

Chemical Analysis Report

SE-DIST-2019-05-23-01

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

Event Description: **SMP- Biscayne**
Request ID: **RQ-2019-04-22-74**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
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2199 South Rock Road
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 18-JUN-2019 11:05

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 few letters of the last 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 group are included in this report: 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: Atlantic Ocean (WBID 8090 ENRG7)

Collection Date/Time: 05/22/2019 09:00

Field ID: G4SE0129

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2088457	EPA 180.1 Rev. 2.0	Turbidity	0.60		NTU	P364477	
	EPA 300.0	Bromide	74		mg Br/L	P364617	
	SM 2320 B-97	Total Alkalinity	115		mg CaCO3/L	P364929	
	SM 2540 D-97	TSS	3	UA	mg/L	P364670	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P364931	
2088462	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P364811	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.17	I	mg N/L	P364910	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P364569	
	EPA 365.1 Rev. 2.0	Total-P	0.007	I	mg P/L	P364826	
	SM 5310 B-00	Organic Carbon	2.0	I	mg C/L	P364644	
2088467	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P364483	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Atlantic Ocean (WBID 8090 ENRG6)

Collection Date/Time: 05/22/2019 09:30

Field ID: G4SE0128

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2088458	EPA 180.1 Rev. 2.0	Turbidity	0.40		NTU	P364477	
	EPA 300.0	Bromide	72		mg Br/L	P364617	
	SM 2320 B-97	Total Alkalinity	122	A	mg CaCO3/L	P364929	
	SM 2540 D-97	TSS	3	U	mg/L	P364670	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P364931	
2088463	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P364811	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.18	I	mg N/L	P364910	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P364569	
	EPA 365.1 Rev. 2.0	Total-P	0.006	I	mg P/L	P364826	
	SM 5310 B-00	Organic Carbon	1.2	I	mg C/L	P365736	
2088468	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P364483	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Atlantic Ocean (WBID 8088 ENRG7)

Collection Date/Time: 05/22/2019 10:30

Field ID: G4SE0103

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2088459	EPA 180.1 Rev. 2.0	Turbidity	0.35		NTU	P364477	
	EPA 300.0	Bromide	74		mg Br/L	P364617	
	SM 2320 B-97	Total Alkalinity	118		mg CaCO3/L	P364929	
	SM 2540 D-97	TSS	3	U	mg/L	P364670	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P364931	
2088464	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P364811	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.18	I	mg N/L	P364910	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P364569	
	EPA 365.1 Rev. 2.0	Total-P	0.006	I	mg P/L	P364826	
	SM 5310 B-00	Organic Carbon	1.7	I	mg C/L	P364644	
2088469	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P364483	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Atlantic Ocean (WBID 8088 ENRG6)

Collection Date/Time: 05/22/2019 11:00

Field ID: G4SE0102

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2088460	EPA 180.1 Rev. 2.0	Turbidity	0.30		NTU	P364477	
	EPA 300.0	Bromide	73		mg Br/L	P364617	
	SM 2320 B-97	Total Alkalinity	121		mg CaCO3/L	P364929	
	SM 2540 D-97	TSS	3	U	mg/L	P364670	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P364931	
2088465	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P364811	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.20	I	mg N/L	P364910	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P364569	
	EPA 365.1 Rev. 2.0	Total-P	0.006	I	mg P/L	P364826	
	SM 5310 B-00	Organic Carbon	1.5	I	mg C/L	P364644	
2088470	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P364483	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Atlantic Ocean (WBID 8088 ENRG6)

Collection Date/Time: 05/22/2019 11:05

Field ID: G4SE0102_DUP

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2088461	EPA 180.1 Rev. 2.0	Turbidity	0.30		NTU	P364477	
	EPA 300.0	Bromide	73		mg Br/L	P364617	
	SM 2320 B-97	Total Alkalinity	121		mg CaCO3/L	P364929	
	SM 2540 D-97	TSS	3	U	mg/L	P364670	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P364931	
2088466	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P364811	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.17	I	mg N/L	P364910	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P364569	
	EPA 365.1 Rev. 2.0	Total-P	0.006	I	mg P/L	P364903	
	SM 5310 B-00	Organic Carbon	1.6	I	mg C/L	P364644	
2088471	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P364483	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Atlantic Ocean (WBID 8088 ENRG6)

Collection Date/Time: 05/22/2019 11:15

Field ID: FB_22052019

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2088472	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P364477	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P364874	
		Sulfate	0.20	U	mg SO4/L	P364875	
	SM 2120 B	Color (true)	2.5	U	PCU	P364480	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P364858	
	SM 2540 C-97	TDS	15	U	mg/L	P364828	
	SM 2540 D-97	TSS	2	U	mg/L	P364668	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P364862	
2088473	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P364814	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P364825	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P364726	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P364831	
	SM 5310 B-00	Organic Carbon	0.52	I	mg C/L	P364797	
2088474	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P364461	

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.

SM 5310 B-00: The result was confirmed on 06/06/2019.

Sample Location: C-111 West

Collection Date/Time: 05/22/2019 15:30

Field ID: G4SE0127

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2088454	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P364476	
	EPA 300.0 Rev. 2.1	Chloride	71		mg Cl/L	P364874	
		Sulfate	3.6		mg SO4/L	P364875	
	SM 2120 B	Color (true)	43		PCU	P364480	
	SM 2320 B-97	Total Alkalinity	210		mg CaCO3/L	P364858	
	SM 2540 C-97	TDS	382	A	mg/L	P364829	
	SM 2540 D-97	TSS	2	IA	mg/L	P364669	
	SM 4500 F-C-97	Fluoride	0.25		mg F/L	P364862	
2088455	EPA 350.1 Rev. 2.0	Ammonia-N	0.17		mg N/L	P364814	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P364825	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.068		mg N/L	P364726	
	EPA 365.1 Rev. 2.0	Total-P	0.01		mg P/L	P364831	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P364643	
2088456	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P364461	

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.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P364476

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P364477

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0
Batch ID: P364617

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364874

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364875

Component	Result	Code	Units
Sulfate	0.20	U	mg SO ₄ /L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364811

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364814

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364825

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364910

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364569

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364726

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364826

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364831

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364903

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364461

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364483

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

Reference Method: SM 2120 B
Batch ID: P364480

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P364858

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P364929

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

Reference Method: SM 2540 C-97
Batch ID: P364828

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P364829

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P364668

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P364669

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P364670

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P364862

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P364931

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P364643

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P364644

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

Reference Method: SM 5310 B-00
Batch ID: P364797

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

Reference Method: SM 5310 B-00
Batch ID: P365736

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0
Batch ID: P364617

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364874

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364875

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364811

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364814

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: P364825

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364910

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: P364569

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	97.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364726

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	99.0		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364826

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.3		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364831

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364903

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364461

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364483

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.9		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P364480

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

Reference Method: SM 2320 B-97
Batch ID: P364858

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	98 - 106

Reference Method: SM 2320 B-97
Batch ID: P364929

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P364862

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.9		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P364931

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.8		P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P364643

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.2		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P364644

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	92.8		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P364797

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	105		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P365736

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0
Batch ID: P364617

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088357	Bromide	97.9	94.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364874

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088391	Chloride	98.4		P	90 - 110
2088541	Chloride	96.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364875

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088391	Sulfate	96.5		P	90 - 110
2088541	Sulfate	98.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364811

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088462	Ammonia-N	104	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364814

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088393	Ammonia-N	107	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364910

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089088	Kjeldahl Nitrogen	103	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364569

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088143	NO2NO3-N	95.4	94.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364726

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088434	NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364826

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088144	Total-P	99.2	99.0	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364831

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088395	Total-P	96.2	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364903

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088466	Total-P	93.2	91.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364461

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088545	O-Phosphate-P	92.3	93.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364483

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088469	O-Phosphate-P	95.8	97.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P364862

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088894	Fluoride	98.4	98.4	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P364643

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088455	Organic Carbon	91.6	94.0	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P364644

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088462	Organic Carbon	92.3	92.6	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P364797

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089104	Organic Carbon	102	104	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P365736

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2093145	Organic Carbon	99.8	100	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P364476

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088357	Turbidity	0.432	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P364477

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088540	Turbidity	3.45	Sample	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P364617

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088357	Bromide	2.91	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364874

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088391	Chloride	0.241	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364875

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088391	Sulfate	0.375	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364811

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088462	Ammonia-N	0.232	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364814

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088393	Ammonia-N	1.24	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364825

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088455	Kjeldahl Nitrogen	4.28	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364910

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089088	Kjeldahl Nitrogen	4.23	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364569

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088143	NO2NO3-N	0.506	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364726

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088434	NO2NO3-N	0.985	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364826

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088144	Total-P	0.245	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364831

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088395	Total-P	2.84	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364903

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088466	Total-P	2.14	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364461

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088545	O-Phosphate-P	0.756	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364483

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088469	O-Phosphate-P	1.45	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P364480

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088390	Color (true)	4.43	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P364858

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088894	Total Alkalinity	0.418	Sample	P	0 - 2.8

Reference Method: SM 2320 B-97
Batch ID: P364929

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088458	Total Alkalinity	0.434	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P364828

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088433	TDS	1.55	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P364829

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088454	TDS	0.262	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P364862

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088894	Fluoride	0.0	Spike	P	0 - 2.5

Reference Method: SM 4500 F-C-97
Batch ID: P364931

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088458	Fluoride	0.513	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P364643

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088455	Organic Carbon	1.33	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P364644

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088462	Organic Carbon	0.257	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P364797

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089104	Organic Carbon	1.61	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P365736

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2093145	Organic Carbon	0.278	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A91629

Included Lab Sample IDs: 2088456, 2088474

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.5	96.5	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A91630

Included Lab Sample IDs: 2088454, 2088457, 2088458, 2088459, 2088460, 2088461, 2088472

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.5	P/P	95 - 105
Turbidity	99.0	100	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A91631

Included Lab Sample IDs: 2088454, 2088472

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	100	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A91632

Included Lab Sample IDs: 2088467, 2088468, 2088469, 2088470, 2088471

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.1	97.7	P/P	90 - 110

Reference Method: EPA 300.0

Run ID: A91648

Included Lab Sample IDs: 2088457, 2088458, 2088459, 2088460, 2088461

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	99.6	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A91682

Included Lab Sample IDs: 2088462, 2088463, 2088464, 2088465, 2088466

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.5	97.0	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A91711

Included Lab Sample IDs: 2088455, 2088462, 2088464, 2088465, 2088466

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.2	95.4	P/P	90 - 110
Organic Carbon	95.4	95.4	P/P	90 - 110
Organic Carbon	95.4	94.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A91740

Included Lab Sample IDs: 2088455, 2088473

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.0	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A91748

Included Lab Sample IDs: 2088454, 2088472

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

Reference Method: SM 5310 B-00

Run ID: A91779

Included Lab Sample IDs: 2088473

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	108	107	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A91783

Included Lab Sample IDs: 2088455, 2088462, 2088463, 2088464, 2088465, 2088466, 2088473

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	101	P/P	90 - 110
Ammonia-N	101	102	P/P	90 - 110
Ammonia-N	104	102	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A91798

Included Lab Sample IDs: 2088454, 2088472

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A91798

Included Lab Sample IDs: 2088454, 2088472

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

Reference Method: SM 2320 B-97

Run ID: A91818

Included Lab Sample IDs: 2088457, 2088458, 2088459, 2088460, 2088461

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

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A91818

Included Lab Sample IDs: 2088457, 2088458, 2088459, 2088460, 2088461

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.1	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A91819

Included Lab Sample IDs: 2088455, 2088462, 2088463, 2088464, 2088465, 2088473

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	100	P/P	90 - 110
Total-P	99.5	99.8	P/P	90 - 110
Total-P	99.8	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A91832

Included Lab Sample IDs: 2088455, 2088473

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.9	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A91839

Included Lab Sample IDs: 2088466

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A91895

Included Lab Sample IDs: 2088462, 2088463, 2088464, 2088465, 2088466

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	97.7	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A92134

Included Lab Sample IDs: 2088463

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	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		Precision	
					LCS	MS
EPA 180.1 Rev. 2.0	Turbidity				0.432	
	Turbidity				3.45	
EPA 300.0	Bromide	100	97.9	94.6		2.91
EPA 300.0 Rev. 2.1	Chloride	98.9	98.4	96.3	0.241	
	Sulfate	98.3	96.5	98.1	0.375	
EPA 350.1 Rev. 2.0	Ammonia-N	97.5	104	104		0.232
	Ammonia-N	101	107	106		1.24
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101				4.28
	Kjeldahl Nitrogen	107	103	98.2		4.23
EPA 353.2 Rev. 2.0	NO2NO3-N	97.5	95.4	94.9		0.506
	NO2NO3-N	99.0	102	101		0.985
EPA 365.1 Rev. 2.0	Total-P	95.3	99.2	99.0		0.245
	Total-P	98.9	96.2	99.0		2.84
	Total-P	99.0	93.2	91.2		2.14
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.5	92.3	93.0		0.756
	O-Phosphate-P	96.9	95.8	97.2		1.45
SM 2120 B	Color (true)	103			4.43	
SM 2320 B-97	Total Alkalinity	105			0.418	
	Total Alkalinity	102			0.434	
SM 2540 C-97	TDS				1.55	
	TDS				0.262	
SM 4500 F-C-97	Fluoride	97.9	98.4	98.4		0.0
	Fluoride	95.8				0.513
SM 5310 B-00	Organic Carbon	93.2	91.6	94.0		1.33
	Organic Carbon	92.8	92.3	92.6		0.257
	Organic Carbon	105	102	104		1.61
	Organic Carbon	101	99.8	100		0.278

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2088454, 2088457, 2088458, 2088459, 2088460, 2088461, 2088472
EPA 300.0 / E31780	Bromide in aqueous matrices	2088457, 2088458, 2088459, 2088460, 2088461
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2088454, 2088472
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2088454, 2088472
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2088455, 2088462, 2088463, 2088464, 2088465, 2088466, 2088473
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2088455, 2088462, 2088463, 2088464, 2088465, 2088466, 2088473
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2088455, 2088462, 2088463, 2088464, 2088465, 2088466, 2088473
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2088455, 2088462, 2088463, 2088464, 2088465, 2088466, 2088473
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2088456, 2088467, 2088468, 2088469, 2088470, 2088471, 2088474
SM 2120 B / E31780	True Color measured at 450 nm	2088454, 2088472
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2088454, 2088457, 2088458, 2088459, 2088460, 2088461, 2088472
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2088454, 2088472
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2088454, 2088457, 2088458, 2088459, 2088460, 2088461, 2088472

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2088454, 2088457, 2088458, 2088459, 2088460, 2088461, 2088472
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2088455, 2088462, 2088463, 2088464, 2088465, 2088466, 2088473

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	05/23/2019			05/23/2019 15:53	Sima Feizi	2088454, 2088457, 2088458, 2088459, 2088460, 2088461, 2088472
EPA 300.0	05/23/2019			05/24/2019 14:22	Lipi Saha	2088457
	05/23/2019			05/24/2019 14:39	Lipi Saha	2088458
	05/23/2019			05/24/2019 14:56	Lipi Saha	2088459
	05/23/2019			05/24/2019 15:13	Lipi Saha	2088460
	05/23/2019			05/24/2019 15:30	Lipi Saha	2088461
EPA 300.0 Rev. 2.1	05/23/2019			05/30/2019 19:07	Lipi Saha	2088454
	05/23/2019			05/30/2019 19:19	Lipi Saha	2088472
EPA 350.1 Rev. 2.0	05/23/2019			05/30/2019 10:38	Ping Hua	2088462
	05/23/2019			05/30/2019 10:42	Ping Hua	2088463
	05/23/2019			05/30/2019 10:50	Ping Hua	2088464
	05/23/2019			05/30/2019 10:51	Ping Hua	2088465
	05/23/2019			05/30/2019 10:53	Ping Hua	2088466
	05/23/2019			05/30/2019 12:31	Ping Hua	2088455
	05/23/2019			05/30/2019 12:32	Ping Hua	2088473
EPA 351.2 Rev. 2.0	05/23/2019	05/31/2019 13:15	Adrian Shelby	06/03/2019 15:19	Joseph Suarez	2088455
	05/23/2019	05/31/2019 13:15	Adrian Shelby	06/03/2019 15:23	Joseph Suarez	2088473
	05/23/2019	06/03/2019 11:50	Jhamieka S. Greenwood	06/05/2019 11:47	Joseph Suarez	2088462
	05/23/2019	06/03/2019 11:50	Jhamieka S. Greenwood	06/05/2019 11:49	Joseph Suarez	2088463
	05/23/2019	06/03/2019 11:50	Jhamieka S. Greenwood	06/05/2019 11:50	Joseph Suarez	2088464
	05/23/2019	06/03/2019 11:50	Jhamieka S. Greenwood	06/05/2019 11:52	Joseph Suarez	2088465
	05/23/2019	06/03/2019 11:50	Jhamieka S. Greenwood	06/05/2019 11:53	Joseph Suarez	2088466
EPA 353.2 Rev. 2.0	05/23/2019			05/28/2019 11:04	Beverly Y. Sanders	2088462
	05/23/2019			05/28/2019 11:05	Beverly Y. Sanders	2088463
	05/23/2019			05/28/2019 11:06	Beverly Y. Sanders	2088464
	05/23/2019			05/28/2019 11:07	Beverly Y. Sanders	2088465
	05/23/2019			05/28/2019 11:08	Beverly Y. Sanders	2088466
	05/23/2019			05/30/2019 09:19	Beverly Y. Sanders	2088455
	05/23/2019			05/30/2019 09:20	Beverly Y. Sanders	2088473
EPA 365.1 Rev. 2.0	05/23/2019	05/31/2019 15:15	Adrian Shelby	06/03/2019 14:37	Julia Storbeck	2088462
	05/23/2019	05/31/2019 15:15	Adrian Shelby	06/03/2019 14:38	Julia Storbeck	2088463
	05/23/2019	05/31/2019 15:15	Adrian Shelby	06/03/2019 14:39	Julia Storbeck	2088464
	05/23/2019	05/31/2019 15:15	Adrian Shelby	06/03/2019 14:47	Julia Storbeck	2088465
	05/23/2019	05/31/2019 15:15	Adrian Shelby	06/03/2019 15:07	Julia Storbeck	2088455
	05/23/2019	05/31/2019 15:15	Adrian Shelby	06/03/2019 15:08	Julia Storbeck	2088473
	05/23/2019	06/03/2019 11:05	Sima Feizi	06/04/2019 12:57	Rosalyn Ballman	2088466
EPA 365.1 Rev. 2.0 dissolved	05/23/2019			05/23/2019 15:17	Jhamieka S. Greenwood	2088456
	05/23/2019			05/23/2019 15:18	Jhamieka S. Greenwood	2088474
	05/23/2019			05/23/2019 16:45	Jhamieka S. Greenwood	2088469

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	05/23/2019			05/23/2019 16:47	Jhamieka S. Greenwood	2088470
	05/23/2019			05/23/2019 16:48	Jhamieka S. Greenwood	2088471
	05/23/2019			05/23/2019 16:50	Jhamieka S. Greenwood	2088467
	05/23/2019			05/23/2019 16:51	Jhamieka S. Greenwood	2088468
SM 2120 B	05/23/2019			05/23/2019 16:15	Madeline Funaro	2088454
	05/23/2019			05/23/2019 16:16	Madeline Funaro	2088472
SM 2320 B-97	05/23/2019			06/01/2019 17:15	Dale L. Simmons	2088454
	05/23/2019			06/01/2019 17:29	Dale L. Simmons	2088472
	05/23/2019			06/02/2019 23:12	Dale L. Simmons	2088458
	05/23/2019			06/02/2019 23:24	Dale L. Simmons	2088457
	05/23/2019			06/02/2019 23:37	Dale L. Simmons	2088459
	05/23/2019			06/03/2019 00:46	Dale L. Simmons	2088460
	05/23/2019			06/03/2019 00:58	Dale L. Simmons	2088461
SM 2540 C-97	05/23/2019			05/28/2019 15:10	Sima Feizi	2088454, 2088472
SM 2540 D-97	05/23/2019			05/28/2019 15:10	Sima Feizi	2088454, 2088457, 2088458, 2088459, 2088460, 2088461, 2088472
SM 4500 F-C-97	05/23/2019			06/01/2019 17:15	Dale L. Simmons	2088454
	05/23/2019			06/01/2019 17:29	Dale L. Simmons	2088472
	05/23/2019			06/02/2019 20:39	Dale L. Simmons	2088458
	05/23/2019			06/02/2019 20:53	Dale L. Simmons	2088457
	05/23/2019			06/02/2019 20:57	Dale L. Simmons	2088459
	05/23/2019			06/02/2019 21:01	Dale L. Simmons	2088460
	05/23/2019			06/02/2019 21:06	Dale L. Simmons	2088461
SM 5310 B-00	05/23/2019			05/28/2019 11:40	Julia Storbeck	2088455
	05/23/2019			05/29/2019 06:42	Julia Storbeck	2088462
	05/23/2019			05/29/2019 07:40	Julia Storbeck	2088464
	05/23/2019			05/29/2019 08:07	Julia Storbeck	2088465
	05/23/2019			05/29/2019 08:50	Julia Storbeck	2088466
	05/23/2019			05/30/2019 20:10	Julia Storbeck	2088473
	05/23/2019			06/15/2019 02:30	Madeline Funaro	2088463