

Chemical Analysis Report

TLH-ROC-2019-04-15-01

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

Event Description: **Run 4**
Request ID: **RQ-2019-04-15-48**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
Attn: Michael Eckles

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: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 07-MAY-2019 10:18

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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: UNNAMED BRANCH @ FLAT CREEK RD

Collection Date/Time: 04/15/2019 10:35

Field ID: G2TLHR0031

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2078162	EPA 180.1 Rev. 2.0	Turbidity	13	A	NTU	P362259	
	EPA 300.0 Rev. 2.1	Chloride	4.7		mg Cl/L	P362382	
		Sulfate	1.2		mg SO4/L	P362384	
	SM 2120 B	Color (true)	65	A	PCU	P362306	
	SM 2320 B-97	Total Alkalinity	37		mg CaCO3/L	P362571	
	SM 2540 C-97	TDS	72		mg/L	P362666	
	SM 2540 D-97	TSS	9	I	mg/L	P362657	
	SM 4500 F-C-97	Fluoride	0.096	I	mg F/L	P362576	MS
	EPA 350.1 Rev. 2.0	Ammonia-N	0.026		mg N/L	P362711	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.25		mg N/L	P362585	MS
2078165	EPA 353.2 Rev. 2.0	NO2NO3-N	0.17		mg N/L	P362598	
	EPA 365.1 Rev. 2.0	Total-P	0.067		mg P/L	P362433	
	SM 5310 B-00	Organic Carbon	4.5		mg C/L	P362398	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.026		mg P/L	P362254	
	dissolved						
2078180	EPA 200.7 Rev. 4.4	Barium	18.4		ug/L	P362279	
		Calcium	10.1		mg/L	P362279	
		Iron	1.20E+03		ug/L	P362279	
		Magnesium	4.63		mg/L	P362279	
		Potassium	0.49	I	mg/L	P362279	
		Sodium	2.4		mg/L	P362279	
		Zinc	5.0	U	ug/L	P362279	
	EPA 200.8 Rev. 5.4	Aluminum	765		ug/L	P362279	
		Antimony	0.050	U	ug/L	P362279	
		Arsenic	0.59		ug/L	P362279	
		Boron**	9.5		ug/L	P362279	
		Cadmium	0.020	U	ug/L	P362279	
		Chromium	1.3	I	ug/L	P362279	
		Copper	0.40	U	ug/L	P362279	
		Lead	0.55		ug/L	P362279	
		Nickel	0.50	U	ug/L	P362279	
		Selenium	0.20	U	ug/L	P362279	
		Silver	0.010	U	ug/L	P362279	
		Thallium	0.10	U	ug/L	P362279	

Sample Location: MOSQUITO CREEK @ SR 269

Collection Date/Time: 04/15/2019 11:05

Field ID: G2TLHR0015

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2078163	EPA 180.1 Rev. 2.0	Turbidity	30		NTU	P362259	
	EPA 300.0 Rev. 2.1	Chloride	4.1		mg Cl/L	P362488	
		Sulfate	0.82		mg SO4/L	P362490	
	SM 2120 B	Color (true)	55	A	PCU	P362309	
	SM 2320 B-97	Total Alkalinity	16		mg CaCO3/L	P362571	
	SM 2540 C-97	TDS	59		mg/L	P362666	
	SM 2540 D-97	TSS	31		mg/L	P362657	
	SM 4500 F-C-97	Fluoride	0.058	I	mg F/L	P362576	MS
2078166	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P362711	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.56		mg N/L	P362585	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.65		mg N/L	P362598	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P362434	
	SM 5310 B-00	Organic Carbon	7.1		mg C/L	P362398	
2078169	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.017		mg P/L	P362254	
2078181	EPA 200.7 Rev. 4.4	Barium	26.8		ug/L	P362279	
		Calcium	5.99		mg/L	P362279	
		Iron	1.94E+03		ug/L	P362279	
		Magnesium	2.76		mg/L	P362279	
		Potassium	0.93	I	mg/L	P362279	
		Sodium	2.2		mg/L	P362279	
		Zinc	5.0	U	ug/L	P362279	
	EPA 200.8 Rev. 5.4	Aluminum	1.13E+03		ug/L	P362279	
		Antimony	0.050	U	ug/L	P362279	
		Arsenic	0.80		ug/L	P362279	
		Boron**	10.8		ug/L	P362279	
		Cadmium	0.022	I	ug/L	P362279	
		Chromium	1.5	I	ug/L	P362279	
		Copper	1.03		ug/L	P362279	
		Lead	1.00		ug/L	P362279	
		Nickel	0.50	U	ug/L	P362279	
		Selenium	0.20	U	ug/L	P362279	
		Silver	0.010	U	ug/L	P362279	
		Thallium	0.10	U	ug/L	P362279	

Ref. Method and Comment:
EPA 200.8 Rev. 5.4: The lead result was confirmed on 05/01/2019.

Sample Location: LAKE SEMINOLE 200M FROM BOAT RAMP @ RIVER RD **Collection Date/Time: 04/15/2019 12:15**

Field ID: G2THLR0002

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2078159	EPA 180.1 Rev. 2.0	Turbidity	20		NTU	P362259	
	EPA 300.0 Rev. 2.1	Chloride	4.8		mg Cl/L	P362382	
		Sulfate	5.6		mg SO4/L	P362384	
		Color (true)	9.1		PCU	P362309	
	SM 2320 B-97	Total Alkalinity	36		mg CaCO3/L	P362571	
	SM 2540 C-97	TDS	64		mg/L	P362666	
	SM 2540 D-97	TSS	34		mg/L	P362657	
	SM 4500 F-C-97	Fluoride	0.075	I	mg F/L	P362576	MS
2078160	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P362711	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.42	J	mg N/L	P362585	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.37		mg N/L	P362597	
	EPA 365.1 Rev. 2.0	Total-P	0.059		mg P/L	P362433	
	SM 5310 B-00	Organic Carbon	3.0		mg C/L	P362398	
2078161	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P362254	
2078179	EPA 200.7 Rev. 4.4	Barium	25.5		ug/L	P362279	
		Calcium	12.5		mg/L	P362279	
		Iron	1.67E+03		ug/L	P362279	
		Magnesium	2.60		mg/L	P362279	
		Potassium	1.6		mg/L	P362279	
		Sodium	4.8		mg/L	P362279	
		Zinc	5.0	U	ug/L	P362279	
	EPA 200.8 Rev. 5.4	Aluminum	826		ug/L	P362279	
		Antimony	0.086	I	ug/L	P362279	
		Arsenic	0.52		ug/L	P362279	
		Boron**	15.7		ug/L	P362279	
		Cadmium	0.020	U	ug/L	P362279	
		Chromium	1.4	I	ug/L	P362279	
		Copper	1.12		ug/L	P362279	
		Lead	0.71		ug/L	P362279	
		Nickel	0.61	I	ug/L	P362279	
		Selenium	0.20	U	ug/L	P362279	
		Silver	0.010	U	ug/L	P362279	
		Thallium	0.10	U	ug/L	P362279	

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

Sample Location: SOUTH MOSQUITO CREEK @ POWER LINE RD

Collection Date/Time: 04/15/2019 13:00

Field ID: G2TLHR0039

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2078164	EPA 180.1 Rev. 2.0	Turbidity	27		NTU	P362259	
	EPA 300.0 Rev. 2.1	Chloride	3.5		mg Cl/L	P362488	
		Sulfate	0.73		mg SO4/L	P362490	
		Color (true)	60		PCU	P362309	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P362571	
	SM 2540 C-97	TDS	54		mg/L	P362666	
	SM 2540 D-97	TSS	32		mg/L	P362657	
	SM 4500 F-C-97	Fluoride	0.053	I	mg F/L	P362576	MS
2078167	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P362711	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.53		mg N/L	P362585	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.30		mg N/L	P362598	
	EPA 365.1 Rev. 2.0	Total-P	0.099		mg P/L	P362434	
	SM 5310 B-00	Organic Carbon	7.6		mg C/L	P362398	
2078170	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.016		mg P/L	P362254	
2078182	EPA 200.7 Rev. 4.4	Barium	22.1		ug/L	P362279	
		Calcium	4.36		mg/L	P362279	
		Iron	1.84E+03		ug/L	P362279	
		Magnesium	2.23		mg/L	P362279	
		Potassium	0.74	I	mg/L	P362279	
		Sodium	2.0	I	mg/L	P362279	
		Zinc	5.0	U	ug/L	P362279	
	EPA 200.8 Rev. 5.4	Aluminum	1.12E+03		ug/L	P362279	
		Antimony	0.050	U	ug/L	P362279	
		Arsenic	0.79		ug/L	P362279	
		Boron**	10.2		ug/L	P362279	
		Cadmium	0.025	I	ug/L	P362279	
		Chromium	1.5	I	ug/L	P362279	
		Copper	0.80	I	ug/L	P362279	
		Lead	0.92		ug/L	P362279	
		Nickel	0.54	I	ug/L	P362279	
		Selenium	0.20	U	ug/L	P362279	
		Silver	0.010	U	ug/L	P362279	
		Thallium	0.10	U	ug/L	P362279	

Ref. Method and Comment:
 EPA 200.8 Rev. 5.4: The lead result was confirmed on 05/02/2019.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P362259

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P362279

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: P362279

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: P362382

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362384

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362488

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362490

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362711

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362585

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362597

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362598

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362433

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362434

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362254

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

Reference Method: SM 2120 B
Batch ID: P362306

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2120 B
Batch ID: P362309

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P362571

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

Reference Method: SM 2540 C-97
Batch ID: P362666

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P362657

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P362576

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P362398

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: P362279

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	103		P	85 - 115
Calcium	102		P	85 - 115
Iron	105		P	85 - 115
Magnesium	107		P	85 - 115
Potassium	99.5		P	85 - 115
Sodium	94.0		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P362279

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	92.9		P	85 - 115
Antimony	92.3		P	85 - 115
Arsenic	91.9		P	85 - 115
Boron	94.5		P	85 - 115
Cadmium	94.1		P	85 - 115
Chromium	85.1		P	85 - 115
Copper	101		P	85 - 115
Lead	96.7		P	85 - 115
Nickel	88.9		P	85 - 115
Selenium	93.1		P	85 - 115
Silver	97.1		P	85 - 115
Thallium	104		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362382

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362384

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362488

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362490

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362711

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362585

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362597

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	97.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362598

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362433

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362434

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362254

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

Reference Method: SM 2120 B
Batch ID: P362306

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

Reference Method: SM 2120 B
Batch ID: P362309

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P362571

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.6		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P362576

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.8		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P362398

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P362279

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2078208	Barium	98.5	99.0	P/P	80 - 120
2078208	Calcium	94.0		P	80 - 120
2078208	Iron	103	103	P/P	80 - 120
2078208	Magnesium	102	102	P/P	80 - 120
2078208	Potassium	95.4	97.2	P/P	80 - 120
2078208	Sodium	100		P	80 - 120
2078208	Zinc	101	102	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P362279

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2078208	Aluminum	94.8	91.8	P/P	80 - 120
2078208	Antimony	92.7	91.5	P/P	80 - 120
2078208	Arsenic	92.9	92.6	P/P	80 - 120
2078208	Boron	94.4	92.4	P/P	80 - 120
2078208	Cadmium	95.0	96.6	P/P	80 - 120
2078208	Chromium	85.3	85.0	P/P	80 - 120
2078208	Copper	102	98.1	P/P	80 - 120
2078208	Lead	100	99.0	P/P	80 - 120
2078208	Nickel	91.3	90.1	P/P	80 - 120
2078208	Selenium	90.4	89.7	P/P	80 - 120
2078208	Silver	97.8	97.2	P/P	80 - 120
2078208	Thallium	106	103	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362382

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2077771	Chloride	101		P	90 - 110
2077863	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362384

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2077771	Sulfate	101		P	90 - 110
2077863	Sulfate	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362488

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2078163	Chloride	97.6		P	90 - 110
2078254	Chloride	99.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362490

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2078163	Sulfate	102		P	90 - 110
2078254	Sulfate	99.7		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362711

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2078142	Ammonia-N	102	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362585

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2078160	Kjeldahl Nitrogen	112	109	F/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362597

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2077920	NO2NO3-N	92.2	92.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362598

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2078165	NO2NO3-N	98.0	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362433

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2078142	Total-P	101	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362434

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2078192	Total-P	104	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362254

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2078170	O-Phosphate-P	95.0	95.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P362576

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2077863	Fluoride	107	105	F/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P362398

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2078142	Organic Carbon	98.1	99.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P362259

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2078162	Turbidity	5.42	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P362279

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2078208	Barium	0.452	Spike	P	0 - 20
2078208	Calcium	0.0361	Spike	P	0 - 20
2078208	Iron	0.365	Spike	P	0 - 20
2078208	Magnesium	0.365	Spike	P	0 - 20
2078208	Potassium	1.23	Spike	P	0 - 20
2078208	Sodium	2.63	Spike	P	0 - 20
2078208	Zinc	1.20	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P362279

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2078208	Aluminum	2.56	Spike	P	0 - 20
2078208	Antimony	1.31	Spike	P	0 - 20
2078208	Arsenic	0.319	Spike	P	0 - 20
2078208	Boron	1.75	Spike	P	0 - 20
2078208	Cadmium	1.71	Spike	P	0 - 20
2078208	Chromium	0.383	Spike	P	0 - 20
2078208	Copper	3.96	Spike	P	0 - 20
2078208	Lead	1.01	Spike	P	0 - 20
2078208	Nickel	1.43	Spike	P	0 - 20
2078208	Selenium	0.804	Spike	P	0 - 20
2078208	Silver	0.594	Spike	P	0 - 20
2078208	Thallium	3.08	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362382

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077771	Chloride	0.0731	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362384

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077771	Sulfate	0.463	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362488

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2078254	Chloride	0.813	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362490

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2078254	Sulfate	1.12	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362711

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2078142	Ammonia-N	0.134	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362585

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2078160	Kjeldahl Nitrogen	1.66	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362597

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077920	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362598

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2078165	NO2NO3-N	0.270	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362433

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2078142	Total-P	0.872	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362434

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2078192	Total-P	2.13	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362254

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2078170	O-Phosphate-P	0.179	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P362306

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2078162	Color (true)	2.75	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P362309

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2078163	Color (true)	4.99	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P362571

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077863	Total Alkalinity	0.283	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P362666

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077884	TDS	6.95	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P362657

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077884	TSS	4.76	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P362576

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077863	Fluoride	1.44	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P362398

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2078142	Organic Carbon	0.758	Spike	P	0 - 20

Quality Assurance Report

Precision

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A90757

Included Lab Sample IDs: 2078161, 2078168, 2078169, 2078170

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	98.9	P/P	90 - 110
O-Phosphate-P	98.9	98.8	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A90758

Included Lab Sample IDs: 2078159, 2078162, 2078163, 2078164

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A90760

Included Lab Sample IDs: 2078159, 2078162, 2078163, 2078164

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

Reference Method: SM 2120 B

Run ID: A90769

Included Lab Sample IDs: 2078159, 2078162, 2078163, 2078164

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	105	P/P	90 - 115
Color (true)	103	103	P/P	90 - 115

Reference Method: SM 5310 B-00

Run ID: A90810

Included Lab Sample IDs: 2078160, 2078165, 2078166, 2078167

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A90847

Included Lab Sample IDs: 2078160, 2078165, 2078166, 2078167

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	104	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A90862

Included Lab Sample IDs: 2078179, 2078180, 2078181, 2078182

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	96.1	95.9	P/P	90 - 110
Antimony	94.5	94.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A90862

Included Lab Sample IDs: 2078179, 2078180, 2078181, 2078182

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	93.7	94.7	P/P	90 - 110
Boron	95.9	94.8	P/P	90 - 110
Cadmium	96.5	96.5	P/P	90 - 110
Chromium	91.9	92.1	P/P	90 - 110
Lead	101	101	P/P	90 - 110
Nickel	90.8	91.0	P/P	90 - 110
Selenium	94.2	93.9	P/P	90 - 110
Silver	100	100	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A90871

Included Lab Sample IDs: 2078159, 2078162, 2078163, 2078164

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.1	100	P/P	90 - 110
Total Alkalinity	99.7	98.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A90871

Included Lab Sample IDs: 2078159, 2078162, 2078163, 2078164

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A90880

Included Lab Sample IDs: 2078160, 2078165, 2078166, 2078167

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.0	98.0	P/P	90 - 110
NO2NO3-N	98.5	98.0	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A90898

Included Lab Sample IDs: 2078179, 2078180, 2078181, 2078182

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	98.9	P/P	95 - 105
Calcium	101	98.5	P/P	95 - 105
Iron	103	102	P/P	95 - 105
Magnesium	103	102	P/P	95 - 105
Potassium	99.5	97.8	P/P	95 - 105
Sodium	97.5	91.5	P/P	95 - 105

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A90919

Included Lab Sample IDs: 2078160, 2078165, 2078166, 2078167

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A90920

Included Lab Sample IDs: 2078179, 2078180, 2078181, 2078182

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Zinc	99.9	102	P/P	95 - 105

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A90943

Included Lab Sample IDs: 2078179, 2078180, 2078181, 2078182

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	97.9	95.5	P/P	90 - 110
Thallium	94.5	91.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A90946

Included Lab Sample IDs: 2078160, 2078165, 2078166, 2078167

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	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	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					5.42	
EPA 200.7 Rev. 4.4	Barium	103	98.5	99.0			0.452
	Calcium	102	94.0				0.0361
	Iron	105	103	103			0.365
	Magnesium	107	102	102			0.365
	Potassium	99.5	95.4	97.2			1.23
	Sodium	94.0	100				2.63
	Zinc	102	101	102			1.20
EPA 200.8 Rev. 5.4	Aluminum	92.9	94.8	91.8			2.56
	Antimony	92.3	92.7	91.5			1.31
	Arsenic	91.9	92.9	92.6			0.319
	Boron	94.5	94.4	92.4			1.75
	Cadmium	94.1	95.0	96.6			1.71
	Chromium	85.1	85.3	85.0			0.383
	Copper	101	102	98.1			3.96
	Lead	96.7	100	99.0			1.01
	Nickel	88.9	91.3	90.1			1.43
	Selenium	93.1	90.4	89.7			0.804
	Silver	97.1	97.8	97.2			0.594
	Thallium	104	106	103			3.08
EPA 300.0 Rev. 2.1	Chloride	101	101	103		0.0731	
	Chloride	102	99.1	97.6		0.813	
	Sulfate	101	101	103		0.463	
	Sulfate	102	99.7	102		1.12	
EPA 350.1 Rev. 2.0	Ammonia-N	101	102	102			0.134
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	112	109			1.66
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	97.5	92.2	92.2			0.0
	NO ₂ NO ₃ -N	98.0	98.0	98.5			0.270
EPA 365.1 Rev. 2.0	Total-P	101	101	100			0.872
	Total-P	103	104	106			2.13
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.4	95.0	95.2			0.179
SM 2120 B	Color (true)	103				2.75	
	Color (true)	102				4.99	
SM 2320 B-97	Total Alkalinity	99.6				0.283	
SM 2540 C-97	TDS					6.95	
SM 2540 D-97	TSS					4.76	
SM 4500 F-C-97	Fluoride	97.8	107	105			1.44
SM 5310 B-00	Organic Carbon	100	98.1	99.0			0.758

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2078159, 2078162, 2078163, 2078164
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2078179, 2078180, 2078181, 2078182
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2078179, 2078180, 2078181, 2078182
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2078159, 2078162, 2078163, 2078164
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2078159, 2078162, 2078163, 2078164
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2078160, 2078165, 2078166, 2078167

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2078160, 2078165, 2078166, 2078167
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2078160, 2078165, 2078166, 2078167
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2078160, 2078165, 2078166, 2078167
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2078161, 2078168, 2078169, 2078170
SM 2120 B / E31780	True Color measured at 450 nm	2078159, 2078162, 2078163, 2078164
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2078159, 2078162, 2078163, 2078164
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2078159, 2078162, 2078163, 2078164
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2078159, 2078162, 2078163, 2078164
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2078159, 2078162, 2078163, 2078164
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2078160, 2078165, 2078166, 2078167

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	04/15/2019			04/16/2019 16:28	Adrian Shelby	2078159, 2078162, 2078163, 2078164
EPA 200.7 Rev. 4.4	04/15/2019	04/17/2019 10:00	Alexander Thompson	04/22/2019 16:17	Betina Topolski	2078179
	04/15/2019	04/17/2019 10:00	Alexander Thompson	04/22/2019 16:24	Betina Topolski	2078180
	04/15/2019	04/17/2019 10:00	Alexander Thompson	04/22/2019 16:32	Betina Topolski	2078181
	04/15/2019	04/17/2019 10:00	Alexander Thompson	04/22/2019 16:39	Betina Topolski	2078182
	04/15/2019	04/17/2019 10:00	Alexander Thompson	04/23/2019 12:11	Betina Topolski	2078179
	04/15/2019	04/17/2019 10:00	Alexander Thompson	04/23/2019 12:12	Betina Topolski	2078180
	04/15/2019	04/17/2019 10:00	Alexander Thompson	04/23/2019 12:15	Betina Topolski	2078181
	04/15/2019	04/17/2019 10:00	Alexander Thompson	04/23/2019 12:17	Betina Topolski	2078182
EPA 200.8 Rev. 5.4	04/15/2019	04/17/2019 10:00	Alexander Thompson	04/19/2019 20:46	Robert K Palmer	2078179
	04/15/2019	04/17/2019 10:00	Alexander Thompson	04/19/2019 20:55	Robert K Palmer	2078180
	04/15/2019	04/17/2019 10:00	Alexander Thompson	04/19/2019 21:05	Robert K Palmer	2078181
	04/15/2019	04/17/2019 10:00	Alexander Thompson	04/19/2019 21:15	Robert K Palmer	2078182
	04/15/2019	04/17/2019 10:00	Alexander Thompson	04/23/2019 13:47	Robert K Palmer	2078179
	04/15/2019	04/17/2019 10:00	Alexander Thompson	04/23/2019 13:55	Robert K Palmer	2078180
	04/15/2019	04/17/2019 10:00	Alexander Thompson	04/23/2019 14:03	Robert K Palmer	2078181
	04/15/2019	04/17/2019 10:00	Alexander Thompson	04/23/2019 14:11	Robert K Palmer	2078182
EPA 300.0 Rev. 2.1	04/15/2019			04/18/2019 01:55	Lipi Saha	2078159
	04/15/2019			04/18/2019 02:07	Lipi Saha	2078162
	04/15/2019			04/18/2019 17:13	Lipi Saha	2078163
	04/15/2019			04/18/2019 17:37	Lipi Saha	2078164
EPA 350.1 Rev. 2.0	04/15/2019			04/22/2019 11:01	Ping Hua	2078160
	04/15/2019			04/22/2019 11:03	Ping Hua	2078165
	04/15/2019			04/22/2019 11:04	Ping Hua	2078166
	04/15/2019			04/22/2019 11:06	Ping Hua	2078167
EPA 351.2 Rev. 2.0	04/15/2019	04/22/2019 11:45	Adrian Shelby	04/23/2019 11:06	Joseph Suarez	2078160
	04/15/2019	04/22/2019 11:45	Adrian Shelby	04/23/2019 11:11	Joseph Suarez	2078165
	04/15/2019	04/22/2019 11:45	Adrian Shelby	04/23/2019 11:12	Joseph Suarez	2078166
	04/15/2019	04/22/2019 11:45	Adrian Shelby	04/23/2019 11:14	Joseph Suarez	2078167
EPA 353.2 Rev. 2.0	04/15/2019			04/22/2019 09:33	Beverly Y. Sanders	2078160
	04/15/2019			04/22/2019 09:40	Beverly Y. Sanders	2078165
	04/15/2019			04/22/2019 09:46	Beverly Y. Sanders	2078166
	04/15/2019			04/22/2019 09:47	Beverly Y. Sanders	2078167
EPA 365.1 Rev. 2.0	04/15/2019	04/18/2019 13:40	Sima Feizi	04/19/2019 13:48	Rosalyn Ballman	2078160
	04/15/2019	04/18/2019 13:40	Sima Feizi	04/19/2019 13:49	Rosalyn Ballman	2078165
	04/15/2019	04/18/2019 13:40	Sima Feizi	04/19/2019 13:52	Rosalyn Ballman	2078166
	04/15/2019	04/18/2019 13:40	Sima Feizi	04/19/2019 13:53	Rosalyn Ballman	2078167
EPA 365.1 Rev. 2.0 dissolved	04/15/2019			04/16/2019 15:08	Jhamieka S. Greenwood	2078170
	04/15/2019			04/16/2019 15:21	Jhamieka S. Greenwood	2078161
	04/15/2019			04/16/2019 15:22	Jhamieka S. Greenwood	2078169

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 SM 2120 B	04/15/2019			04/16/2019 15:23	Jhamieka S. Greenwood	2078168
	04/15/2019			04/16/2019 16:11	Mariam Hanna	2078162
	04/15/2019			04/16/2019 16:44	Mariam Hanna	2078163
	04/15/2019			04/16/2019 16:45	Mariam Hanna	2078164
	04/15/2019			04/16/2019 16:47	Mariam Hanna	2078159
SM 2320 B-97	04/15/2019			04/19/2019 04:30	Samantha Davila	2078159
	04/15/2019			04/19/2019 04:42	Samantha Davila	2078162
	04/15/2019			04/19/2019 05:37	Samantha Davila	2078163
	04/15/2019			04/19/2019 05:49	Samantha Davila	2078164
SM 2540 C-97	04/15/2019			04/17/2019 15:19	Yijie Li	2078159, 2078162, 2078163, 2078164
SM 2540 D-97	04/15/2019			04/17/2019 15:19	Yijie Li	2078159, 2078162, 2078163, 2078164
SM 4500 F-C-97	04/15/2019			04/19/2019 04:30	Samantha Davila	2078159
	04/15/2019			04/19/2019 04:42	Samantha Davila	2078162
	04/15/2019			04/19/2019 05:37	Samantha Davila	2078163
	04/15/2019			04/19/2019 05:49	Samantha Davila	2078164
SM 5310 B-00	04/15/2019			04/17/2019 15:42	Julia Storbeck	2078165
	04/15/2019			04/17/2019 18:33	Julia Storbeck	2078160
	04/15/2019			04/17/2019 18:45	Julia Storbeck	2078166
	04/15/2019			04/17/2019 19:23	Julia Storbeck	2078167