

Chemical Analysis Report

WAS-SECT-2019-02-27-01

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

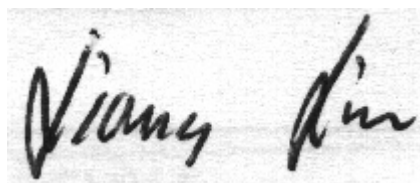
Event Description: **Group 2**
Request ID: **RQ-2019-02-25-48**
Customer: **WAS-SECT**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 20-MAR-2019 09:56

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored 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 by the Florida Department of Health Environmental Laboratory Certification Program 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: STONE MILL CREEK UPSTREAM OF DIANNA ST. **Collection Date/Time: 02/27/2019 11:31**

Field ID: G2WA0012

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2065838	EPA 180.1 Rev. 2.0	Turbidity	24	A	NTU	P359639	
	EPA 300.0 Rev. 2.1	Chloride	4.3		mg Cl/L	P360203	
		Sulfate	1.6		mg SO4/L	P360208	
	SM 2120 B	Color (true)	250		PCU	P359674	
	SM 2320 B-97	Total Alkalinity	5.9		mg CaCO3/L	P360161	
	SM 2540 C-97	TDS	63		mg/L	P360084	
	SM 2540 D-97	TSS	12		mg/L	P359988	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P360164	
2065839	EPA 350.1 Rev. 2.0	Ammonia-N	0.39		mg N/L	P360052	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P359799	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.073		mg N/L	P359825	
	EPA 365.1 Rev. 2.0	Total-P	0.037		mg P/L	P359753	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P359953	
2065840	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P359648	
2065850	EPA 200.7 Rev. 4.4	Barium	11.4		ug/L	P359822	
		Calcium	3.64		mg/L	P359822	
		Iron	1.90E+03		ug/L	P359822	
		Magnesium	0.69		mg/L	P359822	
		Potassium	0.51	I	mg/L	P359822	
		Sodium	2.6		mg/L	P359822	
		Zinc	5.0	U	ug/L	P359822	
	EPA 200.8 Rev. 5.4	Aluminum	1.31E+03		ug/L	P359822	
		Antimony	0.050	U	ug/L	P359822	
		Arsenic	0.43		ug/L	P359822	
		Boron**	9.0		ug/L	P359822	
		Cadmium	0.020	U	ug/L	P359822	
		Chromium	1.1	I	ug/L	P359822	
		Copper	0.40	U	ug/L	P359822	
		Lead	1.23		ug/L	P359822	
		Nickel	0.52	I	ug/L	P359822	
		Selenium	0.20	U	ug/L	P359822	
		Silver	0.010	U	ug/L	P359822	
		Thallium	0.10	U	ug/L	P359822	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for potassium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 03/07/2019.

Sample Location: Big Branch Downstream of Road 5

Collection Date/Time: 02/27/2019 12:15

Field ID: G2WA0010

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2065841	EPA 180.1 Rev. 2.0	Turbidity	18		NTU	P359639	
	EPA 300.0 Rev. 2.1	Chloride	3.6		mg Cl/L	P360203	
		Sulfate	0.31	I	mg SO4/L	P360208	
	SM 2120 B	Color (true)	120	A	PCU	P359674	
	SM 2320 B-97	Total Alkalinity	1.5	I	mg CaCO3/L	P360161	
	SM 2540 C-97	TDS	25		mg/L	P360084	
	SM 2540 D-97	TSS	12		mg/L	P359988	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P360164	
2065842	EPA 350.1 Rev. 2.0	Ammonia-N	0.24		mg N/L	P360052	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.89		mg N/L	P359799	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.018		mg N/L	P359825	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P359753	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P359953	
2065843	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P359648	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Wilson Mill Creek

Collection Date/Time: 02/27/2019 10:10

Field ID: G2WA0020

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2065855	EPA 180.1 Rev. 2.0	Turbidity	4.5		NTU	P359639	
	EPA 300.0 Rev. 2.1	Chloride	7.3		mg Cl/L	P360203	
		Sulfate	0.89		mg SO4/L	P360208	
		Color (true)	90	A	PCU	P359671	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P360161	
	SM 2540 C-97	TDS	57		mg/L	P360084	
	SM 2540 D-97	TSS	3	I	mg/L	P359988	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P360164	
2065856	EPA 350.1 Rev. 2.0	Ammonia-N	0.032		mg N/L	P359944	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.66		mg N/L	P359799	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.5		mg N/L	P359825	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P359753	
	SM 5310 B-00	Organic Carbon	7.2		mg C/L	P359953	
2065857	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P359648	
2065859	EPA 200.7 Rev. 4.4	Barium	51.8		ug/L	P359822	
		Calcium	6.31		mg/L	P359822	
		Iron	1.11E+03		ug/L	P359822	
		Magnesium	3.13		mg/L	P359822	
		Potassium	2.3		mg/L	P359822	
		Sodium	2.1		mg/L	P359822	
		Zinc	5.0	U	ug/L	P359822	
	EPA 200.8 Rev. 5.4	Aluminum	241		ug/L	P359822	
		Antimony	0.050	U	ug/L	P359822	
		Arsenic	0.57		ug/L	P359822	
		Boron**	13.9		ug/L	P359822	
		Cadmium	0.020	U	ug/L	P359822	
		Chromium	0.43	I	ug/L	P359822	
		Copper	0.75	I	ug/L	P359822	
		Lead	0.32	I	ug/L	P359822	
		Nickel	0.50	U	ug/L	P359822	
		Selenium	0.20	U	ug/L	P359822	
		Silver	0.010	U	ug/L	P359822	
		Thallium	0.10	U	ug/L	P359822	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for potassium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P359639

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P359822

Component	Result	Code	Units
Barium	1.0	U	ug/L
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: P359822

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P360203

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P360208

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P359944

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360052

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359799

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359825

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359753

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359648

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

Reference Method: SM 2120 B
Batch ID: P359671

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P359674

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P360161

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

Reference Method: SM 2540 C-97
Batch ID: P360084

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P359988

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P360164

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P359953

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: P359822

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	105		P	85 - 115
Calcium	100		P	85 - 115
Iron	102		P	85 - 115
Magnesium	97.6		P	85 - 115
Potassium	97.2		P	85 - 115
Sodium	101		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P359822

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Antimony	98.6		P	85 - 115
Arsenic	106		P	85 - 115
Boron	104		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	102		P	85 - 115
Copper	102		P	85 - 115
Lead	103		P	85 - 115
Nickel	102		P	85 - 115
Selenium	101		P	85 - 115
Silver	100		P	85 - 115
Thallium	100		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P360203

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

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P360208

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P359944

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P360052

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359799

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: P359825

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: P359753

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359648

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

Reference Method: SM 2120 B
Batch ID: P359671

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	103		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P359674

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.3		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P360161

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

Reference Method: SM 4500 F-C-97
Batch ID: P360164

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.2		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P359953

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.9		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P359822

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2065870	Barium	103	105	P/P	80 - 120
2065870	Calcium	101		P	80 - 120
2065870	Iron	103	99.8	P/P	80 - 120
2065870	Magnesium	100		P	80 - 120
2065870	Potassium	97.6	94.4	P/P	80 - 120
2065870	Sodium	103	102	P/P	80 - 120
2065870	Zinc	102	103	P/P	80 - 120
2066738	Barium	103		P	80 - 120
2066738	Calcium	103		P	80 - 120
2066738	Iron	102		P	80 - 120
2066738	Magnesium	101		P	80 - 120
2066738	Sodium	99.7		P	80 - 120
2066738	Zinc	104		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P359822

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2065870	Aluminum	100	100	P/P	80 - 120
2065870	Antimony	99.5	100	P/P	80 - 120
2065870	Arsenic	106	106	P/P	80 - 120
2065870	Boron	106	104	P/P	80 - 120
2065870	Cadmium	101	102	P/P	80 - 120
2065870	Chromium	102	102	P/P	80 - 120
2065870	Copper	103	102	P/P	80 - 120
2065870	Lead	101	101	P/P	80 - 120
2065870	Nickel	100	99.7	P/P	80 - 120
2065870	Selenium	100	100	P/P	80 - 120
2065870	Silver	99.1	99.4	P/P	80 - 120
2065870	Thallium	101	102	P/P	80 - 120
2066738	Aluminum	99.6		P	75 - 125
2066738	Antimony	100		P	75 - 125
2066738	Arsenic	109		P	75 - 125
2066738	Cadmium	102		P	75 - 125
2066738	Chromium	102		P	75 - 125
2066738	Copper	102		P	75 - 125
2066738	Lead	102		P	75 - 125
2066738	Nickel	101		P	75 - 125
2066738	Selenium	100		P	75 - 125
2066738	Silver	98.7		P	75 - 125
2066738	Thallium	101		P	75 - 125

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P360203

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2065776	Chloride	105		P	90 - 110
2065838	Chloride	105		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360208

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2065776	Sulfate	104		P	90 - 110
2065838	Sulfate	105		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359944

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2065856	Ammonia-N	97.8	94.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360052

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2065884	Ammonia-N	103	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359799

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2065856	Kjeldahl Nitrogen	102	96.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359825

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2065842	NO2NO3-N	98.6	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359753

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2065883	Total-P	101	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359648

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2065857	O-Phosphate-P	95.8	97.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P360164

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2065784	Fluoride	97.1	95.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P359953

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2065797	Organic Carbon	93.8	94.4	P/P	85 - 115

Quality Assurance Report

Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P359639

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2065838	Turbidity	1.70	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P359822

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2065870	Barium	1.16	Spike	P	0 - 20
2065870	Calcium	0.260	Spike	P	0 - 20
2065870	Iron	3.35	Spike	P	0 - 20
2065870	Magnesium	4.38	Spike	P	0 - 20
2065870	Potassium	2.95	Spike	P	0 - 20
2065870	Sodium	0.466	Spike	P	0 - 20
2065870	Zinc	0.402	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P359822

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2065870	Aluminum	0.109	Spike	P	0 - 20
2065870	Antimony	0.995	Spike	P	0 - 20
2065870	Arsenic	0.197	Spike	P	0 - 20
2065870	Boron	1.80	Spike	P	0 - 20
2065870	Cadmium	0.883	Spike	P	0 - 20
2065870	Chromium	0.127	Spike	P	0 - 20
2065870	Copper	0.851	Spike	P	0 - 20
2065870	Lead	0.250	Spike	P	0 - 20
2065870	Nickel	0.427	Spike	P	0 - 20
2065870	Selenium	0.0785	Spike	P	0 - 20
2065870	Silver	0.307	Spike	P	0 - 20
2065870	Thallium	0.901	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P360203

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2065776	Chloride	0.142	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P360208

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2065776	Sulfate	0.0883	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359944

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2065856	Ammonia-N	2.10	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360052

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2065884	Ammonia-N	0.617	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359799

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2065856	Kjeldahl Nitrogen	3.35	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359825

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2065842	NO2NO3-N	1.39	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359753

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2065883	Total-P	3.05	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359648

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2065857	O-Phosphate-P	1.64	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P359671

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2065855	Color (true)	2.75	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P359674

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2065841	Color (true)	1.01	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P360161

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2065784	Total Alkalinity	0.176	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P360084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2065778	TDS	4.52	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P360164

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2065784	Fluoride	1.45	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P359953

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2065797	Organic Carbon	0.568	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 180.1 Rev. 2.0

Run ID: A89702

Included Lab Sample IDs: 2065838, 2065841, 2065855

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	100	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A89704

Included Lab Sample IDs: 2065840, 2065843, 2065857

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.0	97.1	P/P	90 - 110
O-Phosphate-P	99.0	98.0	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A89714

Included Lab Sample IDs: 2065855

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	103	P/P	90 - 115

Reference Method: SM 2120 B

Run ID: A89716

Included Lab Sample IDs: 2065838, 2065841

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.2	101	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A89771

Included Lab Sample IDs: 2065839, 2065842, 2065856

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110
NO2NO3-N	102	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A89795

Included Lab Sample IDs: 2065839, 2065842, 2065856

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	106	P/P	90 - 110
Kjeldahl Nitrogen	106	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A89805

Included Lab Sample IDs: 2065839, 2065842, 2065856

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A89814

Included Lab Sample IDs: 2065856

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.7	102	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A89816

Included Lab Sample IDs: 2065850, 2065859

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	103	103	P/P	90 - 110
Calcium	101	101	P/P	90 - 110
Iron	101	101	P/P	90 - 110
Magnesium	101	102	P/P	90 - 110
Potassium	97.9	97.1	P/P	90 - 110
Sodium	99.9	99.5	P/P	90 - 110
Zinc	103	104	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A89818

Included Lab Sample IDs: 2065850, 2065859

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.7	99.3	P/P	90 - 110
Antimony	94.7	95.0	P/P	90 - 110
Arsenic	99.4	101	P/P	90 - 110
Boron	103	101	P/P	90 - 110
Cadmium	96.3	96.7	P/P	90 - 110
Chromium	97.5	99.7	P/P	90 - 110
Copper	99.8	102	P/P	90 - 110
Lead	100	101	P/P	90 - 110
Nickel	98.2	100	P/P	90 - 110
Selenium	97.0	96.7	P/P	90 - 110
Silver	94.8	95.7	P/P	90 - 110
Thallium	96.0	96.8	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A89824

Included Lab Sample IDs: 2065839, 2065842, 2065856

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.0	90.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A89868

Included Lab Sample IDs: 2065839, 2065842

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A89885

Included Lab Sample IDs: 2065838, 2065841, 2065855

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Chloride	101	102	P/P	90 - 110
Sulfate	100	101	P/P	90 - 110
Sulfate	101	102	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A89907

Included Lab Sample IDs: 2065838, 2065841, 2065855

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	103	P/P	90 - 110
Total Alkalinity	103	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A89907

Included Lab Sample IDs: 2065838, 2065841, 2065855

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.1	99.1	P/P	90 - 110
Fluoride	99.1	99.5	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 SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					1.70	
EPA 200.7 Rev. 4.4	Barium	105	103	105	103		1.16
	Calcium	100	101	103			0.260
	Iron	102	103	99.8	102		3.35
	Magnesium	97.6	100	101			4.38
	Potassium	97.2	97.6	94.4			2.95
	Sodium	101	103	102	99.7		0.466
	Zinc	103	102	103	104		0.402
EPA 200.8 Rev. 5.4	Aluminum	102	100	100	99.6		0.109
	Antimony	98.6	99.5	100	100		0.995
	Arsenic	106	106	106	109		0.197
	Boron	104	106	104			1.80
	Cadmium	103	101	102	102		0.883
	Chromium	102	102	102	102		0.127
	Copper	102	103	102	102		0.851
	Lead	103	101	101	102		0.250
	Nickel	102	100	99.7	101		0.427
	Selenium	101	100	100	100		0.0785
	Silver	100	99.1	99.4	98.7		0.307
	Thallium	100	101	102	101		0.901
EPA 300.0 Rev. 2.1	Chloride	103	105	105		0.142	
	Sulfate	103	104	105		0.0883	
EPA 350.1 Rev. 2.0	Ammonia-N	97.8	97.8	94.5			2.10
	Ammonia-N	101	103	103			0.617
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	102	96.9			3.35
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	98.6	100			1.39
EPA 365.1 Rev. 2.0	Total-P	95.2	101	97.8			3.05
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	95.8	97.5			1.64
SM 2120 B	Color (true)	103				2.75	
	Color (true)	98.3				1.01	
SM 2320 B-97	Total Alkalinity	102				0.176	
SM 2540 C-97	TDS					4.52	
SM 4500 F-C-97	Fluoride	95.2	97.1	95.6			1.45
SM 5310 B-00	Organic Carbon	95.9	93.8	94.4			0.568

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2065838, 2065841, 2065855
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2065850, 2065859
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2065850, 2065859
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2065838, 2065841, 2065855
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2065838, 2065841, 2065855
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2065839, 2065842, 2065856
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2065839, 2065842, 2065856
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2065839, 2065842, 2065856

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2065839, 2065842, 2065856
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2065840, 2065843, 2065857
SM 2120 B / E31780	True Color measured at 450 nm	2065838, 2065841, 2065855
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2065838, 2065841, 2065855
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2065838, 2065841, 2065855
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2065838, 2065841, 2065855
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2065838, 2065841, 2065855
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2065839, 2065842, 2065856

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	02/27/2019			02/27/2019 17:05	Adrian Shelby	2065838, 2065841, 2065855
EPA 200.7 Rev. 4.4	02/27/2019	03/04/2019 14:10	Elliott D. Healy	03/05/2019 14:16	Betina Topolski	2065850
	02/27/2019	03/04/2019 14:10	Elliott D. Healy	03/05/2019 14:21	Betina Topolski	2065859
EPA 200.8 Rev. 5.4	02/27/2019	03/04/2019 14:10	Elliott D. Healy	03/05/2019 17:59	Allison Taylor	2065850
	02/27/2019	03/04/2019 14:10	Elliott D. Healy	03/05/2019 18:09	Allison Taylor	2065859
EPA 300.0 Rev. 2.1	02/27/2019			03/09/2019 07:39	Lipi Saha	2065838
	02/27/2019			03/09/2019 11:06	Lipi Saha	2065841
	02/27/2019			03/09/2019 11:21	Lipi Saha	2065855
EPA 350.1 Rev. 2.0	02/27/2019			03/05/2019 13:36	Ping Hua	2065856
	02/27/2019			03/06/2019 14:00	Ping Hua	2065839
	02/27/2019			03/06/2019 14:02	Ping Hua	2065842
EPA 351.2 Rev. 2.0	02/27/2019	03/01/2019 14:15	Adrian Shelby	03/05/2019 09:26	Joseph Suarez	2065839
	02/27/2019	03/01/2019 14:15	Adrian Shelby	03/05/2019 09:30	Joseph Suarez	2065842
	02/27/2019	03/01/2019 14:15	Adrian Shelby	03/05/2019 09:32	Joseph Suarez	2065856
EPA 353.2 Rev. 2.0	02/27/2019			03/04/2019 12:40	Beverly Y. Sanders	2065842
	02/27/2019			03/04/2019 12:55	Beverly Y. Sanders	2065839
	02/27/2019			03/04/2019 12:56	Beverly Y. Sanders	2065856
EPA 365.1 Rev. 2.0	02/27/2019	03/01/2019 13:40	Joseph Suarez	03/05/2019 16:25	Rosalyn Ballman	2065839
	02/27/2019	03/01/2019 13:40	Joseph Suarez	03/05/2019 16:26	Rosalyn Ballman	2065842
	02/27/2019	03/01/2019 13:40	Joseph Suarez	03/05/2019 16:27	Rosalyn Ballman	2065856
EPA 365.1 Rev. 2.0 dissolved	02/27/2019			02/27/2019 17:50	Jhamieka S. Greenwood	2065857
	02/27/2019			02/27/2019 18:03	Jhamieka S. Greenwood	2065840
	02/27/2019			02/27/2019 18:04	Jhamieka S. Greenwood	2065843
SM 2120 B	02/27/2019			02/27/2019 17:11	Chelsea Hernandez	2065855
	02/27/2019			02/27/2019 17:57	Chelsea Hernandez	2065841
	02/27/2019			02/27/2019 17:58	Chelsea Hernandez	2065838
SM 2320 B-97	02/27/2019			03/08/2019 05:10	Dale L. Simmons	2065838
	02/27/2019			03/08/2019 05:52	Dale L. Simmons	2065841
	02/27/2019			03/08/2019 06:03	Dale L. Simmons	2065855
SM 2540 C-97	02/27/2019			03/01/2019 15:19	Yijie Li	2065838, 2065841, 2065855
SM 2540 D-97	02/27/2019			03/01/2019 15:19	Yijie Li	2065838, 2065841, 2065855
SM 4500 F-C-97	02/27/2019			03/08/2019 05:10	Dale L. Simmons	2065838
	02/27/2019			03/08/2019 05:52	Dale L. Simmons	2065841
	02/27/2019			03/08/2019 06:03	Dale L. Simmons	2065855
SM 5310 B-00	02/27/2019			03/06/2019 01:41	Chelsea Hernandez	2065839
	02/27/2019			03/06/2019 01:57	Chelsea Hernandez	2065842
	02/27/2019			03/06/2019 02:15	Chelsea Hernandez	2065856