

Chemical Analysis Report

WAS-SECT-2019-12-04-02

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

Event Description: **McBride Little River**

Request ID: **RQ-2019-11-11-19**

Customer: **WAS-SECT**

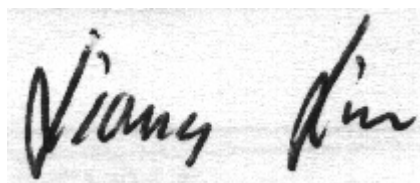
Project ID: **SMP**

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 30-DEC-2019 17:16

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: Little River at Highbridge Road

Collection Date/Time: 12/04/2019 08:58

Field ID: G1WA0086

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2140597	EPA 180.1 Rev. 2.0	Turbidity	8.0	A	NTU	P375265	
	EPA 300.0 Rev. 2.1	Chloride	8.7		mg Cl/L	P375475	
		Sulfate	2.2		mg SO4/L	P375477	
		Color (true)	57	A	PCU	P375296	
	SM 2320 B-97	Total Alkalinity	21		mg CaCO3/L	P375483	
	SM 2540 C-97	TDS	51		mg/L	P375802	
	SM 2540 D-97	TSS	4	I	mg/L	P375901	
	SM 4500 F-C-97	Fluoride	0.074	I	mg F/L	P375486	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P375670	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36		mg N/L	P375442	
2140600	EPA 353.2 Rev. 2.0	NO2NO3-N	0.71		mg N/L	P375468	
	EPA 365.1 Rev. 2.0	Total-P	0.070		mg P/L	P375612	
	SM 5310 B-00	Organic Carbon	4.2		mg C/L	P375413	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.035		mg P/L	P375234	
	EPA 200.7 Rev. 4.4	Barium	16.4		ug/L	P375281	
2140636	EPA 200.8 Rev. 5.4	Calcium	6.38		mg/L	P375281	
		Iron	950		ug/L	P375281	
		Magnesium	2.96		mg/L	P375281	
		Potassium	1.6		mg/L	P375281	
		Sodium	5.8		mg/L	P375281	
		Zinc	5.0	U	ug/L	P375281	
		Aluminum	274		ug/L	P375281	
		Antimony	0.050	U	ug/L	P375281	
		Arsenic	0.54		ug/L	P375281	
		Boron**	18.0		ug/L	P375281	
		Cadmium	0.020	U	ug/L	P375281	
		Chromium	0.51	I	ug/L	P375281	
		Copper	0.40	U	ug/L	P375281	
		Lead	0.29	I	ug/L	P375281	
		Nickel	0.50	U	ug/L	P375281	
		Selenium	0.20	U	ug/L	P375281	
		Silver	0.010	U	ug/L	P375281	
		Thallium	0.10	U	ug/L	P375281	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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

Sample Location: Willacoochee Creek at 161

Collection Date/Time: 12/04/2019 10:48

Field ID: FB_11132019

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2140606	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P375265	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P375475	
		Sulfate	0.20	U	mg SO4/L	P375477	
		Color (true)	2.5	U	PCU	P375296	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P375483	
	SM 2540 C-97	TDS	15	U	mg/L	P375801	
	SM 2540 D-97	TSS	2	U	mg/L	P375900	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P375486	
2140607	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P375670	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P375478	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P375468	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P375612	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P375413	
2140608	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P375235	
2140639	EPA 200.7 Rev. 4.4	Barium	1.0	U	ug/L	P375281	
		Calcium	0.075	U	mg/L	P375281	
		Iron	30	U	ug/L	P375281	
		Magnesium	0.040	U	mg/L	P375281	
		Potassium	0.30	U	mg/L	P375281	
		Sodium	0.50	U	mg/L	P375281	
		Zinc	5.0	U	ug/L	P375281	
	EPA 200.8 Rev. 5.4	Aluminum	5.0	U	ug/L	P375281	
		Antimony	0.050	U	ug/L	P375281	
		Arsenic	0.050	U	ug/L	P375281	
		Boron**	2.0	U	ug/L	P375281	
		Cadmium	0.020	U	ug/L	P375281	
		Chromium	0.40	U	ug/L	P375281	
		Copper	0.40	U	ug/L	P375281	
		Lead	0.20	U	ug/L	P375281	
		Nickel	0.50	U	ug/L	P375281	
		Selenium	0.20	U	ug/L	P375281	
		Silver	0.010	U	ug/L	P375281	
		Thallium	0.10	U	ug/L	P375281	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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

Sample Location: Willacoochee Creek at 161

Collection Date/Time: 12/04/2019 10:59

Field ID: G1WA0087

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2140598	EPA 180.1 Rev. 2.0	Turbidity	6.4		NTU	P375265	
	EPA 300.0 Rev. 2.1	Chloride	7.2		mg Cl/L	P375475	
		Sulfate	0.49	I	mg SO4/L	P375477	
		Color (true)	51		PCU	P375296	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P375483	
	SM 2540 C-97	TDS	38		mg/L	P375802	
	SM 2540 D-97	TSS	4	I	mg/L	P375901	
	SM 4500 F-C-97	Fluoride	0.053	I	mg F/L	P375486	
2140601	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P375670	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.38		mg N/L	P375478	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.4		mg N/L	P375468	
	EPA 365.1 Rev. 2.0	Total-P	0.040		mg P/L	P375612	
	SM 5310 B-00	Organic Carbon	3.6		mg C/L	P375413	
2140604	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.017		mg P/L	P375234	
2140637	EPA 200.7 Rev. 4.4	Barium	21.8		ug/L	P375281	
		Calcium	4.90		mg/L	P375281	
		Iron	800		ug/L	P375281	
		Magnesium	2.99		mg/L	P375281	
		Potassium	1.3		mg/L	P375281	
		Sodium	3.6		mg/L	P375281	
		Zinc	5.0	U	ug/L	P375281	
		Aluminum	222		ug/L	P375281	
	EPA 200.8 Rev. 5.4	Antimony	0.050	U	ug/L	P375281	
		Arsenic	0.37		ug/L	P375281	
		Boron**	9.5		ug/L	P375281	
		Cadmium	0.020	U	ug/L	P375281	
		Chromium	0.40	U	ug/L	P375281	
		Copper	0.54	I	ug/L	P375281	
		Lead	0.22	I	ug/L	P375281	
		Nickel	0.50	U	ug/L	P375281	
		Selenium	0.20	U	ug/L	P375281	
		Silver	0.010	U	ug/L	P375281	
		Thallium	0.10	U	ug/L	P375281	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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

Sample Location: Willacoochee Creek at 161

Collection Date/Time: 12/04/2019 11:13

Field ID: G1WA0087_Dup

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2140599	EPA 180.1 Rev. 2.0	Turbidity	6.6		NTU	P375265	
	EPA 300.0 Rev. 2.1	Chloride	7.3		mg Cl/L	P375475	
		Sulfate	0.50	I	mg SO4/L	P375477	
		Color (true)	51		PCU	P375296	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P375483	
	SM 2540 C-97	TDS	42		mg/L	P375802	
	SM 2540 D-97	TSS	3	I	mg/L	P375901	
	SM 4500 F-C-97	Fluoride	0.054	I	mg F/L	P375486	
2140602	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P375670	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36		mg N/L	P375478	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.4		mg N/L	P375468	
	EPA 365.1 Rev. 2.0	Total-P	0.040		mg P/L	P375612	
	SM 5310 B-00	Organic Carbon	3.6		mg C/L	P375413	
2140605	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.018		mg P/L	P375234	
2140638	EPA 200.7 Rev. 4.4	Barium	21.3		ug/L	P375281	
		Calcium	4.87		mg/L	P375281	
		Iron	790		ug/L	P375281	
		Magnesium	2.99		mg/L	P375281	
		Potassium	1.2		mg/L	P375281	
		Sodium	3.6		mg/L	P375281	
		Zinc	5.0	U	ug/L	P375281	
		Aluminum	214		ug/L	P375281	
		Antimony	0.050	U	ug/L	P375281	
		Arsenic	0.37		ug/L	P375281	
	EPA 200.8 Rev. 5.4	Boron**	9.9		ug/L	P375281	
		Cadmium	0.020	U	ug/L	P375281	
		Chromium	0.40	U	ug/L	P375281	
		Copper	0.54	I	ug/L	P375281	
		Lead	0.22	I	ug/L	P375281	
		Nickel	0.50	U	ug/L	P375281	
		Selenium	0.20	U	ug/L	P375281	
		Silver	0.010	U	ug/L	P375281	
		Thallium	0.10	U	ug/L	P375281	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P375265

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P375281

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: P375281

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: P375475

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P375477

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P375670

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P375442

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P375478

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P375468

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P375612

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375234

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375235

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

Reference Method: SM 2120 B
Batch ID: P375296

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P375483

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

Reference Method: SM 2540 C-97
Batch ID: P375801

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P375802

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P375900

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P375901

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P375486

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P375413

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: P375281

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	105		P	85 - 115
Calcium	104		P	85 - 115
Iron	110		P	85 - 115
Magnesium	103		P	85 - 115
Potassium	110		P	85 - 115
Sodium	103		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P375281

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	104		P	85 - 115
Antimony	107		P	85 - 115
Arsenic	105		P	85 - 115
Boron	110		P	85 - 115
Cadmium	104		P	85 - 115
Chromium	106		P	85 - 115
Copper	102		P	85 - 115
Lead	111		P	85 - 115
Nickel	102		P	85 - 115
Selenium	93.2		P	85 - 115
Silver	111		P	85 - 115
Thallium	101		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P375475

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

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P375477

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P375670

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P375442

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P375478

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.7		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P375468

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P375612

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375234

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375235

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

Reference Method: SM 2120 B
Batch ID: P375296

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	105		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P375483

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P375486

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.6		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P375413

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P375281

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2139769	Barium	102		P	80 - 120
2139769	Calcium	104		P	80 - 120
2139769	Iron	108		P	80 - 120
2139769	Magnesium	99.6		P	80 - 120
2139769	Potassium	106		P	80 - 120
2139769	Sodium	103		P	80 - 120
2139769	Zinc	99.2		P	80 - 120
2140626	Barium	102	102	P/P	80 - 120
2140626	Calcium	104		P	80 - 120
2140626	Iron	110	110	P/P	80 - 120
2140626	Magnesium	113	111	P/P	80 - 120
2140626	Potassium	110	108	P/P	80 - 120
2140626	Sodium	108	109	P/P	80 - 120
2140626	Zinc	99.1	99.9	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P375281

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2139769	Aluminum	98.1		P	80 - 120
2139769	Antimony	105		P	80 - 120
2139769	Arsenic	102		P	80 - 120
2139769	Boron	107		P	80 - 120
2139769	Cadmium	103		P	80 - 120
2139769	Chromium	101		P	80 - 120
2139769	Copper	95.1		P	80 - 120
2139769	Lead	104		P	80 - 120
2139769	Nickel	94.6		P	80 - 120
2139769	Selenium	87.1		P	80 - 120
2139769	Silver	106		P	80 - 120
2139769	Thallium	98.7		P	80 - 120
2140626	Aluminum	103	103	P/P	80 - 120
2140626	Antimony	107	107	P/P	80 - 120
2140626	Arsenic	103	102	P/P	80 - 120
2140626	Boron	110	110	P/P	80 - 120
2140626	Cadmium	105	104	P/P	80 - 120
2140626	Chromium	106	105	P/P	80 - 120
2140626	Copper	99.8	99.1	P/P	80 - 120
2140626	Lead	109	109	P/P	80 - 120
2140626	Nickel	99.3	98.4	P/P	80 - 120
2140626	Selenium	87.8	91.5	P/P	80 - 120
2140626	Silver	111	111	P/P	80 - 120
2140626	Thallium	100	100	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P375475

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2140585	Chloride	103		P	90 - 110
2140820	Chloride	103		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P375477

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2140585	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P375670

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2140600	Ammonia-N	98.2	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P375442

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2140600	Kjeldahl Nitrogen	92.6	99.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P375478

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2140754	Kjeldahl Nitrogen	105	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P375468

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2140586	NO2NO3-N	99.8	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P375612

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2140600	Total-P	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375234

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2140590	O-Phosphate-P	97.8	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375235

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2140769	O-Phosphate-P	95.6	96.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P375486

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2141040	Fluoride	95.3	96.7	P/P	89 - 106

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 5310 B-00

Batch ID: P375413

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2140433	Organic Carbon	95.2	97.0	P/P	85 - 115

Quality Assurance Report

Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P375265

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140597	Turbidity	1.38	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P375281

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140626	Barium	0.245	Spike	P	0 - 20
2140626	Calcium	0.828	Spike	P	0 - 20
2140626	Iron	0.0227	Spike	P	0 - 20
2140626	Magnesium	1.02	Spike	P	0 - 20
2140626	Potassium	1.70	Spike	P	0 - 20
2140626	Sodium	0.574	Spike	P	0 - 20
2140626	Zinc	0.864	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P375281

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140626	Aluminum	0.406	Spike	P	0 - 20
2140626	Antimony	0.123	Spike	P	0 - 20
2140626	Arsenic	0.534	Spike	P	0 - 20
2140626	Boron	0.561	Spike	P	0 - 20
2140626	Cadmium	0.550	Spike	P	0 - 20
2140626	Chromium	1.19	Spike	P	0 - 20
2140626	Copper	0.750	Spike	P	0 - 20
2140626	Lead	0.0615	Spike	P	0 - 20
2140626	Nickel	0.900	Spike	P	0 - 20
2140626	Selenium	4.10	Spike	P	0 - 20
2140626	Silver	0.336	Spike	P	0 - 20
2140626	Thallium	0.255	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P375475

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140820	Chloride	0.337	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P375477

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140820	Sulfate	0.481	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P375670

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140600	Ammonia-N	0.0317	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P375442

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140600	Kjeldahl Nitrogen	5.15	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P375478

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140754	Kjeldahl Nitrogen	0.684	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P375468

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140586	NO2NO3-N	0.781	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P375612

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140600	Total-P	1.55	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375234

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140590	O-Phosphate-P	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375235

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140769	O-Phosphate-P	0.695	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P375296

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140597	Color (true)	2.92	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
 Batch ID: P375483

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2141040	Total Alkalinity	0.536	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
 Batch ID: P375801

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140816	TDS	4.33	Sample	P	0 - 10

Reference Method: SM 2540 C-97
 Batch ID: P375802

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140822	TDS	0.440	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P375486

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2141040	Fluoride	0.986	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
 Batch ID: P375413

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140433	Organic Carbon	1.12	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A96116

Included Lab Sample IDs: 2140603, 2140604, 2140605, 2140608

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.7	96.3	P/P	90 - 110
O-Phosphate-P	97.2	96.0	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A96120

Included Lab Sample IDs: 2140597, 2140598, 2140599, 2140606

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A96139

Included Lab Sample IDs: 2140597, 2140598, 2140599, 2140606

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	104	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A96157

Included Lab Sample IDs: 2140600, 2140601, 2140602, 2140607

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A96180

Included Lab Sample IDs: 2140636, 2140637, 2140638, 2140639

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	100	101	P/P	90 - 110
Barium	100	101	P/P	95 - 105
Barium	101	100	P/P	90 - 110
Calcium	101	104	P/P	90 - 110
Calcium	102	101	P/P	95 - 105
Calcium	104	103	P/P	90 - 110
Iron	101	103	P/P	95 - 105
Iron	102	104	P/P	90 - 110
Iron	104	103	P/P	90 - 110
Potassium	101	102	P/P	90 - 110
Potassium	102	102	P/P	95 - 105
Potassium	102	103	P/P	90 - 110
Zinc	101	101	P/P	90 - 110
Zinc	102	102	P/P	95 - 105
Zinc	102	101	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A96190

Included Lab Sample IDs: 2140600, 2140601, 2140602, 2140607

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

Reference Method: SM 5310 B-00

Run ID: A96190

Included Lab Sample IDs: 2140600, 2140601, 2140602, 2140607

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.7	95.2	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A96205

Included Lab Sample IDs: 2140597, 2140598, 2140599, 2140606

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

Reference Method: SM 2320 B-97

Run ID: A96207

Included Lab Sample IDs: 2140597, 2140598, 2140599, 2140606

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

Reference Method: SM 4500 F-C-97

Run ID: A96207

Included Lab Sample IDs: 2140597, 2140598, 2140599, 2140606

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.6	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A96228

Included Lab Sample IDs: 2140600

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.1	98.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A96256

Included Lab Sample IDs: 2140601, 2140602, 2140607

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	105	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A96275

Included Lab Sample IDs: 2140600, 2140601, 2140602, 2140607

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	101	P/P	90 - 110
Ammonia-N	101	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A96314

Included Lab Sample IDs: 2140600

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A96314

Included Lab Sample IDs: 2140600

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A96342

Included Lab Sample IDs: 2140601, 2140602, 2140607

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.0	97.2	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A96407

Included Lab Sample IDs: 2140636, 2140637, 2140638, 2140639

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	94.8	96.1	P/P	90 - 110
Aluminum	95.9	97.7	P/P	90 - 110
Aluminum	97.7	94.8	P/P	90 - 110
Antimony	97.4	98.8	P/P	90 - 110
Antimony	98.8	99.1	P/P	90 - 110
Antimony	99.1	103	P/P	90 - 110
Arsenic	98.2	99.9	P/P	90 - 110
Arsenic	99.8	99.9	P/P	90 - 110
Arsenic	99.9	98.2	P/P	90 - 110
Boron	100	105	P/P	90 - 110
Boron	101	101	P/P	90 - 110
Boron	101	100	P/P	90 - 110
Cadmium	98.6	99.3	P/P	90 - 110
Cadmium	99.3	99.9	P/P	90 - 110
Cadmium	99.9	104	P/P	90 - 110
Chromium	101	103	P/P	90 - 110
Chromium	103	103	P/P	90 - 110
Chromium	103	108	P/P	90 - 110
Copper	94.2	95.6	P/P	90 - 110
Copper	98.4	94.2	P/P	90 - 110
Copper	98.7	98.4	P/P	90 - 110
Lead	100	99.7	P/P	90 - 110
Lead	103	104	P/P	90 - 110
Lead	104	100	P/P	90 - 110
Nickel	93.9	94.8	P/P	90 - 110
Nickel	97.7	93.9	P/P	90 - 110
Nickel	98.4	97.7	P/P	90 - 110
Silver	106	107	P/P	90 - 110
Silver	107	108	P/P	90 - 110
Silver	107	106	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A96522

Included Lab Sample IDs: 2140636, 2140637, 2140638, 2140639

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Selenium	92.7	94.7	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A96522

Included Lab Sample IDs: 2140636, 2140637, 2140638, 2140639

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Selenium	94.7	95.1	P/P	90 - 110
Selenium	95.1	93.9	P/P	90 - 110
Thallium	91.0	91.9	P/P	90 - 110
Thallium	91.9	92.2	P/P	90 - 110
Thallium	92.2	90.9	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A96617

Included Lab Sample IDs: 2140636, 2140637, 2140638, 2140639

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Magnesium	102	102	P/P	90 - 110
Magnesium	103	103	P/P	95 - 105
Sodium	103	103	P/P	90 - 110
Sodium	104	103	P/P	95 - 105

* 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	MS
							SMP	
EPA 180.1 Rev. 2.0	Turbidity						1.38	
EPA 200.7 Rev. 4.4	Barium	105	102	102	102			0.245
	Calcium	104	104	104				0.828
	Iron	110	108	110	110			0.0227
	Magnesium	103	99.6	113	111			1.02
	Potassium	110	106	110	108			1.70
	Sodium	103	103	108	109			0.574
	Zinc	103	99.2	99.1	99.9			0.864
EPA 200.8 Rev. 5.4	Aluminum	104	98.1	103	103			0.406
	Antimony	107	105	107	107			0.123
	Arsenic	105	102	103	102			0.534
	Boron	110	107	110	110			0.561
	Cadmium	104	103	105	104			0.550
	Chromium	106	101	106	105			1.19
	Copper	102	95.1	99.8	99.1			0.750
	Lead	111	104	109	109			0.0615
	Nickel	102	94.6	99.3	98.4			0.900
	Selenium	93.2	87.8	91.5	87.1			4.10
	Silver	111	106	111	111			0.336
	Thallium	101	100	100	98.7			0.255
EPA 300.0 Rev. 2.1	Chloride	102	103	103			0.337	
	Sulfate	102	102				0.481	
EPA 350.1 Rev. 2.0	Ammonia-N	98.8	98.2	98.2				0.0317
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	92.6	99.1				5.15
	Kjeldahl Nitrogen	99.7	105	104				0.684
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	101	99.8	98.8				0.781
EPA 365.1 Rev. 2.0	Total-P	105	102	104				1.55
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	97.8	97.8				0.0
	O-Phosphate-P	102	95.6	96.3				0.695
SM 2120 B	Color (true)	105					2.92	
SM 2320 B-97	Total Alkalinity	103					0.536	
SM 2540 C-97	TDS						4.33	
	TDS						0.440	
SM 4500 F-C-97	Fluoride	95.6	95.3	96.7				0.986
SM 5310 B-00	Organic Carbon	95.8	95.2	97.0				1.12

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2140597, 2140598, 2140599, 2140606
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2140636, 2140637, 2140638, 2140639
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2140636, 2140637, 2140638, 2140639
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2140597, 2140598, 2140599, 2140606
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2140597, 2140598, 2140599, 2140606
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2140600, 2140601, 2140602, 2140607
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2140600, 2140601, 2140602, 2140607
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2140600, 2140601, 2140602, 2140607

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	2140600, 2140601, 2140602, 2140607
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2140603, 2140604, 2140605, 2140608
SM 2120 B / E31780	True Color measured at 450 nm	2140597, 2140598, 2140599, 2140606
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2140597, 2140598, 2140599, 2140606
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2140597, 2140598, 2140599, 2140606
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2140597, 2140598, 2140599, 2140606
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2140597, 2140598, 2140599, 2140606
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2140600, 2140601, 2140602, 2140607

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	12/04/2019			12/04/2019 16:05	Yen Ta	2140597, 2140598, 2140599, 2140606
EPA 200.7 Rev. 4.4	12/04/2019	12/05/2019 15:40	Elliott D. Healy	12/06/2019 11:54	Vijayalakshmi Reddy	2140639
	12/04/2019	12/05/2019 15:40	Elliott D. Healy	12/06/2019 14:06	Vijayalakshmi Reddy	2140636
	12/04/2019	12/05/2019 15:40	Elliott D. Healy	12/06/2019 14:12	Vijayalakshmi Reddy	2140637
	12/04/2019	12/05/2019 15:40	Elliott D. Healy	12/06/2019 14:37	Vijayalakshmi Reddy	2140638
	12/04/2019	12/05/2019 15:40	Elliott D. Healy	12/27/2019 10:50	Vijayalakshmi Reddy	2140639
	12/04/2019	12/05/2019 15:40	Elliott D. Healy	12/27/2019 12:37	Vijayalakshmi Reddy	2140636
	12/04/2019	12/05/2019 15:40	Elliott D. Healy	12/27/2019 12:43	Vijayalakshmi Reddy	2140637
	12/04/2019	12/05/2019 15:40	Elliott D. Healy	12/27/2019 12:48	Vijayalakshmi Reddy	2140638
EPA 200.8 Rev. 5.4	12/04/2019	12/05/2019 15:40	Elliott D. Healy	12/17/2019 14:41	Justin Cutchin	2140639
	12/04/2019	12/05/2019 15:40	Elliott D. Healy	12/17/2019 17:14	Justin Cutchin	2140636
	12/04/2019	12/05/2019 15:40	Elliott D. Healy	12/17/2019 17:42	Justin Cutchin	2140637
	12/04/2019	12/05/2019 15:40	Elliott D. Healy	12/17/2019 17:52	Justin Cutchin	2140638
	12/04/2019	12/05/2019 15:40	Elliott D. Healy	12/20/2019 18:42	Alexander Thompson	2140639
	12/04/2019	12/05/2019 15:40	Elliott D. Healy	12/20/2019 20:39	Alexander Thompson	2140636
	12/04/2019	12/05/2019 15:40	Elliott D. Healy	12/20/2019 20:49	Alexander Thompson	2140637
	12/04/2019	12/05/2019 15:40	Elliott D. Healy	12/20/2019 21:58	Alexander Thompson	2140638
EPA 300.0 Rev. 2.1	12/04/2019			12/10/2019 01:47	Lipi Saha	2140597
	12/04/2019			12/10/2019 01:59	Lipi Saha	2140598
	12/04/2019			12/10/2019 02:12	Lipi Saha	2140599
	12/04/2019			12/10/2019 02:24	Lipi Saha	2140606
EPA 350.1 Rev. 2.0	12/04/2019			12/11/2019 11:53	Ping Hua	2140600
	12/04/2019			12/11/2019 12:04	Ping Hua	2140601
	12/04/2019			12/11/2019 12:05	Ping Hua	2140602
	12/04/2019			12/11/2019 12:13	Ping Hua	2140607
EPA 351.2 Rev. 2.0	12/04/2019	12/09/2019 12:48	Sima Feizi	12/10/2019 13:38	Jhamieka S. Greenwood	2140600
	12/04/2019	12/10/2019 12:43	Sima Feizi	12/11/2019 12:13	Jhamieka S. Greenwood	2140601
	12/04/2019	12/10/2019 12:43	Sima Feizi	12/11/2019 12:14	Jhamieka S. Greenwood	2140602
	12/04/2019	12/10/2019 12:43	Sima Feizi	12/11/2019 12:16	Jhamieka S. Greenwood	2140607
EPA 353.2 Rev. 2.0	12/04/2019			12/06/2019 10:42	Beverly Y. Sanders	2140600
	12/04/2019			12/06/2019 12:10	Beverly Y. Sanders	2140601
	12/04/2019			12/06/2019 12:11	Beverly Y. Sanders	2140602
	12/04/2019			12/06/2019 12:12	Beverly Y. Sanders	2140607
EPA 365.1 Rev. 2.0	12/04/2019	12/11/2019 10:23	Yen Ta	12/12/2019 16:45	Benjamin T. Nordmann	2140600
	12/04/2019	12/11/2019 10:23	Yen Ta	12/13/2019 16:04	Benjamin T. Nordmann	2140607
	12/04/2019	12/11/2019 10:23	Yen Ta	12/13/2019 16:07	Benjamin T. Nordmann	2140601
	12/04/2019	12/11/2019 10:23	Yen Ta	12/13/2019 16:08	Benjamin T. Nordmann	2140602
EPA 365.1 Rev. 2.0 dissolved	12/04/2019			12/04/2019 16:49	Samantha Davila	2140604
	12/04/2019			12/04/2019 16:50	Samantha Davila	2140605
	12/04/2019			12/04/2019 16:53	Samantha Davila	2140603

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 365.1 Rev. 2.0 dissolved	12/04/2019			12/04/2019 17:19	Samantha Davila	2140608
SM 2120 B	12/04/2019			12/04/2019 18:57	Madeline Funaro	2140597, 2140598
	12/04/2019			12/04/2019 18:58	Madeline Funaro	2140599
	12/04/2019			12/04/2019 18:59	Madeline Funaro	2140606
SM 2320 B-97	12/04/2019			12/07/2019 02:22	Dale L. Simmons	2140597
	12/04/2019			12/07/2019 02:34	Dale L. Simmons	2140598
	12/04/2019			12/07/2019 02:45	Dale L. Simmons	2140599
	12/04/2019			12/07/2019 02:59	Dale L. Simmons	2140606
SM 2540 C-97	12/04/2019			12/09/2019 15:22	Yijie Li	2140597, 2140598, 2140599, 2140606
SM 2540 D-97	12/04/2019			12/09/2019 15:22	Yijie Li	2140597, 2140598, 2140599, 2140606
SM 4500 F-C-97	12/04/2019			12/07/2019 02:22	Dale L. Simmons	2140597
	12/04/2019			12/07/2019 02:34	Dale L. Simmons	2140598
	12/04/2019			12/07/2019 02:45	Dale L. Simmons	2140599
	12/04/2019			12/07/2019 02:59	Dale L. Simmons	2140606
SM 5310 B-00	12/04/2019			12/07/2019 04:25	Madeline Funaro	2140600
	12/04/2019			12/07/2019 04:37	Madeline Funaro	2140601
	12/04/2019			12/07/2019 04:50	Madeline Funaro	2140602
	12/04/2019			12/07/2019 05:03	Madeline Funaro	2140607