

Chemical Analysis Report

SO-DIST-2018-10-25-02

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-2018-10-01-10**
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
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Certified by: Colin Wright, Program Administrator

Date Certified: 19-NOV-2018 10:58

A handwritten signature in black ink, appearing to read "Colin Wright", is shown 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: 10/24/2018 09:55

Field ID: G3SD0108

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2035956	SM 2320 B-97	Total Alkalinity	118		mg CaCO3/L	P354097	
	SM 4500 F-C-97	Fluoride	0.85		mg F/L	P354100	
2035960	SM 5310 B-00 dissolved	Organic Carbon	7.9		mg C/L	P353996	
2035964	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P354092	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.50		mg N/L	P354058	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.014		mg N/L	P353830	
	EPA 365.1 Rev. 2.0	Total-P	0.057		mg P/L	P353755	
	SM 5310 B-00	Organic Carbon	8.1		mg C/L	P353996	
2035968	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.034		mg P/L	P353715	
2035992	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P353933	
		Zinc	15	U	ug/L	P353933	
	EPA 200.8 Rev. 5.4	Arsenic	2.39		ug/L	P353933	
		Cadmium	0.060	U	ug/L	P353933	
		Chromium	4.0	U	ug/L	P353933	
		Copper	1.0	I	ug/L	P353933	
		Lead	0.15	U	ug/L	P353933	
		Nickel	0.60	U	ug/L	P353933	
		Silver	0.030	U	ug/L	P353933	

Sample Location: USGS Station-ShellPoint

Collection Date/Time: 10/24/2018 10:15

Field ID: G3SD0109

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2035957	SM 2320 B-97	Total Alkalinity	116		mg CaCO3/L	P354097	
	SM 4500 F-C-97	Fluoride	0.78		mg F/L	P354100	
2035961	SM 5310 B-00 dissolved	Organic Carbon	9.2		mg C/L	P353996	
2035965	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P354092	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.64		mg N/L	P354058	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P353830	
	EPA 365.1 Rev. 2.0	Total-P	0.062		mg P/L	P354027	
	SM 5310 B-00	Organic Carbon	9.4		mg C/L	P353996	
2035969	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.026		mg P/L	P353715	
2035993	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P353933	
		Zinc	15	U	ug/L	P353933	
	EPA 200.8 Rev. 5.4	Arsenic	2.21		ug/L	P353933	
		Cadmium	0.060	U	ug/L	P353933	
		Chromium	4.0	U	ug/L	P353933	
		Copper	0.92	I	ug/L	P353933	
		Lead	0.15	U	ug/L	P353933	
		Nickel	0.60	U	ug/L	P353933	
		Silver	0.030	U	ug/L	P353933	

Sample Location: Marker # 76

Collection Date/Time: 10/24/2018 10:50

Field ID: G3SD0110

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2035958	SM 2320 B-97	Total Alkalinity	117		mg CaCO3/L	P354097	
	SM 4500 F-C-97	Fluoride	0.50		mg F/L	P354100	
2035962	SM 5310 B-00 dissolved	Organic Carbon	12		mg C/L	P353996	
2035966	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P354092	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.80		mg N/L	P354058	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P353830	
	EPA 365.1 Rev. 2.0	Total-P	0.078		mg P/L	P354027	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P353996	
2035970	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.024		mg P/L	P353715	
2035994	EPA 200.7 Rev. 4.4	Iron	130	I	ug/L	P353933	
		Zinc	15	U	ug/L	P353933	
	EPA 200.8 Rev. 5.4	Arsenic	1.99		ug/L	P353933	
		Cadmium	0.060	U	ug/L	P353933	
		Chromium	4.0	U	ug/L	P353933	
		Copper	1.1	I	ug/L	P353933	
		Lead	0.15	U	ug/L	P353933	
		Nickel	0.60	U	ug/L	P353933	
		Silver	0.030	U	ug/L	P353933	

Sample Location: Marker # 52

Collection Date/Time: 10/24/2018 11:30

Field ID: G3SD0111

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2035959	SM 2320 B-97	Total Alkalinity	120		mg CaCO3/L	P354097	
	SM 4500 F-C-97	Fluoride	0.34		mg F/L	P354100	
2035963	SM 5310 B-00 dissolved	Organic Carbon	14		mg C/L	P354153	
2035967	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P354092	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.94		mg N/L	P354058	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P353830	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P354027	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P354153	
2035971	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.031		mg P/L	P353715	
2035995	EPA 200.7 Rev. 4.4	Iron	170		ug/L	P353933	
		Zinc	5.0	U	ug/L	P353933	
	EPA 200.8 Rev. 5.4	Arsenic	1.74		ug/L	P353933	
		Cadmium	0.060	U	ug/L	P353933	
		Chromium	4.0	U	ug/L	P353933	
		Copper	1.2	I	ug/L	P353933	
		Lead	0.15	U	ug/L	P353933	
		Nickel	0.60	U	ug/L	P353933	
		Silver	0.030	U	ug/L	P353933	

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353933

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: P353933

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	0.056	I	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354092

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354058

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353830

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353755

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354027

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353715

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: P354097

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

Reference Method: SM 4500 F-C-97
Batch ID: P354100

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P353996

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

Reference Method: SM 5310 B-00
Batch ID: P354153

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

Reference Method: SM 5310 B-00 dissolved
Batch ID: P353996

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

Reference Method: SM 5310 B-00 dissolved
Batch ID: P354153

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: P353933

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	102		P	85 - 115
Zinc	107		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353933

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	100		P	85 - 115
Cadmium	97.0		P	85 - 115
Chromium	104		P	85 - 115
Copper	97.2		P	85 - 115
Lead	90.8		P	85 - 115
Nickel	98.9		P	85 - 115
Silver	95.1		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354092

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354058

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353830

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	100		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353755

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354027

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353715

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P354097

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P354100

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.5		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P353996

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.8		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P354153

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Reference Method: SM 5310 B-00 dissolved
Batch ID: P353996

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.8		P	85 - 115

Reference Method: SM 5310 B-00 dissolved
Batch ID: P354153

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353933

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035995	Iron	100	99.1	P/P	70 - 130
2035995	Zinc	107	104	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353933

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035995	Arsenic	108	110	P/P	70 - 130
2035995	Cadmium	95.7	96.8	P/P	70 - 130
2035995	Chromium	106	106	P/P	80 - 120
2035995	Copper	92.9	93.0	P/P	70 - 130
2035995	Lead	98.5	101	P/P	70 - 130
2035995	Nickel	90.1	91.6	P/P	70 - 130
2035995	Silver	89.3	90.2	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354092

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035964	Ammonia-N	106	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354058

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036143	Kjeldahl Nitrogen	97.0	97.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353830

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035964	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353755

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035345	Total-P	94.0	92.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354027

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036241	Total-P	93.2	93.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353715

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035968	O-Phosphate-P	99.4	96.3	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P354100

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035932	Fluoride	97.5	98.2	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P353996

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035340	Organic Carbon	97.8	97.6	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P354153

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035810	Organic Carbon	101	101	P/P	85 - 115

Reference Method: SM 5310 B-00 dissolved
Batch ID: P353996

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035340	Organic Carbon	97.8	97.6	P/P	85 - 115

Reference Method: SM 5310 B-00 dissolved
Batch ID: P354153

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035810	Organic Carbon	101	101	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035995	Iron	0.972	Spike	P	0 - 20
2035995	Zinc	2.29	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035995	Arsenic	1.71	Spike	P	0 - 20
2035995	Cadmium	1.19	Spike	P	0 - 20
2035995	Chromium	0.196	Spike	P	0 - 20
2035995	Copper	0.0864	Spike	P	0 - 20
2035995	Lead	2.66	Spike	P	0 - 20
2035995	Nickel	1.66	Spike	P	0 - 20
2035995	Silver	1.03	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035964	Ammonia-N	0.0820	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354058

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036143	Kjeldahl Nitrogen	0.0860	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353830

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035964	NO2NO3-N	0.464	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353755

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035345	Total-P	2.10	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354027

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036241	Total-P	0.180	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P353715

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035968	O-Phosphate-P	2.35	Spike	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P354097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035932	Total Alkalinity	0.133	Sample	P	0 - 1.6

Reference Method: SM 4500 F-C-97
 Batch ID: P354100

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035932	Fluoride	0.470	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
 Batch ID: P353996

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035340	Organic Carbon	0.174	Spike	P	0 - 20

Reference Method: SM 5310 B-00
 Batch ID: P354153

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035810	Organic Carbon	0.247	Spike	P	0 - 20

Reference Method: SM 5310 B-00 dissolved
 Batch ID: P353996

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035340	Organic Carbon	0.174	Spike	P	0 - 20

Reference Method: SM 5310 B-00 dissolved
 Batch ID: P354153

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035810	Organic Carbon	0.247	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: A87305

Included Lab Sample IDs: 2035968, 2035969, 2035970, 2035971

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	98.9	P/P	90 - 110
O-Phosphate-P	99.0	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A87354

Included Lab Sample IDs: 2035964, 2035965, 2035966, 2035967

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A87361

Included Lab Sample IDs: 2035964

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

Reference Method: SM 5310 B-00

Run ID: A87420

Included Lab Sample IDs: 2035964, 2035965, 2035966

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

Reference Method: SM 5310 B-00 dissolved

Run ID: A87420

Included Lab Sample IDs: 2035960, 2035961, 2035962

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A87465

Included Lab Sample IDs: 2035964, 2035965, 2035966, 2035967

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A87466

Included Lab Sample IDs: 2035992, 2035993, 2035994, 2035995

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	102	103	P/P	90 - 110
Iron	103	102	P/P	90 - 110
Zinc	105	107	P/P	90 - 110
Zinc	105	105	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A87470

Included Lab Sample IDs: 2035956, 2035957, 2035958, 2035959

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.8	P/P	90 - 110
Total Alkalinity	99.8	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A87470

Included Lab Sample IDs: 2035956, 2035957, 2035958, 2035959

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	98.6	P/P	90 - 110
Fluoride	98.6	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A87487

Included Lab Sample IDs: 2035965, 2035966, 2035967

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A87488

Included Lab Sample IDs: 2035964, 2035965, 2035966, 2035967

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.1	96.4	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A87498

Included Lab Sample IDs: 2035967

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

Reference Method: SM 5310 B-00 dissolved

Run ID: A87498

Included Lab Sample IDs: 2035963

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A87591

Included Lab Sample IDs: 2035992, 2035993, 2035994, 2035995

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	98.1	99.9	P/P	90 - 110
Cadmium	95.0	95.6	P/P	90 - 110
Lead	92.6	92.0	P/P	90 - 110
Nickel	97.6	96.0	P/P	90 - 110
Silver	91.2	90.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A87705

Included Lab Sample IDs: 2035992, 2035993, 2035994, 2035995

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	101	102	P/P	90 - 110
Chromium	103	101	P/P	90 - 110
Lead	99.2	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A87798

Included Lab Sample IDs: 2035992, 2035993, 2035994, 2035995

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	100	95.8	P/P	90 - 110

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

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

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 200.7 Rev. 4.4	Iron	102	100	99.1		0.972
	Zinc	107	107	104		2.29
EPA 200.8 Rev. 5.4	Arsenic	100	108	110		1.71
	Cadmium	97.0	95.7	96.8		1.19
	Chromium	104	106	106		0.196
	Copper	97.2	92.9	93.0		0.0864
	Lead	90.8	98.5	101		2.66
	Nickel	98.9	90.1	91.6		1.66
	Silver	95.1	89.3	90.2		1.03
EPA 350.1 Rev. 2.0	Ammonia-N	105	106	106		0.0820
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.8	97.0	97.1		0.0860
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	101	101		0.464
EPA 365.1 Rev. 2.0	Total-P	99.3	94.0	92.0		2.10
	Total-P	103	93.2	93.1		0.180
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.8	99.4	96.3		2.35
SM 2320 B-97	Total Alkalinity	102			0.133	
SM 4500 F-C-97	Fluoride	98.5	97.5	98.2		0.470
SM 5310 B-00	Organic Carbon	98.8	97.8	97.6		0.174
	Organic Carbon	101	101	101		0.247
SM 5310 B-00 dissolved	Organic Carbon	98.8	97.8	97.6		0.174
	Organic Carbon	101	101	101		0.247

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	2035992, 2035993, 2035994, 2035995
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2035992, 2035993, 2035994, 2035995
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2035964, 2035965, 2035966, 2035967
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2035964, 2035965, 2035966, 2035967
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2035964, 2035965, 2035966, 2035967
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2035964, 2035965, 2035966, 2035967
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2035968, 2035969, 2035970, 2035971
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2035956, 2035957, 2035958, 2035959
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2035956, 2035957, 2035958, 2035959
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2035964, 2035965, 2035966, 2035967
SM 5310 B-00 dissolved / E31780	Dissolved Nonpurgeable Organic Carbon in filtered, aqueous matrices	2035960, 2035961, 2035962, 2035963

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	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/01/2018 16:29	Betina Topolski	2035992
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/01/2018 16:35	Betina Topolski	2035993
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/01/2018 16:42	Betina Topolski	2035994
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/01/2018 17:06	Betina Topolski	2035995
EPA 200.8 Rev. 5.4	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/07/2018 06:52	Robert K Palmer	2035992
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/07/2018 07:02	Robert K Palmer	2035993
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/07/2018 07:11	Robert K Palmer	2035994
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/07/2018 07:21	Robert K Palmer	2035995
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/09/2018 18:57	Allison Taylor	2035992
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/09/2018 19:24	Allison Taylor	2035993
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/09/2018 19:31	Allison Taylor	2035994
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/09/2018 19:38	Allison Taylor	2035995
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/09/2018 23:06	Allison Taylor	2035994
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/09/2018 23:20	Allison Taylor	2035993
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/09/2018 23:33	Allison Taylor	2035992
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/15/2018 22:58	Robert K Palmer	2035992
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/15/2018 23:03	Robert K Palmer	2035993
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/15/2018 23:08	Robert K Palmer	2035994
	10/25/2018	10/30/2018 17:35	Elliott D. Healy	11/15/2018 23:13	Robert K Palmer	2035995
EPA 350.1 Rev. 2.0	10/25/2018			11/01/2018 13:43	Ping Hua	2035964
	10/25/2018			11/01/2018 13:52	Ping Hua	2035965
	10/25/2018			11/01/2018 13:59	Ping Hua	2035966
	10/25/2018			11/01/2018 14:01	Ping Hua	2035967
EPA 351.2 Rev. 2.0	10/25/2018	11/01/2018 17:00	Adrian Shelby	11/02/2018 12:30	Virginia P. Brown	2035964
	10/25/2018	11/01/2018 17:00	Adrian Shelby	11/02/2018 12:31	Virginia P. Brown	2035965
	10/25/2018	11/01/2018 17:00	Adrian Shelby	11/02/2018 12:33	Virginia P. Brown	2035966
	10/25/2018	11/01/2018 17:00	Adrian Shelby	11/02/2018 12:34	Virginia P. Brown	2035967
EPA 353.2 Rev. 2.0	10/25/2018			10/29/2018 11:33	Beverly Y. Sanders	2035964
	10/25/2018			10/29/2018 11:38	Beverly Y. Sanders	2035965
	10/25/2018			10/29/2018 11:40	Beverly Y. Sanders	2035966
	10/25/2018			10/29/2018 11:41	Beverly Y. Sanders	2035967
EPA 365.1 Rev. 2.0	10/25/2018	10/26/2018 12:55	Sima Feizi	10/29/2018 13:38	Lipi Saha	2035964
	10/25/2018	10/31/2018 16:00	Adrian Shelby	11/02/2018 09:44	Beverly Y. Sanders	2035965
	10/25/2018	10/31/2018 16:00	Adrian Shelby	11/02/2018 09:45	Beverly Y. Sanders	2035966
	10/25/2018	10/31/2018 16:00	Adrian Shelby	11/02/2018 09:46	Beverly Y. Sanders	2035967
EPA 365.1 Rev. 2.0 dissolved	10/25/2018			10/26/2018 08:50	Lipi Saha	2035968
	10/25/2018			10/26/2018 08:55	Lipi Saha	2035969
	10/25/2018			10/26/2018 08:56	Lipi Saha	2035970
	10/25/2018			10/26/2018 09:01	Lipi Saha	2035971
SM 2320 B-97	10/25/2018			10/30/2018 23:30	Dale L. Simmons	2035958

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	10/25/2018			10/31/2018 00:33	Dale L. Simmons	2035959
	10/25/2018			10/31/2018 02:34	Dale L. Simmons	2035956
	10/25/2018			10/31/2018 02:44	Dale L. Simmons	2035957
SM 4500 F-C-97	10/25/2018			10/30/2018 21:00	Dale L. Simmons	2035958
	10/25/2018			10/30/2018 21:04	Dale L. Simmons	2035959
	10/25/2018			10/30/2018 22:21	Dale L. Simmons	2035956
	10/25/2018			10/30/2018 22:25	Dale L. Simmons	2035957
SM 5310 B-00	10/25/2018			10/31/2018 10:03	Megan Treadwell	2035964
	10/25/2018			10/31/2018 10:28	Megan Treadwell	2035965
	10/25/2018			10/31/2018 10:40	Megan Treadwell	2035966
	10/25/2018			11/01/2018 11:08	Megan Treadwell	2035967
SM 5310 B-00 dissolved	10/25/2018			10/31/2018 09:25	Megan Treadwell	2035960
	10/25/2018			10/31/2018 09:37	Megan Treadwell	2035961
	10/25/2018			10/31/2018 09:51	Megan Treadwell	2035962
	10/25/2018			11/01/2018 10:56	Megan Treadwell	2035963