

Chemical Analysis Report

CEN-DIST-2018-11-21-02

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

Event Description: **Puzzle / Charm / Myrtle X2**
Request ID: **RQ-2018-11-19-23**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Mike Linger

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Colin Wright, Program Administrator

Date Certified: 12-DEC-2018 13:08

A handwritten signature in black ink, appearing to read "Colin Wright", 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 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: Saint Johns River @ 300m downstream of
Hatbill Park Ramp**

Collection Date/Time: 11/20/2018 11:21

Field ID: G3CE0006

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2043280	EPA 180.1 Rev. 2.0	Turbidity	22	A	NTU	P355039	
	EPA 300.0 Rev. 2.1	Chloride	500		mg Cl/L	P355452	
		Sulfate	130		mg SO4/L	P355455	
		Color (true)	120		PCU	P355038	
	SM 2320 B-97	Total Alkalinity	77		mg CaCO3/L	P355468	
	SM 2540 C-97	TDS	1.13E+03		mg/L	P355460	
	SM 2540 D-97	TSS	28		mg/L	P355462	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P355473	
2043281	EPA 350.1 Rev. 2.0	Ammonia-N	0.040		mg N/L	P355303	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P355215	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.20		mg N/L	P355262	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P355084	
	SM 5310 B-00	Organic Carbon	24		mg C/L	P355325	
2043282	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.016		mg P/L	P355043	
2043298	EPA 200.7 Rev. 4.4	Calcium	71.8		mg/L	P355105	
		Iron	1.24E+03		ug/L	P355105	
		Magnesium	31.9		mg/L	P355105	
		Potassium	8.2		mg/L	P355105	
		Sodium	252		mg/L	P355105	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P355105	
		Arsenic	0.83		ug/L	P355105	
		Cadmium	0.020	U	ug/L	P355105	
		Chromium	0.71	I	ug/L	P355105	
		Copper	0.69	I	ug/L	P355105	
		Lead	1.10		ug/L	P355105	
		Nickel	0.51	I	ug/L	P355105	
		Silver	0.010	U	ug/L	P355105	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

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

Sample Location: Lake Charm @ Center

Collection Date/Time: 11/20/2018 12:41

Field ID: G2CE0080

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2043283	EPA 180.1 Rev. 2.0	Turbidity	4.2		NTU	P355039	
	EPA 300.0 Rev. 2.1	Chloride	42		mg Cl/L	P355452	
		Sulfate	14		mg SO4/L	P355455	
	SM 2120 B	Color (true)	23		PCU	P355036	
	SM 2320 B-97	Total Alkalinity	62		mg CaCO3/L	P355468	
	SM 2540 C-97	TDS	191		mg/L	P355460	
	SM 2540 D-97	TSS	4	I	mg/L	P355462	
	SM 4500 F-C-97	Fluoride	0.22		mg F/L	P355473	
2043284	EPA 350.1 Rev. 2.0	Ammonia-N	0.40		mg N/L	P355446	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P355215	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.16		mg N/L	P355329	
	EPA 365.1 Rev. 2.0	Total-P	0.030		mg P/L	P355084	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P355325	
2043285	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P355043	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lake Myrtle @ 140m W of Center of South Lobe Collection Date/Time: 11/20/2018 14:15

Field ID: G2CE0190

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2043286	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P355039	
	EPA 300.0 Rev. 2.1	Chloride	31		mg Cl/L	P355452	
		Sulfate	3.8		mg SO ₄ /L	P355455	
		Color (true)	45		PCU	P355036	
	SM 2320 B-97	Total Alkalinity	48		mg CaCO ₃ /L	P355469	
	SM 2540 C-97	TDS	122		mg/L	P355461	
	SM 2540 D-97	TSS	4	I	mg/L	P355463	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P355474	
2043288	EPA 350.1 Rev. 2.0	Ammonia-N	0.028		mg N/L	P355446	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P355215	
	EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	0.090		mg N/L	P355329	
	EPA 365.1 Rev. 2.0	Total-P	0.040		mg P/L	P355084	
	SM 5310 B-00	Organic Carbon	9.8		mg C/L	P355325	
2043290	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P355043	
2043299	EPA 200.7 Rev. 4.4	Calcium	13.6		mg/L	P355105	
		Iron	68	I	ug/L	P355105	
		Magnesium	3.30		mg/L	P355105	
		Potassium	3.8		mg/L	P355105	
		Sodium	21.1		mg/L	P355105	
		Zinc	5.0	U	ug/L	P355105	
	EPA 200.8 Rev. 5.4	Arsenic	0.82		ug/L	P355105	
		Cadmium	0.020	U	ug/L	P355105	
		Chromium	0.40	U	ug/L	P355105	
		Copper	0.20	U	ug/L	P355105	
		Lead	0.16	I	ug/L	P355105	
		Nickel	0.20	U	ug/L	P355105	
		Silver	0.010	U	ug/L	P355105	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

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

Sample Location: Lake Myrtle @ 135m NE of Center of South Lobe

Collection Date/Time: 11/20/2018 14:24

Field ID: G2CE0191

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2043287	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P355039	
	EPA 300.0 Rev. 2.1	Chloride	30	A	mg Cl/L	P355505	
		Sulfate	3.7	A	mg SO4/L	P355507	
		Color (true)	46		PCU	P355037	
	SM 2320 B-97	Total Alkalinity	47		mg CaCO3/L	P355469	
	SM 2540 C-97	TDS	120	A	mg/L	P355461	
	SM 2540 D-97	TSS	4	IA	mg/L	P355463	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P355474	
2043289	EPA 350.1 Rev. 2.0	Ammonia-N	0.026		mg N/L	P355303	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P355215	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.092		mg N/L	P355329	
	EPA 365.1 Rev. 2.0	Total-P	0.038		mg P/L	P355084	
	SM 5310 B-00	Organic Carbon	9.7		mg C/L	P355326	
2043291	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P355043	
2043300	EPA 200.7 Rev. 4.4	Calcium	13.8		mg/L	P355105	
		Iron	61	I	ug/L	P355105	
		Magnesium	3.31		mg/L	P355105	
		Potassium	3.8		mg/L	P355105	
		Sodium	21.5		mg/L	P355105	
		Zinc	5.0	U	ug/L	P355105	
	EPA 200.8 Rev. 5.4	Arsenic	0.80		ug/L	P355105	
		Cadmium	0.020	U	ug/L	P355105	
		Chromium	0.40	U	ug/L	P355105	
		Copper	0.20	U	ug/L	P355105	
		Lead	0.18	I	ug/L	P355105	
		Nickel	0.20	I	ug/L	P355105	
		Silver	0.010	U	ug/L	P355105	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, magnesium, potassium, and sodium 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: P355039

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P355105

Component	Result	Code	Units
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: P355105

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355452

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355455

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355505

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355507

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355303

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355446

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355215

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355262

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355329

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355084

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355043

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

Reference Method: SM 2120 B
Batch ID: P355036

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P355037

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2120 B
Batch ID: P355038

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P355468

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

Reference Method: SM 2320 B-97
Batch ID: P355469

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

Reference Method: SM 2540 C-97
Batch ID: P355460

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P355461

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P355462

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P355463

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P355473

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P355474

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P355325

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

Reference Method: SM 5310 B-00
Batch ID: P355326

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: P355105

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	100		P	85 - 115
Iron	104		P	85 - 115
Magnesium	100		P	85 - 115
Potassium	102		P	85 - 115
Sodium	96.9		P	85 - 115
Zinc	99.8		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P355105

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	109		P	85 - 115
Cadmium	105		P	85 - 115
Chromium	104		P	85 - 115
Copper	105		P	85 - 115
Lead	104		P	85 - 115
Nickel	105		P	85 - 115
Silver	104		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355452

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355455

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355505

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355507

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355303

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.0		P	90 - 110

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355446

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355215

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355262

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355329

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: P355084

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355043

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

Reference Method: SM 2120 B
Batch ID: P355036

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.1		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P355037

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.3		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P355038

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	97.2		P	85 - 115

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P355468

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.9		P	98 - 107

Reference Method: SM 2320 B-97
Batch ID: P355469

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P355473

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.9		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P355474

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.9		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P355325

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.8		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P355326

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.5		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P355105

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043083	Iron	97.4	98.1	P/P	80 - 120
2043083	Zinc	96.2	96.3	P/P	80 - 120
2043420	Calcium	97.0		P	80 - 120
2043420	Iron	100		P	80 - 120
2043420	Magnesium	98.1		P	80 - 120
2043420	Potassium	95.8		P	80 - 120
2043420	Sodium	97.3		P	80 - 120
2043420	Zinc	94.7		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P355105

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043083	Arsenic	115	115	P/P	80 - 120
2043083	Cadmium	103	102	P/P	80 - 120
2043083	Chromium	84.4	82.9	P/P	80 - 120
2043083	Copper	97.0	96.5	P/P	80 - 120
2043083	Lead	107	105	P/P	80 - 120
2043083	Nickel	92.4	91.8	P/P	80 - 120
2043083	Silver	96.8	93.6	P/P	80 - 120
2043420	Arsenic	107		P	80 - 120
2043420	Cadmium	108		P	80 - 120
2043420	Chromium	102		P	80 - 120
2043420	Copper	100		P	80 - 120
2043420	Lead	102		P	80 - 120
2043420	Nickel	99.4		P	80 - 120
2043420	Silver	102		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355452

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2042124	Chloride	100		P	90 - 110
2042937	Chloride	98.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355455

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2042124	Sulfate	98.4		P	90 - 110
2042937	Sulfate	98.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355505

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043287	Chloride	98.1		P	90 - 110
2043510	Chloride	98.7		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355507

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043287	Sulfate	99.1		P	90 - 110
2043510	Sulfate	99.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355303

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043244	Ammonia-N	93.1	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355446

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2044031	Ammonia-N	105	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355262

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043271	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355329

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043284	NO2NO3-N	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043394	Total-P	106	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355043

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043389	O-Phosphate-P	96.8	98.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P355473

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043270	Fluoride	98.6	98.0	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P355474

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043543	Fluoride	98.8	99.9	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P355325

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043003	Organic Carbon	98.6	95.6	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P355326

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043289	Organic Carbon	97.4	94.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P355039

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043280	Turbidity	2.32	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P355105

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043083	Calcium	0.00614	Spike	P	0 - 20
2043083	Iron	0.634	Spike	P	0 - 20
2043083	Magnesium	0.426	Spike	P	0 - 20
2043083	Potassium	0.671	Spike	P	0 - 20
2043083	Sodium	1.62	Spike	P	0 - 20
2043083	Zinc	0.0857	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P355105

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043083	Arsenic	0.360	Spike	P	0 - 20
2043083	Cadmium	1.66	Spike	P	0 - 20
2043083	Chromium	1.84	Spike	P	0 - 20
2043083	Copper	0.537	Spike	P	0 - 20
2043083	Lead	1.71	Spike	P	0 - 20
2043083	Nickel	0.611	Spike	P	0 - 20
2043083	Silver	3.41	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355452

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042937	Chloride	0.659	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355455

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042937	Sulfate	0.561	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355505

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043287	Chloride	0.513	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355507

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043287	Sulfate	0.739	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355303

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043244	Ammonia-N	4.95	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355446

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2044031	Ammonia-N	1.79	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355215

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043284	Kjeldahl Nitrogen	0.989	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355262

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043271	NO2NO3-N	0.366	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355329

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043284	NO2NO3-N	0.274	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043394	Total-P	1.65	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355043

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043389	O-Phosphate-P	1.00	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P355036

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043270	Color (true)	1.49	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P355037

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043385	Color (true)	2.77	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P355038

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043489	Color (true)	2.21	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P355468

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043270	Total Alkalinity	1.03	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P355469

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043543	Total Alkalinity	1.09	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P355460

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043165	TDS	3.22	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P355461

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043287	TDS	7.53	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P355473

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043270	Fluoride	0.530	Spike	P	0 - 3.5

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P355474

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043543	Fluoride	0.979	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P355325

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043003	Organic Carbon	2.03	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P355326

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043289	Organic Carbon	2.29	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: SM 2120 B

Run ID: A87929

Included Lab Sample IDs: 2043280, 2043283, 2043286, 2043287

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	99.5	P/P	85 - 115
Color (true)	98.6	100	P/P	90 - 115
Color (true)	98.8	98.6	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A87930

Included Lab Sample IDs: 2043280, 2043283, 2043286, 2043287

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: A87931

Included Lab Sample IDs: 2043282, 2043285, 2043290, 2043291

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A87969

Included Lab Sample IDs: 2043281

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.6	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A87981

Included Lab Sample IDs: 2043284, 2043288, 2043289

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A87993

Included Lab Sample IDs: 2043280, 2043283, 2043286

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A88017

Included Lab Sample IDs: 2043281

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A88036

Included Lab Sample IDs: 2043281, 2043284, 2043288, 2043289

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	103	P/P	90 - 110
Kjeldahl Nitrogen	102	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A88037

Included Lab Sample IDs: 2043281, 2043289

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	96.0	100	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A88042

Included Lab Sample IDs: 2043281, 2043284, 2043288, 2043289

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.1	95.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A88043

Included Lab Sample IDs: 2043284, 2043288, 2043289

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A88044

Included Lab Sample IDs: 2043298, 2043299, 2043300

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	98.0	97.9	P/P	90 - 110
Iron	97.0	97.0	P/P	90 - 110
Magnesium	97.5	97.2	P/P	90 - 110
Potassium	98.3	97.9	P/P	90 - 110
Sodium	97.2	95.9	P/P	90 - 110
Zinc	99.6	99.2	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A88046

Included Lab Sample IDs: 2043298, 2043299, 2043300

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	103	100	P/P	90 - 110
Cadmium	100	99.9	P/P	90 - 110
Chromium	98.2	98.8	P/P	90 - 110
Copper	102	100	P/P	90 - 110
Lead	99.9	100	P/P	90 - 110
Nickel	99.6	99.0	P/P	90 - 110
Silver	100	99.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A88077

Included Lab Sample IDs: 2043284, 2043288

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

Reference Method: SM 2320 B-97

Run ID: A88097

Included Lab Sample IDs: 2043280, 2043283, 2043286, 2043287

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	98.5	P/P	90 - 110
Total Alkalinity	98.5	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A88097

Included Lab Sample IDs: 2043280, 2043283, 2043286, 2043287

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	99.5	P/P	90 - 110
Fluoride	99.5	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A88113

Included Lab Sample IDs: 2043287

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

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

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						2.32	
EPA 200.7 Rev. 4.4	Calcium	100	97.0					0.0061
	Iron	104	97.4	98.1	100			0.634
	Magnesium	100	98.1					0.426
	Potassium	102	95.8					0.671
	Sodium	96.9	97.3					1.62
	Zinc	99.8	96.2	96.3	94.7			0.0857
EPA 200.8 Rev. 5.4	Arsenic	109	115	115	107			0.360
	Cadmium	105	103	102	108			1.66
	Chromium	104	84.4	82.9	102			1.84
	Copper	105	97.0	96.5	100			0.537
	Lead	104	107	105	102			1.71
	Nickel	105	92.4	91.8	99.4			0.611
	Silver	104	96.8	93.6	102			3.41
EPA 300.0 Rev. 2.1	Chloride	98.3	98.0	100			0.659	
	Chloride	101	98.1	98.7			0.513	
	Sulfate	98.8	98.5	98.4			0.561	
	Sulfate	100	99.1	99.1			0.739	
EPA 350.1 Rev. 2.0	Ammonia-N	96.0	93.1	101				4.95
	Ammonia-N	98.6	105	103				1.79
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.5						0.989
EPA 353.2 Rev. 2.0	NO2NO3-N	100	101	101				0.366
	NO2NO3-N	100	100	101				0.274
EPA 365.1 Rev. 2.0	Total-P	104	106	104				1.65
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	96.8	98.1				1.00
SM 2120 B	Color (true)	98.1					1.49	
	Color (true)	99.3					2.77	
	Color (true)	97.2					2.21	
SM 2320 B-97	Total Alkalinity	99.9					1.03	
	Total Alkalinity	100					1.09	
SM 2540 C-97	TDS						3.22	
	TDS						7.53	
SM 4500 F-C-97	Fluoride	97.9	98.6	98.0				0.530
	Fluoride	98.9	98.8	99.9				0.979
SM 5310 B-00	Organic Carbon	94.8	98.6	95.6				2.03
	Organic Carbon	94.5	97.4	94.1				2.29

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2043280, 2043283, 2043286, 2043287
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2043298, 2043299, 2043300
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2043298, 2043299, 2043300
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2043280, 2043283, 2043286, 2043287
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2043280, 2043283, 2043286, 2043287
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2043281, 2043284, 2043288, 2043289
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2043281, 2043284, 2043288, 2043289

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2043281, 2043284, 2043288, 2043289
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2043281, 2043284, 2043288, 2043289
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2043282, 2043285, 2043290, 2043291
SM 2120 B / E31780	True Color measured at 450 nm	2043280, 2043283, 2043286, 2043287
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2043280, 2043283, 2043286, 2043287
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2043280, 2043283, 2043286, 2043287
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2043280, 2043283, 2043286, 2043287
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2043280, 2043283, 2043286, 2043287
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2043281, 2043284, 2043288, 2043289

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	11/21/2018			11/21/2018 15:37	Megan Treadwell	2043280, 2043283, 2043286, 2043287
EPA 200.7 Rev. 4.4	11/21/2018	11/26/2018 17:30	Elliott D. Healy	11/28/2018 15:10	Betina Topolski	2043298
	11/21/2018	11/26/2018 17:30	Elliott D. Healy	11/28/2018 15:17	Betina Topolski	2043298
	11/21/2018	11/26/2018 17:30	Elliott D. Healy	11/28/2018 15:23	Betina Topolski	2043299
	11/21/2018	11/26/2018 17:30	Elliott D. Healy	11/28/2018 15:29	Betina Topolski	2043300
EPA 200.8 Rev. 5.4	11/21/2018	11/26/2018 17:30	Elliott D. Healy	11/29/2018 17:01	Robert K Palmer	2043298
	11/21/2018	11/26/2018 17:30	Elliott D. Healy	11/29/2018 17:10	Robert K Palmer	2043299
	11/21/2018	11/26/2018 17:30	Elliott D. Healy	11/29/2018 17:19	Robert K Palmer	2043300
EPA 300.0 Rev. 2.1	11/21/2018			12/01/2018 08:09	Lipi Saha	2043280
	11/21/2018			12/01/2018 08:21	Lipi Saha	2043283
	11/21/2018			12/01/2018 08:33	Lipi Saha	2043286
	11/21/2018			12/03/2018 17:52	Lipi Saha	2043287
EPA 350.1 Rev. 2.0	11/21/2018			11/29/2018 10:34	Ping Hua	2043281
	11/21/2018			11/29/2018 10:39	Ping Hua	2043289
	11/21/2018			11/30/2018 13:53	Ping Hua	2043284
	11/21/2018			11/30/2018 13:54	Ping Hua	2043288
EPA 351.2 Rev. 2.0	11/21/2018	11/28/2018 11:50	Adrian Shelby	11/29/2018 09:26	Joseph Suarez	2043281
	11/21/2018	11/28/2018 11:50	Adrian Shelby	11/29/2018 09:28	Joseph Suarez	2043284
	11/21/2018	11/28/2018 11:50	Adrian Shelby	11/29/2018 09:36	Joseph Suarez	2043288
	11/21/2018	11/28/2018 11:50	Adrian Shelby	11/29/2018 09:37	Joseph Suarez	2043289
EPA 353.2 Rev. 2.0	11/21/2018			11/28/2018 14:29	Lauren Bottorf	2043281
	11/21/2018			11/29/2018 11:53	Lauren Bottorf	2043284
	11/21/2018			11/29/2018 11:59	Lauren Bottorf	2043288
	11/21/2018			11/29/2018 12:00	Lauren Bottorf	2043289
EPA 365.1 Rev. 2.0	11/21/2018	11/26/2018 12:15	Sima Feizi	11/27/2018 11:29	Beverly Y. Sanders	2043281
	11/21/2018	11/26/2018 12:15	Sima Feizi	11/27/2018 14:02	Beverly Y. Sanders	2043284
	11/21/2018	11/26/2018 12:15	Sima Feizi	11/27/2018 14:03	Beverly Y. Sanders	2043288
	11/21/2018	11/26/2018 12:15	Sima Feizi	11/27/2018 14:04	Beverly Y. Sanders	2043289
EPA 365.1 Rev. 2.0 dissolved	11/21/2018			11/21/2018 15:38	Jhamieka S. Greenwood	2043282, 2043285
	11/21/2018			11/21/2018 15:39	Jhamieka S. Greenwood	2043290
	11/21/2018			11/21/2018 15:40	Jhamieka S. Greenwood	2043291
SM 2120 B	11/21/2018			11/21/2018 16:04	Chelsea Hernandez	2043283, 2043286
	11/21/2018			11/21/2018 16:08	Chelsea Hernandez	2043287
	11/21/2018			11/21/2018 16:18	Chelsea Hernandez	2043280
SM 2320 B-97	11/21/2018			11/30/2018 06:28	Dale L. Simmons	2043283
	11/21/2018			11/30/2018 06:38	Dale L. Simmons	2043280
	11/21/2018			11/30/2018 08:21	Dale L. Simmons	2043286
	11/21/2018			11/30/2018 08:32	Dale L. Simmons	2043287
SM 2540 C-97	11/21/2018			11/26/2018 16:02	Yijie Li	2043280, 2043283, 2043286, 2043287
SM 2540 D-97	11/21/2018			11/26/2018 16:02	Yijie Li	2043280, 2043283, 2043286, 2043287

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-97	11/21/2018			11/30/2018 06:28	Dale L. Simmons	2043283
	11/21/2018			11/30/2018 06:38	Dale L. Simmons	2043280
	11/21/2018			11/30/2018 08:21	Dale L. Simmons	2043286
	11/21/2018			11/30/2018 08:32	Dale L. Simmons	2043287
SM 5310 B-00	11/21/2018			11/28/2018 20:58	Megan Treadwell	2043281
	11/21/2018			11/28/2018 21:11	Megan Treadwell	2043284
	11/21/2018			11/28/2018 21:24	Megan Treadwell	2043288
	11/21/2018			11/28/2018 22:04	Megan Treadwell	2043289