

Chemical Analysis Report

SO-DIST-2018-03-15-03

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

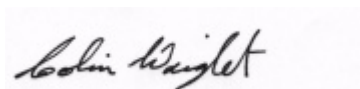
Event Description: **CALOOSA LT 3240A**
Request ID: **RQ-2018-03-12-07**
Customer: **SO-DIST**
Project ID: **BMAP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: John Barrington

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Certified by: Colin Wright, Program Administrator

Date Certified: 24-APR-2018 13:19

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light-colored rectangular background.

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: USGSStation-PuntaBlanca

Collection Date/Time: 03/14/2018 10:28

Field ID: G3SD0108

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1975129	SM 2320 B-97	Total Alkalinity	120		mg CaCO3/L	P342151	
	SM 4500 F-C-97	Fluoride	1.0		mg F/L	P342288	
1975133	SM 5310 B-00 dissolved	Organic Carbon	6.4		mg C/L	P342187	
1975137	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P342198	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40	I	mg N/L	P341879	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P341701	
	EPA 365.1 Rev. 2.0	Total-P	0.060		mg P/L	P341745	
	SM 5310 B-00	Organic Carbon	6.6		mg C/L	P342187	
1975141	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.043		mg P/L	P341651	
1975175	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P341870	
		Zinc	20	U	ug/L	P341870	
	EPA 200.8 Rev. 5.4	Arsenic	2.34		ug/L	P341870	
		Cadmium	0.080	U	ug/L	P341870	
		Chromium	1.6	U	ug/L	PP34187	
		Copper	1.2	I	ug/L	P341870	
		Lead	0.20	U	ug/L	P341870	
		Nickel	0.80	U	ug/L	P341870	
		Silver	0.040	U	ug/L	P341870	

Sample Location: USGS Station-ShellPoint

Collection Date/Time: 03/14/2018 10:50

Field ID: G3SD0109

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1975130	SM 2320 B-97	Total Alkalinity	118		mg CaCO3/L	P342151	
	SM 4500 F-C-97	Fluoride	0.95		mg F/L	P342288	
1975134	SM 5310 B-00 dissolved	Organic Carbon	7.2		mg C/L	P342187	
1975138	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P342198	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.50		mg N/L	P341879	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P341701	
	EPA 365.1 Rev. 2.0	Total-P	0.068		mg P/L	P341745	
	SM 5310 B-00	Organic Carbon	7.2		mg C/L	P342187	
1975142	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.046		mg P/L	P341651	
1975176	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P341870	
		Zinc	20	U	ug/L	P341870	
	EPA 200.8 Rev. 5.4	Arsenic	2.25		ug/L	P341870	
		Cadmium	0.060	U	ug/L	P341870	
		Chromium	1.2	U	ug/L	P343226	
		Copper	1.6	I	ug/L	P341870	
		Lead	0.50	U	ug/L	P341870	
		Nickel	0.60	U	ug/L	P343226	
		Silver	0.030	U	ug/L	P341870	

Sample Location: Marker # 76

Collection Date/Time: 03/14/2018 11:44

Field ID: G3SD0110

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1975131	SM 2320 B-97	Total Alkalinity	116		mg CaCO3/L	P342151	
	SM 4500 F-C-97	Fluoride	0.79		mg F/L	P342288	
1975135	SM 5310 B-00 dissolved	Organic Carbon	9.2		mg C/L	P342187	
1975139	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P342198	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.59		mg N/L	P341879	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P341701	
	EPA 365.1 Rev. 2.0	Total-P	0.082		mg P/L	P341745	
	SM 5310 B-00	Organic Carbon	9.4		mg C/L	P342277	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.056		mg P/L	P341651	
1975177	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P341870	
		Zinc	15	U	ug/L	P341870	
	EPA 200.8 Rev. 5.4	Arsenic	2.15		ug/L	P341870	
		Cadmium	0.060	U	ug/L	P341870	
		Chromium	1.2	U	ug/L	PP34187	
		Copper	1.5	I	ug/L	P341870	
		Lead	0.15	U	ug/L	P341870	
		Nickel	0.60	U	ug/L	P341870	
		Silver	0.030	U	ug/L	P341870	

Sample Location: Marker # 52

Collection Date/Time: 03/14/2018 12:20

Field ID: G3SD0111

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1975132	SM 2320 B-97	Total Alkalinity	122		mg CaCO3/L	P342151	
	SM 4500 F-C-97	Fluoride	0.51		mg F/L	P342288	
1975136	SM 5310 B-00 dissolved	Organic Carbon	12		mg C/L	P342187	
1975140	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P342198	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P341879	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P341701	
	EPA 365.1 Rev. 2.0	Total-P	0.094		mg P/L	P341745	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P342277	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.056		mg P/L	P341651	
1975178	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P341870	
		Zinc	15	U	ug/L	P341870	
	EPA 200.8 Rev. 5.4	Arsenic	1.86		ug/L	P341870	
		Cadmium	0.060	U	ug/L	P341870	
		Chromium	1.2	U	ug/L	PP34187	
		Copper	1.6	I	ug/L	P341870	
		Lead	0.15	U	ug/L	P341870	
		Nickel	0.60	U	ug/L	P341870	
		Silver	0.030	U	ug/L	P341870	

**Quality Assurance Report
Method Blank Results**

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P341870

Component	Result	Code	Units
Iron	30	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P341870

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	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 200.8 Rev. 5.4
Batch ID: P343226

Component	Result	Code	Units
Chromium	0.40	U	ug/L
Nickel	0.20	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: PP341870

Component	Result	Code	Units
Chromium	0.40	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342198

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341879

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341701

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341745

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 dissolved
Batch ID: P341651

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

Reference Method: SM 2320 B-97
Batch ID: P342151

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

Reference Method: SM 4500 F-C-97
Batch ID: P342288

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P342187

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

Reference Method: SM 5310 B-00
Batch ID: P342277

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

Reference Method: SM 5310 B-00 dissolved
Batch ID: P342187

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: P341870

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	102		P	85 - 115
Zinc	96.9		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P341870

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	101		P	85 - 115
Cadmium	105		P	85 - 115
Copper	102		P	85 - 115
Lead	102		P	85 - 115
Nickel	101		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P341870

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Silver	98.2		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343226

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chromium	104		P	85 - 115
Nickel	98.7		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: PP341870

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chromium	102		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342198

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.7		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341879

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341701

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341745

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341651

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

Reference Method: SM 2320 B-97
Batch ID: P342151

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	98 - 107

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P342288

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.2		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P342187

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.4		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P342277

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	106		P	85 - 115

Reference Method: SM 5310 B-00 dissolved
Batch ID: P342187

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P341870

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975360	Iron	98.3	99.7	P/P	80 - 120
1975360	Zinc	95.2	93.8	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P341870

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975360	Arsenic	109	110	P/P	70 - 130
1975360	Cadmium	97.4	101	P/P	70 - 130
1975360	Copper	99.5	99.8	P/P	70 - 130
1975360	Lead	106	108	P/P	70 - 130
1975360	Nickel	98.7	102	P/P	70 - 130
1975360	Silver	92.3	92.9	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343226

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1982946	Chromium	96.5	96.7	P/P	70 - 130
1982946	Nickel	104	104	P/P	70 - 130

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: PP341870

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975360	Chromium	89.8	89.4	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342198

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974947	Ammonia-N	98.2	98.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341879

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975138	Kjeldahl Nitrogen	103	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341701

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975080	NO2NO3-N	104	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341745

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975137	Total-P	95.3	93.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341651

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975144	O-Phosphate-P	97.3	98.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P342288

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975351	Fluoride	93.9	94.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P342187

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974884	Organic Carbon	98.7	97.9	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P342277

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975140	Organic Carbon	103	105	P/P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00 dissolved
Batch ID: P342187

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974884	Organic Carbon	98.7	97.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P341870

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975360	Iron	1.38	Spike	P	0 - 20
1975360	Zinc	1.53	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P341870

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975360	Arsenic	0.510	Spike	P	0 - 20
1975360	Cadmium	3.38	Spike	P	0 - 20
1975360	Copper	0.340	Spike	P	0 - 20
1975360	Lead	1.98	Spike	P	0 - 20
1975360	Nickel	3.14	Spike	P	0 - 20
1975360	Silver	0.655	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343226

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1982946	Chromium	0.203	Spike	P	0 - 20
1982946	Nickel	0.144	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: PP341870

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975360	Chromium	0.454	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342198

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974947	Ammonia-N	0.483	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341879

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975138	Kjeldahl Nitrogen	0.809	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341701

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975080	NO2NO3-N	0.925	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341745

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975137	Total-P	1.53	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341651

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975144	O-Phosphate-P	0.778	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P342151

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975959	Total Alkalinity	0.163	Sample	P	0 - 1.6

Reference Method: SM 4500 F-C-97
Batch ID: P342288

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975351	Fluoride	0.474	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P342187

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974884	Organic Carbon	0.646	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P342277

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975140	Organic Carbon	1.98	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 5310 B-00 dissolved
Batch ID: P342187

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974884	Organic Carbon	0.646	Spike	P	0 - 20

* 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 365.1 Rev. 2.0 dissolved
Run ID: A82644
Included Lab Sample IDs: 1975141, 1975142, 1975143, 1975144

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	102	102	P/P	90 - 110
O-Phosphate-P	99.9	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A82663
Included Lab Sample IDs: 1975137, 1975138, 1975139, 1975140

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A82770
Included Lab Sample IDs: 1975175, 1975176, 1975177, 1975178

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	97.2	96.4	P/P	90 - 110
Iron	99.1	97.2	P/P	90 - 110
Zinc	100	97.9	P/P	90 - 110
Zinc	97.9	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A82773
Included Lab Sample IDs: 1975137, 1975138, 1975139, 1975140

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	100	P/P	90 - 110
Total-P	99.8	99.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A82796
Included Lab Sample IDs: 1975137, 1975138, 1975139, 1975140

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.1	97.8	P/P	90 - 110
Kjeldahl Nitrogen	97.8	96.3	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A82826

Included Lab Sample IDs: 1975129, 1975130, 1975131, 1975132

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.2	97.3	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A82844

Included Lab Sample IDs: 1975137, 1975138

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.4	98.6	P/P	90 - 110

Reference Method: SM 5310 B-00 dissolved

Run ID: A82844

Included Lab Sample IDs: 1975133, 1975134, 1975135, 1975136

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.4	98.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A82853

Included Lab Sample IDs: 1975137, 1975138, 1975139, 1975140

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

Reference Method: SM 5310 B-00

Run ID: A82877

Included Lab Sample IDs: 1975139, 1975140

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	102	99.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A82882

Included Lab Sample IDs: 1975129, 1975130, 1975131, 1975132

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	98.6	P/P	90 - 110
Fluoride	99.1	98.6	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A83015

Included Lab Sample IDs: 1975175, 1975176, 1975177, 1975178

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	97.1	96.6	P/P	90 - 110
Arsenic	97.2	97.1	P/P	90 - 110
Cadmium	96.2	96.6	P/P	90 - 110
Cadmium	97.2	96.2	P/P	90 - 110
Copper	97.0	96.3	P/P	90 - 110
Copper	97.2	97.0	P/P	90 - 110
Lead	95.2	95.7	P/P	90 - 110
Lead	95.6	95.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A83015

Included Lab Sample IDs: 1975175, 1975176, 1975177, 1975178

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	95.7	95.6	P/P	90 - 110
Nickel	96.1	96.3	P/P	90 - 110
Nickel	97.2	96.1	P/P	90 - 110
Silver	98.2	98.4	P/P	90 - 110
Silver	98.8	98.2	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A83040

Included Lab Sample IDs: 1975175, 1975177, 1975178

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	93.9	91.6	P/P	90 - 110
Chromium	96.4	93.9	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A83248

Included Lab Sample IDs: 1975176

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	101	99.9	P/P	90 - 110
Nickel	101	99.6	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 200.7 Rev. 4.4	Iron	102	98.3	99.7		1.38
	Zinc	96.9	95.2	93.8		1.53
EPA 200.8 Rev. 5.4	Arsenic	101	109	110		0.510
	Cadmium	105	97.4	101		3.38
	Chromium	104	96.5	96.7		0.203
	Chromium	102	89.8	89.4		0.454
	Copper	102	99.5	99.8		0.340
	Lead	102	106	108		1.98
	Nickel	101	98.7	102		3.14
	Nickel	98.7	104	104		0.144
	Silver	98.2	92.3	92.9		0.655
EPA 350.1 Rev. 2.0	Ammonia-N	95.7	98.2	98.8		0.483
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	103	102		0.809
EPA 353.2 Rev. 2.0	NO2NO3-N	101	104	103		0.925
EPA 365.1 Rev. 2.0	Total-P	102	95.3	93.7		1.53
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	97.3	98.5		0.778
SM 2320 B-97	Total Alkalinity	105			0.163	
SM 4500 F-C-97	Fluoride	98.2	93.9	94.4		0.474
SM 5310 B-00	Organic Carbon	99.4	98.7	97.9		0.646

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
SM 5310 B-00	Organic Carbon	106	103	105		1.98
SM 5310 B-00 dissolved	Organic Carbon	99.4	98.7	97.9		0.646

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	1975175, 1975176, 1975177, 1975178
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1975175, 1975176, 1975177, 1975178
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1975137, 1975138, 1975139, 1975140
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1975137, 1975138, 1975139, 1975140
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1975137, 1975138, 1975139, 1975140
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1975137, 1975138, 1975139, 1975140
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1975141, 1975142, 1975143, 1975144
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1975129, 1975130, 1975131, 1975132
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1975129, 1975130, 1975131, 1975132
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1975137, 1975138, 1975139, 1975140
SM 5310 B-00 dissolved / E31780	Dissolved Nonpurgeable Organic Carbon in filtered, aqueous matrices	1975133, 1975134, 1975135, 1975136

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	03/15/2018	03/20/2018 16:35	Elliott D. Healy	03/21/2018 19:18	Betina Topolski	1975175
	03/15/2018	03/20/2018 16:35	Elliott D. Healy	03/21/2018 19:30	Betina Topolski	1975176
	03/15/2018	03/20/2018 16:35	Elliott D. Healy	03/21/2018 20:06	Betina Topolski	1975177
	03/15/2018	03/20/2018 16:35	Elliott D. Healy	03/21/2018 20:18	Betina Topolski	1975178
EPA 200.8 Rev. 5.4	03/15/2018	03/20/2018 16:35	Elliott D. Healy	04/03/2018 19:41	Nadine Brooks	1975176
	03/15/2018	03/20/2018 16:35	Elliott D. Healy	04/03/2018 21:37	Nadine Brooks	1975178
	03/15/2018	03/20/2018 16:35	Elliott D. Healy	04/03/2018 21:56	Nadine Brooks	1975177
	03/15/2018	03/20/2018 16:35	Elliott D. Healy	04/03/2018 22:15	Nadine Brooks	1975176
	03/15/2018	03/20/2018 16:35	Elliott D. Healy	04/03/2018 23:13	Nadine Brooks	1975175
	03/15/2018	03/20/2018 16:35	Elliott D. Healy	04/05/2018 03:32	Nadine Brooks	1975178
	03/15/2018	03/20/2018 16:35	Elliott D. Healy	04/05/2018 04:30	Nadine Brooks	1975177
	03/15/2018	03/20/2018 16:35	Elliott D. Healy	04/05/2018 04:39	Nadine Brooks	1975175
	03/15/2018	04/11/2018 18:30	Elliott D. Healy	04/14/2018 01:46	Nadine Brooks	1975176
EPA 350.1 Rev. 2.0	03/15/2018			03/26/2018 12:50	Ping Hua	1975137
	03/15/2018			03/26/2018 12:52	Ping Hua	1975138
	03/15/2018			03/26/2018 12:54	Ping Hua	1975139
	03/15/2018			03/26/2018 12:55	Ping Hua	1975140
EPA 351.2 Rev. 2.0	03/15/2018	03/21/2018 11:00	Adrian Shelby	03/22/2018 12:39	Joseph Suarez	1975137
	03/15/2018	03/21/2018 11:00	Adrian Shelby	03/22/2018 12:41	Joseph Suarez	1975138
	03/15/2018	03/21/2018 11:00	Adrian Shelby	03/22/2018 12:49	Joseph Suarez	1975139
	03/15/2018	03/21/2018 11:00	Adrian Shelby	03/22/2018 12:50	Joseph Suarez	1975140
EPA 353.2 Rev. 2.0	03/15/2018			03/16/2018 12:00	Beverly Y. Sanders	1975137
	03/15/2018			03/16/2018 12:02	Beverly Y. Sanders	1975138
	03/15/2018			03/16/2018 12:03	Beverly Y. Sanders	1975139
	03/15/2018			03/16/2018 12:04	Beverly Y. Sanders	1975140
EPA 365.1 Rev. 2.0	03/15/2018	03/19/2018 12:20	Sima Feizi	03/21/2018 15:40	Lipi Saha	1975137
	03/15/2018	03/19/2018 12:20	Sima Feizi	03/21/2018 15:52	Lipi Saha	1975138
	03/15/2018	03/19/2018 12:20	Sima Feizi	03/21/2018 15:53	Lipi Saha	1975139
	03/15/2018	03/19/2018 12:20	Sima Feizi	03/21/2018 15:54	Lipi Saha	1975140
EPA 365.1 Rev. 2.0 dissolved	03/15/2018			03/15/2018 19:39	Julia Storbeck	1975144
	03/15/2018			03/15/2018 20:14	Julia Storbeck	1975141
	03/15/2018			03/15/2018 20:15	Julia Storbeck	1975142
	03/15/2018			03/15/2018 20:16	Julia Storbeck	1975143
SM 2320 B-97	03/15/2018			03/24/2018 01:06	Dale L. Simmons	1975129
	03/15/2018			03/24/2018 01:14	Dale L. Simmons	1975130
	03/15/2018			03/24/2018 01:22	Dale L. Simmons	1975131
	03/15/2018			03/24/2018 01:31	Dale L. Simmons	1975132
SM 4500 F-C-97	03/15/2018			03/26/2018 17:58	Dale L. Simmons	1975132
	03/15/2018			03/26/2018 18:49	Dale L. Simmons	1975129
	03/15/2018			03/26/2018 18:53	Dale L. Simmons	1975130

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-97	03/15/2018			03/26/2018 18:56	Dale L. Simmons	1975131
SM 5310 B-00	03/15/2018			03/24/2018 14:40	Julia Storbeck	1975137
	03/15/2018			03/24/2018 14:59	Julia Storbeck	1975138
	03/15/2018			03/27/2018 11:24	Julia Storbeck	1975140
	03/15/2018			03/27/2018 12:06	Julia Storbeck	1975139
	03/15/2018			03/24/2018 13:22	Julia Storbeck	1975133
SM 5310 B-00 dissolved	03/15/2018			03/24/2018 13:36	Julia Storbeck	1975134
	03/15/2018			03/24/2018 14:08	Julia Storbeck	1975135
	03/15/2018			03/24/2018 14:25	Julia Storbeck	1975136