

Chemical Analysis Report

NW-DIST-2018-09-28-01

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

Event Description: **Bay/Walton RUN**
Request ID: **RQ-2018-09-03-57**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 208
Pensacola, FL 32502-5794
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 23-OCT-2018 11:46

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 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: Otter Creek upstream of Otter Creek Bridge Rd. Collection Date/Time: 09/26/2018 11:30

Field ID: G3NW0133

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2029490	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P352506	
	EPA 300.0 Rev. 2.1	Chloride	24		mg Cl/L	P352816	
		Sulfate	5.8		mg SO ₄ /L	P352818	
		Color (true)	260		PCU	P352438	
	SM 2320 B-97	Total Alkalinity	5.4		mg CaCO ₃ /L	P352911	
	SM 2540 C-97	TDS	97		mg/L	P352989	
	SM 2540 D-97	TSS	4	I	mg/L	P352922	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P352725	
2029491	EPA 350.1 Rev. 2.0	Ammonia-N	0.97		mg N/L	P353030	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P353080	
	EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	0.084		mg N/L	P352704	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P352531	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P352733	
2029492	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P352437	
2029508	EPA 200.7 Rev. 4.4	Calcium	5.49		mg/L	P352619	
		Iron	1.64E+03		ug/L	P352619	
		Magnesium	1.43		mg/L	P352619	
		Potassium	3.3		mg/L	P352619	
		Sodium	13.4		mg/L	P352619	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P352619	
		Arsenic	0.65		ug/L	P352619	
		Cadmium	0.020	U	ug/L	P352619	
		Chromium	0.55	I	ug/L	P352619	
		Copper	0.20	U	ug/L	P352619	
		Lead	0.36		ug/L	P352619	
		Nickel	0.36	I	ug/L	P352619	
		Silver	0.010	U	ug/L	P352619	

Ref. Method and Comment:

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

Sample Location: Layfayette Creek upstream of Hwy 20

Collection Date/Time: 09/26/2018 13:10

Field ID: G3NW0118

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2029493	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P352506	
	EPA 300.0 Rev. 2.1	Chloride	3.2		mg Cl/L	P352816	
		Sulfate	2.0		mg SO4/L	P352818	
	SM 2120 B	Color (true)	97	A	PCU	P352438	
	SM 2320 B-97	Total Alkalinity	2.0	I	mg CaCO3/L	P352911	
	SM 2540 C-97	TDS	29		mg/L	P352989	
	SM 2540 D-97	TSS	3	I	mg/L	P352922	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P352725	
2029495	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P353015	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.33		mg N/L	P352607	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.10		mg N/L	P352705	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P352531	
	SM 5310 B-00	Organic Carbon	7.0		mg C/L	P352733	
2029497	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P352437	

Ref. Method and Comment:

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

Sample Location: Layfayette Creek upstream of Hwy 20

Collection Date/Time: 09/26/2018 13:15

Field ID: G3NW0118_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2029494	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P352506	
	EPA 300.0 Rev. 2.1	Chloride	3.2		mg Cl/L	P352816	
		Sulfate	2.0		mg SO4/L	P352818	
	SM 2120 B	Color (true)	95		PCU	P352438	
	SM 2320 B-97	Total Alkalinity	1.8	I	mg CaCO3/L	P352911	
	SM 2540 C-97	TDS	26		mg/L	P352989	
	SM 2540 D-97	TSS	4	I	mg/L	P352922	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P352725	
2029496	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P353015	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39		mg N/L	P352607	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.10		mg N/L	P352705	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P352531	
	SM 5310 B-00	Organic Carbon	7.0		mg C/L	P352734	
2029498	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P352437	

Ref. Method and Comment:

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

Sample Location: Layfayette Creek upstream of Hwy 20

Collection Date/Time: 09/26/2018 13:20

Field ID: blank_09042018

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2029499	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P352506	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P352817	
		Sulfate	0.20	U	mg SO4/L	P352819	
	SM 2120 B	Color (true)	2.5	U	PCU	P352438	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P352911	
	SM 2540 C-97	TDS	15	U	mg/L	P352989	
	SM 2540 D-97	TSS	2	U	mg/L	P352922	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P352725	
2029500	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P353030	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P352607	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P352705	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P352588	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P352734	
2029501	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P352437	

Ref. Method and Comment:

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: P352506

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P352619

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: P352619

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: P352816

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352817

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352818

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352819

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: P353015

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353030

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P352607

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353080

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352704

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352705

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352531

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352588

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352437

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2120 B
Batch ID: P352438

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P352911

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

Reference Method: SM 2540 C-97
Batch ID: P352989

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P352922

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P352725

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P352733

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

Reference Method: SM 5310 B-00
Batch ID: P352734

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: P352619

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	99.5		P	85 - 115
Iron	100		P	85 - 115
Magnesium	108		P	85 - 115
Potassium	108		P	85 - 115
Sodium	100		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P352619

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	99.7		P	85 - 115
Cadmium	98.9		P	85 - 115
Chromium	97.4		P	85 - 115
Copper	98.2		P	85 - 115
Lead	92.8		P	85 - 115
Nickel	98.3		P	85 - 115
Silver	98.2		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352816

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352817

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352818

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352819

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353015

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353030

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P352607

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353080

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	107		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352704

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352705

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352531

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352588

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: P352437

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

Reference Method: SM 2120 B
Batch ID: P352438

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	96.1		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P352911

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P352725

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P352733

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.6		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P352734

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P352619

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029488	Calcium	99.1		P	80 - 120
2029488	Iron	102		P	80 - 120
2029488	Magnesium	108		P	80 - 120
2029488	Potassium	106		P	80 - 120
2029488	Sodium	98.2		P	80 - 120
2029488	Zinc	107		P	80 - 120
2029521	Calcium	94.5		P	80 - 120
2029521	Iron	99.7	101	P/P	80 - 120
2029521	Magnesium	103	106	P/P	80 - 120
2029521	Potassium	103	106	P/P	80 - 120
2029521	Sodium	94.3		P	80 - 120
2029521	Zinc	104	106	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P352619

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029488	Arsenic	98.5		P	80 - 120
2029488	Cadmium	101		P	80 - 120
2029488	Chromium	98.0		P	80 - 120
2029488	Copper	96.0		P	80 - 120
2029488	Lead	94.0		P	80 - 120
2029488	Nickel	97.0		P	80 - 120
2029488	Silver	98.2		P	80 - 120
2029521	Arsenic	97.6	98.1	P/P	80 - 120
2029521	Cadmium	100	100	P/P	80 - 120
2029521	Chromium	97.4	95.2	P/P	80 - 120
2029521	Copper	96.6	95.7	P/P	80 - 120
2029521	Lead	92.6	93.9	P/P	80 - 120
2029521	Nickel	97.7	96.6	P/P	80 - 120
2029521	Silver	99.5	100	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352816

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029320	Chloride	96.3		P	90 - 110
2029490	Chloride	96.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352817

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029514	Chloride	98.0		P	90 - 110
2029713	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352818

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029320	Sulfate	94.4		P	90 - 110
2029490	Sulfate	94.8		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352819

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029514	Sulfate	97.2		P	90 - 110
2029713	Sulfate	98.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353015

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029405	Ammonia-N	96.7	98.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353030

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029529	Ammonia-N	103	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P352607

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029495	Kjeldahl Nitrogen	99.1	109	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353080

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029405	Kjeldahl Nitrogen	99.1	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352704

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029406	NO2NO3-N	101		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352705

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029515	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352531

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029485	Total-P	105	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352588

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029530	Total-P	98.1	100	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352437

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029492	O-Phosphate-P	95.1	96.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P352725

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029525	Fluoride	101	99.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P352733

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029236	Organic Carbon	99.0		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P352734

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2029496	Organic Carbon	96.6	95.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P352506

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029404	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P352619

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029521	Calcium	2.36	Spike	P	0 - 20
2029521	Iron	1.00	Spike	P	0 - 20
2029521	Magnesium	2.33	Spike	P	0 - 20
2029521	Potassium	1.98	Spike	P	0 - 20
2029521	Sodium	1.17	Spike	P	0 - 20
2029521	Zinc	1.22	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P352619

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029521	Arsenic	0.468	Spike	P	0 - 20
2029521	Cadmium	0.250	Spike	P	0 - 20
2029521	Chromium	2.24	Spike	P	0 - 20
2029521	Copper	0.986	Spike	P	0 - 20
2029521	Lead	1.40	Spike	P	0 - 20
2029521	Nickel	1.10	Spike	P	0 - 20
2029521	Silver	0.511	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352816

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029320	Chloride	0.675	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352817

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029514	Chloride	1.17	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352818

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029320	Sulfate	2.17	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352819

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029514	Sulfate	1.71	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353015

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029405	Ammonia-N	1.09	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353030

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029529	Ammonia-N	2.64	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P352607

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029495	Kjeldahl Nitrogen	7.43	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353080

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029405	Kjeldahl Nitrogen	0.522	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352704

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029406	NO2NO3-N	0.204	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352705

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029515	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352531

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029485	Total-P	0.230	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352588

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029530	Total-P	1.92	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352437

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029492	O-Phosphate-P	1.36	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P352438

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029493	Color (true)	1.14	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P352911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029525	Total Alkalinity	0.466	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P352989

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029484	TDS	3.66	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P352725

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029525	Fluoride	1.93	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P352733

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029236	Organic Carbon	0.871	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P352734

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2029496	Organic Carbon	0.649	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: A86768

Included Lab Sample IDs: 2029492, 2029497, 2029498, 2029501

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.7	98.7	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A86771

Included Lab Sample IDs: 2029490, 2029493, 2029494, 2029499

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.8	97.9	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A86805

Included Lab Sample IDs: 2029490, 2029493, 2029494, 2029499

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	102	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A86839

Included Lab Sample IDs: 2029490, 2029493, 2029494, 2029499

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	100	P/P	90 - 110
Chloride	101	102	P/P	90 - 110
Chloride	101	100	P/P	90 - 110
Sulfate	101	99.2	P/P	90 - 110
Sulfate	99.2	99.3	P/P	90 - 110
Sulfate	99.5	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86851

Included Lab Sample IDs: 2029491, 2029495, 2029496

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86874

Included Lab Sample IDs: 2029500

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A86888

Included Lab Sample IDs: 2029508

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	98.7	98.7	P/P	90 - 110
Iron	96.4	95.5	P/P	90 - 110
Magnesium	98.7	98.4	P/P	90 - 110
Potassium	101	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A86888

Included Lab Sample IDs: 2029508

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sodium	100	100	P/P	90 - 110
Zinc	103	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A86890

Included Lab Sample IDs: 2029491, 2029495, 2029496, 2029500

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

Reference Method: SM 4500 F-C-97

Run ID: A86892

Included Lab Sample IDs: 2029490, 2029493, 2029494, 2029499

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	105	102	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A86895

Included Lab Sample IDs: 2029491, 2029495, 2029496, 2029500

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.4	94.7	P/P	90 - 110
Organic Carbon	94.7	96.4	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A86929

Included Lab Sample IDs: 2029508

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	95.1	94.1	P/P	90 - 110
Cadmium	98.0	97.6	P/P	90 - 110
Copper	96.1	96.0	P/P	90 - 110
Lead	95.2	95.4	P/P	90 - 110
Nickel	96.3	96.3	P/P	90 - 110
Silver	92.1	92.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A86957

Included Lab Sample IDs: 2029508

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

Reference Method: SM 2320 B-97

Run ID: A86962

Included Lab Sample IDs: 2029490, 2029493, 2029494, 2029499

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A86962

Included Lab Sample IDs: 2029490, 2029493, 2029494, 2029499

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86972

Included Lab Sample IDs: 2029495, 2029500

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	97.7	P/P	90 - 110
Kjeldahl Nitrogen	98.2	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86981

Included Lab Sample IDs: 2029496

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.6	94.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A87010

Included Lab Sample IDs: 2029495, 2029496

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A87014

Included Lab Sample IDs: 2029491, 2029500

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A87102

Included Lab Sample IDs: 2029491

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	99.0	P/P	90 - 110

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

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

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					0.0	
EPA 200.7 Rev. 4.4	Calcium	99.5	99.1	94.5			2.36
	Iron	100	102	99.7	101		1.00
	Magnesium	108	108	103	106		2.33
	Potassium	108	106	103	106		1.98
	Sodium	100	98.2	94.3			1.17
	Zinc	102	107	104	106		1.22
EPA 200.8 Rev. 5.4	Arsenic	99.7	98.5	97.6	98.1		0.468
	Cadmium	98.9	101	100	100		0.250
	Chromium	97.4	98.0	97.4	95.2		2.24
	Copper	98.2	96.0	96.6	95.7		0.986
	Lead	92.8	94.0	92.6	93.9		1.40
	Nickel	98.3	97.0	97.7	96.6		1.10
	Silver	98.2	98.2	99.5	100		0.511
EPA 300.0 Rev. 2.1	Chloride	97.9	96.3	96.7		0.675	
	Chloride	99.3	98.0	100		1.17	
	Sulfate	96.3	94.4	94.8		2.17	
	Sulfate	97.6	97.2	98.1		1.71	
EPA 350.1 Rev. 2.0	Ammonia-N	101	96.7	98.5			1.09
	Ammonia-N	97.4	103	106			2.64
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	99.1	109			7.43
	Kjeldahl Nitrogen	107	99.1	99.8			0.522
EPA 353.2 Rev. 2.0	NO2NO3-N	102	101				0.204
	NO2NO3-N	103	104	104			0.0
EPA 365.1 Rev. 2.0	Total-P	103	105	105			0.230
	Total-P	103	98.1	100			1.92
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.9	95.1	96.4			1.36
SM 2120 B	Color (true)	96.1				1.14	
SM 2320 B-97	Total Alkalinity	104				0.466	
SM 2540 C-97	TDS					3.66	
SM 4500 F-C-97	Fluoride	102	101	99.1			1.93
SM 5310 B-00	Organic Carbon	93.6	99.0				0.871
	Organic Carbon	94.0	96.6	95.8			0.649

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2029490, 2029493, 2029494, 2029499
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2029508
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2029508
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2029490, 2029493, 2029494, 2029499
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2029490, 2029493, 2029494, 2029499
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2029491, 2029495, 2029496, 2029500
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2029491, 2029495, 2029496, 2029500
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2029491, 2029495, 2029496, 2029500
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2029491, 2029495, 2029496, 2029500

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2029492, 2029497, 2029498, 2029501
SM 2120 B / E31780	True Color measured at 450 nm	2029490, 2029493, 2029494, 2029499
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2029490, 2029493, 2029494, 2029499
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2029490, 2029493, 2029494, 2029499
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2029490, 2029493, 2029494, 2029499
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2029490, 2029493, 2029494, 2029499
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2029491, 2029495, 2029496, 2029500

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	09/28/2018			09/28/2018 10:47	Megan Treadwell	2029490
	09/28/2018			09/28/2018 10:48	Megan Treadwell	2029493
	09/28/2018			09/28/2018 10:53	Megan Treadwell	2029499
	09/28/2018			09/28/2018 10:54	Megan Treadwell	2029494
EPA 200.7 Rev. 4.4	09/28/2018	10/02/2018 18:00	Elliott D. Healy	10/03/2018 13:09	Betina Topolski	2029508
EPA 200.8 Rev. 5.4	09/28/2018	10/02/2018 18:00	Elliott D. Healy	10/04/2018 17:16	Robert K Palmer	2029508
	09/28/2018	10/02/2018 18:00	Elliott D. Healy	10/06/2018 16:40	Robert K Palmer	2029508
EPA 300.0 Rev. 2.1	09/28/2018			10/04/2018 17:30	Lipi Saha	2029490
	09/28/2018			10/04/2018 20:12	Lipi Saha	2029493
	09/28/2018			10/04/2018 20:24	Lipi Saha	2029494
	09/28/2018			10/05/2018 00:15	Lipi Saha	2029499
EPA 350.1 Rev. 2.0	09/28/2018			10/03/2018 13:52	Ping Hua	2029496
	09/28/2018			10/03/2018 13:54	Ping Hua	2029495
	09/28/2018			10/04/2018 11:57	Ping Hua	2029500
	09/28/2018			10/04/2018 14:05	Ping Hua	2029491
EPA 351.2 Rev. 2.0	09/28/2018	10/02/2018 15:30	Adrian Shelby	10/08/2018 10:26	Joseph Suarez	2029495
	09/28/2018	10/02/2018 15:30	Adrian Shelby	10/08/2018 10:53	Joseph Suarez	2029500
	09/28/2018	10/02/2018 15:30	Adrian Shelby	10/08/2018 14:39	Joseph Suarez	2029496
	09/28/2018	10/16/2018 11:00	Adrian Shelby	10/17/2018 13:52	Joseph Suarez	2029491
EPA 353.2 Rev. 2.0	09/28/2018			10/03/2018 14:00	Lauren Bottorf	2029491
	09/28/2018			10/03/2018 14:19	Lauren Bottorf	2029500
	09/28/2018			10/03/2018 14:20	Lauren Bottorf	2029495
	09/28/2018			10/03/2018 14:21	Lauren Bottorf	2029496
EPA 365.1 Rev. 2.0	09/28/2018	10/01/2018 12:40	Sima Feizi	10/02/2018 13:50	Beverly Y. Sanders	2029491
	09/28/2018	10/01/2018 12:40	Sima Feizi	10/02/2018 13:51	Beverly Y. Sanders	2029495
	09/28/2018	10/01/2018 12:40	Sima Feizi	10/02/2018 13:52	Beverly Y. Sanders	2029496
	09/28/2018	10/02/2018 12:37	Sima Feizi	10/03/2018 10:58	Beverly Y. Sanders	2029500
EPA 365.1 Rev. 2.0 dissolved	09/28/2018			09/28/2018 11:20	Julia Storbeck	2029492
	09/28/2018			09/28/2018 11:24	Julia Storbeck	2029497, 2029498
	09/28/2018			09/28/2018 11:25	Julia Storbeck	2029501
SM 2120 B	09/28/2018			09/28/2018 10:59	DeAsia Armster	2029493
	09/28/2018			09/28/2018 11:00	DeAsia Armster	2029494, 2029499
	09/28/2018			09/28/2018 11:05	DeAsia Armster	2029490
SM 2320 B-97	09/28/2018			10/08/2018 06:40	Dale L. Simmons	2029490
	09/28/2018			10/08/2018 06:49	Dale L. Simmons	2029493
	09/28/2018			10/08/2018 07:13	Dale L. Simmons	2029494
	09/28/2018			10/08/2018 07:20	Dale L. Simmons	2029499
SM 2540 C-97	09/28/2018			10/03/2018 10:51	Yijie Li	2029490, 2029493, 2029494, 2029499
SM 2540 D-97	09/28/2018			10/03/2018 10:51	Yijie Li	2029490, 2029493, 2029494, 2029499
SM 4500 F-C-97	09/28/2018			10/03/2018 13:15	Dale L. Simmons	2029490

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	09/28/2018			10/03/2018 13:25	Dale L. Simmons	2029493
	09/28/2018			10/03/2018 13:35	Dale L. Simmons	2029494
	09/28/2018			10/03/2018 13:43	Dale L. Simmons	2029499
SM 5310 B-00	09/28/2018			10/03/2018 06:56	Megan Treadwell	2029491
	09/28/2018			10/03/2018 07:41	Megan Treadwell	2029495
	09/28/2018			10/03/2018 08:23	Megan Treadwell	2029496
	09/28/2018			10/03/2018 09:22	Megan Treadwell	2029500