

Chemical Analysis Report

SO-DIST-2018-04-12-02

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-2018-04-09-03**
Customer: **SO-DIST**
Project ID: **BMAP**

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FLDEP South District Office
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Date Certified: 15-MAY-2018 14:36



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: 04/11/2018 09:47

Field ID: G3SD0108

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1983827	SM 2320 B-97	Total Alkalinity	119	A	mg CaCO3/L	P343951	
	SM 4500 F-C-97	Fluoride	1.0		mg F/L	P343954	
1983831	SM 5310 B-00 dissolved	Organic Carbon	6.2		mg C/L	P343574	
1983835	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P343446	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.61		mg N/L	P343351	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P343390	
	EPA 365.1 Rev. 2.0	Total-P	0.067		mg P/L	P343593	
	SM 5310 B-00	Organic Carbon	6.5		mg C/L	P343574	
1983839	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.038		mg P/L	P343294	
1983872	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P343536	
	EPA 200.8 Rev. 5.4	Arsenic	2.76		ug/L	P343536	
		Cadmium	0.080	U	ug/L	P343536	
		Chromium	1.6	U	ug/L	P343536	
		Copper	1.4	I	ug/L	P343536	
		Lead	0.50	U	ug/L	P343536	
		Nickel	0.80	U	ug/L	P343536	
		Silver	0.040	U	ug/L	P343536	
		Zinc	4.0	U	ug/L	P343536	

Sample Location: USGS Station-ShellPoint

Collection Date/Time: 04/11/2018 10:10

Field ID: G3SD0109

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1983828	SM 2320 B-97	Total Alkalinity	119		mg CaCO3/L	P343951	
	SM 4500 F-C-97	Fluoride	1.0		mg F/L	P343954	
1983832	SM 5310 B-00 dissolved	Organic Carbon	6.4		mg C/L	P343574	
1983836	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P343446	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.45	J	mg N/L	P343881	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P343390	
	EPA 365.1 Rev. 2.0	Total-P	0.061		mg P/L	P343593	
	SM 5310 B-00	Organic Carbon	7.0		mg C/L	P343574	
1983840	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.038		mg P/L	P343294	
1983873	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P343536	
	EPA 200.8 Rev. 5.4	Arsenic	2.55		ug/L	P343536	
		Cadmium	0.080	U	ug/L	P343536	
		Chromium	1.6	U	ug/L	P343536	
		Copper	1.3	I	ug/L	P343536	
		Lead	0.50	U	ug/L	P343536	
		Nickel	0.80	U	ug/L	P343536	
		Silver	0.040	U	ug/L	P343536	
		Zinc	4.0	U	ug/L	P343536	

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

Sample Location: Marker # 76

Collection Date/Time: 04/11/2018 10:37

Field ID: G3SD0110

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1983829	SM 2320 B-97	Total Alkalinity	118		mg CaCO3/L	P343951	
	SM 4500 F-C-97	Fluoride	0.84		mg F/L	P343954	
1983833	SM 5310 B-00 dissolved	Organic Carbon	9.0		mg C/L	P343574	
1983837	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P343446	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.66		mg N/L	P343881	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P343390	
	EPA 365.1 Rev. 2.0	Total-P	0.088		mg P/L	P343593	
	SM 5310 B-00	Organic Carbon	9.7		mg C/L	P343574	
1983841	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.053		mg P/L	P343294	
1983874	EPA 200.7 Rev. 4.4	Iron	97	I	ug/L	P343536	
	EPA 200.8 Rev. 5.4	Arsenic	2.55		ug/L	P343536	
		Cadmium	0.060	U	ug/L	P343536	
		Chromium	1.2	U	ug/L	P343536	
		Copper	1.9	I	ug/L	P343536	
		Lead	0.50	U	ug/L	P343536	
		Nickel	0.60	U	ug/L	P343536	
		Silver	0.030	U	ug/L	P343536	
		Zinc	3.0	U	ug/L	P343536	

Sample Location: Marker # 52

Collection Date/Time: 04/11/2018 11:20

Field ID: G3SD0111

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1983830	SM 2320 B-97	Total Alkalinity	113		mg CaCO3/L	P343951	
	SM 4500 F-C-97	Fluoride	0.51		mg F/L	P343954	
1983834	SM 5310 B-00 dissolved	Organic Carbon	13		mg C/L	P343574	
1983838	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P343446	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.99		mg N/L	P343881	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P343390	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P343593	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P343574	
1983842	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.092		mg P/L	P343294	
1983875	EPA 200.7 Rev. 4.4	Iron	160	I	ug/L	P343536	
	EPA 200.8 Rev. 5.4	Arsenic	2.30		ug/L	P343536	
		Cadmium	0.060	U	ug/L	P343536	
		Chromium	1.2	U	ug/L	P343536	
		Copper	1.9	I	ug/L	P343536	
		Lead	0.15	U	ug/L	P343536	
		Nickel	0.64	I	ug/L	P343536	
		Silver	0.030	U	ug/L	P343536	
		Zinc	3.0	U	ug/L	P343536	

**Quality Assurance Report
Method Blank Results**

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P343536

Component	Result	Code	Units
Iron	30	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343536

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
Zinc	1.0	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343446

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343351

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343881

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343390

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343593

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343294

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P343951

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

Reference Method: SM 4500 F-C-97
Batch ID: P343954

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P343574

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

Reference Method: SM 5310 B-00 dissolved
Batch ID: P343574

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: P343536

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	100		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343536

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	102		P	80 - 120
Cadmium	98.8		P	80 - 120
Chromium	94.3		P	80 - 120
Copper	98.3		P	80 - 120
Lead	95.1		P	80 - 120
Nickel	100		P	80 - 120
Silver	97.9		P	80 - 120
Zinc	100		P	80 - 120

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343446

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343351

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.3		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343881

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: P343390

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343593

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343294

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

Reference Method: SM 2320 B-97
Batch ID: P343951

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P343954

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

Reference Method: SM 5310 B-00
Batch ID: P343574

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.8		P	85 - 115

Reference Method: SM 5310 B-00 dissolved
Batch ID: P343574

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P343536

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1983873	Iron	100	102	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343536

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1983873	Arsenic	105	110	P/P	70 - 130
1983873	Cadmium	84.8	84.1	P/P	70 - 130
1983873	Chromium	82.5	85.8	P/P	70 - 130
1983873	Copper	97.2	101	P/P	70 - 130
1983873	Lead	103	106	P/P	70 - 130
1983873	Nickel	106	113	P/P	70 - 130
1983873	Silver	86.9	89.1	P/P	70 - 130
1983873	Zinc	85.4	88.1	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343446

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1983772	Ammonia-N	98.0	96.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343351

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981205	Kjeldahl Nitrogen	97.4	97.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343881

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1983836	Kjeldahl Nitrogen	104	111	P/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343390

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1983814	NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343593

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1983836	Total-P	95.6	96.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343294

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1983839	O-Phosphate-P	98.8	98.7	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P343954

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1980264	Fluoride	93.3	94.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P343574

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1982916	Organic Carbon	96.8	97.2	P/P	85 - 115

Reference Method: SM 5310 B-00 dissolved
Batch ID: P343574

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1982916	Organic Carbon	96.8	97.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P343536

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983873	Iron	1.15	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343536

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983873	Arsenic	4.36	Spike	P	0 - 20
1983873	Cadmium	0.845	Spike	P	0 - 20
1983873	Chromium	4.02	Spike	P	0 - 20
1983873	Copper	4.00	Spike	P	0 - 20
1983873	Lead	2.54	Spike	P	0 - 20
1983873	Nickel	5.94	Spike	P	0 - 20
1983873	Silver	2.52	Spike	P	0 - 20
1983873	Zinc	3.10	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343446

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983772	Ammonia-N	0.853	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343351

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981205	Kjeldahl Nitrogen	0.398	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343881

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983836	Kjeldahl Nitrogen	5.30	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343390

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983814	NO2NO3-N	0.952	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343593

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983836	Total-P	0.973	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343294

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983839	O-Phosphate-P	0.0733	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P343951

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983827	Total Alkalinity	0.472	Sample	P	0 - 1.6

Reference Method: SM 4500 F-C-97
Batch ID: P343954

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1980264	Fluoride	0.946	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P343574

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1982916	Organic Carbon	0.342	Spike	P	0 - 20

Reference Method: SM 5310 B-00 dissolved
Batch ID: P343574

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1982916	Organic Carbon	0.342	Spike	P	0 - 20

Quality Assurance Report Precision

* 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: A83196

Included Lab Sample IDs: 1983839, 1983840, 1983841, 1983842

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A83233

Included Lab Sample IDs: 1983835, 1983836, 1983837, 1983838

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A83249

Included Lab Sample IDs: 1983835, 1983836, 1983837, 1983838

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.7	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A83278

Included Lab Sample IDs: 1983835

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

Reference Method: SM 5310 B-00

Run ID: A83288

Included Lab Sample IDs: 1983835, 1983836, 1983837, 1983838

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.8	98.6	P/P	90 - 110

Reference Method: SM 5310 B-00 dissolved

Run ID: A83288

Included Lab Sample IDs: 1983831, 1983832, 1983833, 1983834

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.8	98.6	P/P	90 - 110
Organic Carbon	99.0	98.8	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A83317

Included Lab Sample IDs: 1983872, 1983873, 1983874, 1983875

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A83317

Included Lab Sample IDs: 1983872, 1983873, 1983874, 1983875

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	97.1	99.6	P/P	90 - 110
Iron	99.6	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A83357

Included Lab Sample IDs: 1983835, 1983836, 1983837

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A83365

Included Lab Sample IDs: 1983838

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A83389

Included Lab Sample IDs: 1983872, 1983873, 1983874, 1983875

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	105	108	P/P	90 - 110
Arsenic	108	108	P/P	90 - 110
Cadmium	101	102	P/P	90 - 110
Cadmium	102	103	P/P	90 - 110
Chromium	97.2	97.5	P/P	90 - 110
Chromium	99.5	97.2	P/P	90 - 110
Copper	103	105	P/P	90 - 110
Copper	105	104	P/P	90 - 110
Lead	102	101	P/P	90 - 110
Lead	102	102	P/P	90 - 110
Nickel	102	104	P/P	90 - 110
Nickel	104	104	P/P	90 - 110
Silver	102	102	P/P	90 - 110
Silver	99.4	102	P/P	90 - 110
Zinc	104	105	P/P	90 - 110
Zinc	105	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A83417

Included Lab Sample IDs: 1983836, 1983837, 1983838

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	99.4	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A83420

Included Lab Sample IDs: 1983827, 1983828, 1983829, 1983830

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

Reference Method: SM 2320 B-97

Run ID: A83420

Included Lab Sample IDs: 1983827, 1983828, 1983829, 1983830

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.2	P/P	90 - 110
Total Alkalinity	99.2	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A83420

Included Lab Sample IDs: 1983827, 1983828, 1983829, 1983830

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	98.6	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	100	100 102			1.15
EPA 200.8 Rev. 5.4	Arsenic	102	105 110			4.36
	Cadmium	98.8	84.8 84.1			0.845
	Chromium	94.3	82.5 85.8			4.02
	Copper	98.3	97.2 101			4.00
	Lead	95.1	103 106			2.54
	Nickel	100	106 113			5.94
	Silver	97.9	86.9 89.1			2.52
	Zinc	100	85.4 88.1			3.10
EPA 350.1 Rev. 2.0	Ammonia-N	98.4	98.0 96.7			0.853
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.3	97.4 97.9			0.398
	Kjeldahl Nitrogen	102	104 111			5.30
EPA 353.2 Rev. 2.0	NO2NO3-N	100	102 103			0.952
EPA 365.1 Rev. 2.0	Total-P	100	95.6 96.6			0.973
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	98.8 98.7			0.0733
SM 2320 B-97	Total Alkalinity	101			0.472	
SM 4500 F-C-97	Fluoride	95.4	93.3 94.9			0.946
SM 5310 B-00	Organic Carbon	99.8	96.8 97.2			0.342
SM 5310 B-00 dissolved	Organic Carbon	99.8	96.8 97.2			0.342

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	1983872, 1983873, 1983874, 1983875
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1983872, 1983873, 1983874, 1983875
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1983835, 1983836, 1983837, 1983838
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1983835, 1983836, 1983837, 1983838

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1983835, 1983836, 1983837, 1983838
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1983835, 1983836, 1983837, 1983838
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1983839, 1983840, 1983841, 1983842
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1983827, 1983828, 1983829, 1983830
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1983827, 1983828, 1983829, 1983830
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1983835, 1983836, 1983837, 1983838
SM 5310 B-00 dissolved / E31780	Dissolved Nonpurgeable Organic Carbon in filtered, aqueous matrices	1983831, 1983832, 1983833, 1983834

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	04/12/2018	04/17/2018 14:05	Elliott D. Healy	04/18/2018 12:34	Betina Topolski	1983872
	04/12/2018	04/17/2018 14:05	Elliott D. Healy	04/18/2018 12:37	Betina Topolski	1983873
	04/12/2018	04/17/2018 14:05	Elliott D. Healy	04/18/2018 13:06	Betina Topolski	1983874
	04/12/2018	04/17/2018 14:05	Elliott D. Healy	04/18/2018 13:10	Betina Topolski	1983875
EPA 200.8 Rev. 5.4	04/12/2018	04/17/2018 14:05	Elliott D. Healy	04/21/2018 00:37	Nadine Brooks	1983874
	04/12/2018	04/17/2018 14:05	Elliott D. Healy	04/21/2018 00:46	Nadine Brooks	1983873
	04/12/2018	04/17/2018 14:05	Elliott D. Healy	04/21/2018 01:15	Nadine Brooks	1983872
	04/12/2018	04/17/2018 14:05	Elliott D. Healy	04/21/2018 02:04	Nadine Brooks	1983873
	04/12/2018	04/17/2018 14:05	Elliott D. Healy	04/21/2018 02:42	Nadine Brooks	1983872
	04/12/2018	04/17/2018 14:05	Elliott D. Healy	04/21/2018 03:50	Nadine Brooks	1983875
	04/12/2018	04/17/2018 14:05	Elliott D. Healy	04/21/2018 04:28	Nadine Brooks	1983874
	04/12/2018			04/13/2018 16:02	Julia Storbeck	1983835
EPA 350.1 Rev. 2.0	04/12/2018			04/13/2018 16:04	Julia Storbeck	1983836
	04/12/2018			04/13/2018 16:05	Julia Storbeck	1983837
	04/12/2018			04/13/2018 16:07	Julia Storbeck	1983838
	04/12/2018	04/13/2018 10:00	Adrian Shelby	04/17/2018 11:23	Joseph Suarez	1983835
EPA 351.2 Rev. 2.0	04/12/2018	04/23/2018 11:15	Adrian Shelby	04/24/2018 11:20	Joseph Suarez	1983836
	04/12/2018	04/23/2018 11:15	Adrian Shelby	04/24/2018 11:24	Joseph Suarez	1983837
	04/12/2018	04/23/2018 11:15	Adrian Shelby	04/24/2018 11:26	Joseph Suarez	1983838
	04/12/2018			04/13/2018 13:04	Lauren Bottorf	1983835
EPA 353.2 Rev. 2.0	04/12/2018			04/13/2018 13:05	Lauren Bottorf	1983836
	04/12/2018			04/13/2018 13:06	Lauren Bottorf	1983837
	04/12/2018			04/13/2018 13:08	Lauren Bottorf	1983838
	04/12/2018	04/17/2018 13:49	Sima Feizi	04/19/2018 09:24	Beverly Y. Sanders	1983838
EPA 365.1 Rev. 2.0	04/12/2018	04/17/2018 13:49	Sima Feizi	04/19/2018 13:59	Beverly Y. Sanders	1983835
	04/12/2018	04/17/2018 13:49	Sima Feizi	04/19/2018 14:00	Beverly Y. Sanders	1983836
	04/12/2018	04/17/2018 13:49	Sima Feizi	04/19/2018 14:01	Beverly Y. Sanders	1983837
	04/12/2018			04/12/2018 13:56	Megan Treadwell	1983839
EPA 365.1 Rev. 2.0 dissolved	04/12/2018			04/12/2018 13:58	Megan Treadwell	1983840
	04/12/2018			04/12/2018 13:59	Megan Treadwell	1983841
	04/12/2018			04/12/2018 14:04	Megan Treadwell	1983842
	04/12/2018			04/24/2018 03:02	Dale L. Simmons	1983830
SM 2320 B-97	04/12/2018			04/24/2018 03:29	Dale L. Simmons	1983827
	04/12/2018			04/24/2018 04:20	Dale L. Simmons	1983828
	04/12/2018			04/24/2018 04:31	Dale L. Simmons	1983829
	04/12/2018			04/24/2018 02:37	Dale L. Simmons	1983830
SM 4500 F-C-97	04/12/2018			04/24/2018 02:45	Dale L. Simmons	1983827
	04/12/2018			04/24/2018 02:48	Dale L. Simmons	1983828
	04/12/2018			04/24/2018 02:52	Dale L. Simmons	1983829
	04/12/2018			04/17/2018 08:22	Megan Treadwell	1983835
SM 5310 B-00	04/12/2018					

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	04/12/2018			04/17/2018 08:46	Megan Treadwell	1983836
	04/12/2018			04/17/2018 08:58	Megan Treadwell	1983837
	04/12/2018			04/17/2018 09:10	Megan Treadwell	1983838
SM 5310 B-00 dissolved	04/12/2018			04/17/2018 07:06	Megan Treadwell	1983831
	04/12/2018			04/17/2018 07:45	Megan Treadwell	1983832
	04/12/2018			04/17/2018 07:57	Megan Treadwell	1983833
	04/12/2018			04/17/2018 08:09	Megan Treadwell	1983834