Chemical Analysis Report

NW-DIST-2018-07-18-01

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

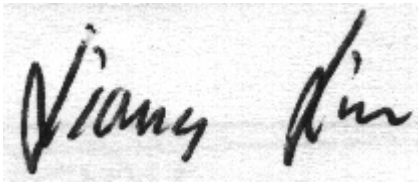
Event Description: **CRESTVIEW**
Request ID: **RQ-2018-07-16-26**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government St
Suite 208A
Pensacola, FL 32502-5794
Attn: Michael King

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: Liang Lin, Environmental Administrator

Date Certified: 07-AUG-2018 12:00



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 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: Green Branch Upstream of Buck Tyner Rd. **Collection Date/Time: 07/17/2018 11:00**

Field ID: G4NW0207 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2008397	EPA 180.1 Rev. 2.0	Turbidity	3.4		NTU	P348692	
	EPA 300.0 Rev. 2.1	Chloride	5.0		mg Cl/L	P349062	
		Sulfate	0.42	I	mg SO4/L	P349065	
	SM 2120 B	Color (true)	81		PCU	P348713	
	SM 2320 B-97	Total Alkalinity	4.6		mg CaCO3/L	P348843	
	SM 2540 C-97	TDS	36		mg/L	P349270	
	SM 2540 D-97	TSS	3	I	mg/L	P349276	
	SM 4500 F-C-97	Fluoride	0.038	I	mg F/L	P348849	
2008404	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P349068	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28		mg N/L	P348847	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.018		mg N/L	P348761	
	EPA 365.1 Rev. 2.0	Total-P	0.031		mg P/L	P349382	
	SM 5310 B-00	Organic Carbon	4.8		mg C/L	P348930	
2008411	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.011		mg P/L	P348686	

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: Green Branch Upstream of Buck Tyner Rd. **Collection Date/Time: 07/17/2018 11:10**

Field ID: G4NW0207_DUP Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2008398	EPA 180.1 Rev. 2.0	Turbidity	3.4		NTU	P348692	
	EPA 300.0 Rev. 2.1	Chloride	5.2		mg Cl/L	P349063	
		Sulfate	0.47	I	mg SO4/L	P349066	
	SM 2120 B	Color (true)	82		PCU	P348713	
	SM 2320 B-97	Total Alkalinity	4.5		mg CaCO3/L	P348843	
	SM 2540 C-97	TDS	34		mg/L	P349270	
	SM 2540 D-97	TSS	4	I	mg/L	P349276	
	SM 4500 F-C-97	Fluoride	0.039	I	mg F/L	P348849	
2008405	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P349068	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.27		mg N/L	P348847	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.017		mg N/L	P348761	
	EPA 365.1 Rev. 2.0	Total-P	0.030		mg P/L	P349382	
	SM 5310 B-00	Organic Carbon	4.7		mg C/L	P348930	
2008412	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.012		mg P/L	P348686	

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: Green Branch Upstream of Buck Tyner Rd. **Collection Date/Time: 07/17/2018 11:20**

Field ID: BLANK_07172018 Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2008418	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P348693	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P349063	
		Sulfate	0.20	U	mg SO4/L	P349066	
	SM 2120 B	Color (true)	2.5	U	PCU	P348714	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P348843	
	SM 2540 C-97	TDS	15	U	mg/L	P349268	
	SM 2540 D-97	TSS	2	U	mg/L	P349274	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P348849	
2008419	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P349069	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P348848	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P348762	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P348982	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P348930	
2008420	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P348687	

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: Oak Creek below Tommy Steel Rd **Collection Date/Time: 07/17/2018 12:05**

Field ID: G4NW0395 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2008399	EPA 180.1 Rev. 2.0	Turbidity	6.9	A	NTU	P348693	
	EPA 300.0 Rev. 2.1	Chloride	3.4		mg Cl/L	P349063	
		Sulfate	2.3		mg SO4/L	P349066	
	SM 2120 B	Color (true)	96		PCU	P348714	
	SM 2320 B-97	Total Alkalinity	4.4		mg CaCO3/L	P348843	
	SM 2540 C-97	TDS	31		mg/L	P349271	
	SM 2540 D-97	TSS	5	I	mg/L	P349277	
	SM 4500 F-C-97	Fluoride	0.040	I	mg F/L	P348849	
2008406	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P349068	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.41		mg N/L	P348847	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.030		mg N/L	P348761	
	EPA 365.1 Rev. 2.0	Total-P	0.041		mg P/L	P348981	
	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P348930	
2008413	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.009	I	mg P/L	P348686	

Sample Location: Hurricane Creek below Hurricane Lake Road **Collection Date/Time: 07/17/2018 12:30**

Field ID: G4NW0160 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2008400	EPA 180.1 Rev. 2.0	Turbidity	4.2		NTU	P348693	
	EPA 300.0 Rev. 2.1	Chloride	2.4		mg Cl/L	P349063	
		Sulfate	0.39	I	mg SO4/L	P349066	
	SM 2120 B	Color (true)	21		PCU	P348714	
	SM 2320 B-97	Total Alkalinity	5.4		mg CaCO3/L	P348843	
	SM 2540 C-97	TDS	23	I	mg/L	P349271	
	SM 2540 D-97	TSS	7	I	mg/L	P349277	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P348849	
2008407	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P349069	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.58		mg N/L	P348847	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P348761	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P348981	
	SM 5310 B-00	Organic Carbon	5.4		mg C/L	P348930	
2008414	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P348686	

Sample Location: Baggett Creek upstream of Hwy 90 **Collection Date/Time: 07/17/2018 13:10**

Field ID: G4NW0336 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2008401	EPA 180.1 Rev. 2.0	Turbidity	4.9		NTU	P348693	
	EPA 300.0 Rev. 2.1	Chloride	3.7		mg Cl/L	P349063	
		Sulfate	0.56	I	mg SO4/L	P349066	
	SM 2120 B	Color (true)	44	A	PCU	P348714	
	SM 2320 B-97	Total Alkalinity	7.5		mg CaCO3/L	P348843	
	SM 2540 C-97	TDS	32		mg/L	P349271	
	SM 2540 D-97	TSS	4	I	mg/L	P349277	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P348849	
2008408	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P349069	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.22		mg N/L	P348847	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.34		mg N/L	P348762	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P348981	
	SM 5310 B-00	Organic Carbon	3.1		mg C/L	P348930	
2008415	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P348686	

Sample Location: Wilkinson Creek upstream of Wilkinson Bluff Road **Collection Date/Time: 07/17/2018 13:30**

Field ID: G4NW0357 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2008402	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P348693	
	EPA 300.0 Rev. 2.1	Chloride	3.4		mg Cl/L	P349063	
		Sulfate	1.0		mg SO4/L	P349066	
	SM 2120 B	Color (true)	24		PCU	P348714	
	SM 2320 B-97	Total Alkalinity	1.6	I	mg CaCO3/L	P348843	
	SM 2540 C-97	TDS	15	U	mg/L	P349271	
	SM 2540 D-97	TSS	4	I	mg/L	P349277	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P348849	
2008409	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P349069	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.15	I	mg N/L	P348848	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.21		mg N/L	P348762	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P348982	
	SM 5310 B-00	Organic Carbon	2.0		mg C/L	P348930	
2008416	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P348687	

Sample Location: Trammel Creek East of Hwy 4 **Collection Date/Time: 07/17/2018 13:55**

Field ID: G4NW0052 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2008403	EPA 180.1 Rev. 2.0	Turbidity	4.7		NTU	P348693	
	EPA 300.0 Rev. 2.1	Chloride	4.2		mg Cl/L	P349063	
		Sulfate	3.2		mg SO4/L	P349066	
	SM 2120 B	Color (true)	62	A	PCU	P348715	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P348843	
	SM 2540 C-97	TDS	39		mg/L	P349271	
	SM 2540 D-97	TSS	6	I	mg/L	P349277	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P348849	
2008410	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P349069	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.26		mg N/L	P348848	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P348762	
	EPA 365.1 Rev. 2.0	Total-P	0.038		mg P/L	P348982	
	SM 5310 B-00	Organic Carbon	4.3		mg C/L	P348930	
2008417	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.019		mg P/L	P348687	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P348692

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P348693

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349062

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349063

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349065

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349066

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349068

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349069

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348847

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348848

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348761

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348762

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348981

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348982

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349382

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348686

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348687

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

Reference Method: SM 2120 B
Batch ID: P348713

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2120 B
Batch ID: P348714

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P348715

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P348843

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

Reference Method: SM 2540 C-97
Batch ID: P349268

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P349270

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P349271

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P349274

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P349276

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P349277

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P348849

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P348930

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349062

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349063

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349065

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349066

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349068

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349069

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348847

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348848

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348761

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348762

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348981

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348982

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349382

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348686

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.1		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348687

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

Reference Method: SM 2120 B
Batch ID: P348713

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	109		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P348714

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	106		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P348715

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P348843

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P348849

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.8		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P348930

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349062

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2006061	Chloride	108		P	90 - 110
2007924	Chloride	98.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349063

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008487	Chloride	105		P	90 - 110
2008502	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349065

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2006061	Sulfate	106		P	90 - 110
2007924	Sulfate	97.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349066

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008487	Sulfate	105		P	90 - 110
2008502	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349068

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008406	Ammonia-N	97.3	99.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349069

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008407	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348847

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008405	Kjeldahl Nitrogen	99.8	98.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348848

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008409	Kjeldahl Nitrogen	106	99.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348761

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348761

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008302	NO2NO3-N	99.2		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348762

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008408	NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348981

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008408	Total-P	95.9	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348982

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008490	Total-P	96.2	95.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349382

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2010617	Total-P	93.1	92.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348686

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008228	O-Phosphate-P	94.9	96.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348687

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008416	O-Phosphate-P	102	99.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P348849

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008487	Fluoride	97.6	97.0	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P348930

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008367	Organic Carbon	101		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P348692

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008296	Turbidity	7.34	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P348693

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008399	Turbidity	4.79	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349062

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007924	Chloride	2.45	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349063

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008487	Chloride	5.84	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349065

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007924	Sulfate	2.30	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349066

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008487	Sulfate	6.71	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349068

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008406	Ammonia-N	1.50	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349069

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008407	Ammonia-N	0.828	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348847

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008405	Kjeldahl Nitrogen	1.40	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348848

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008409	Kjeldahl Nitrogen	6.09	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348761

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008302	NO2NO3-N	0.429	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348762

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008408	NO2NO3-N	0.186	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348981

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008408	Total-P	2.10	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348982

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008490	Total-P	0.837	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349382

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2010617	Total-P	0.770	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348686

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008228	O-Phosphate-P	1.25	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348687

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008416	O-Phosphate-P	2.09	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P348713

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008297	Color (true)	0.238	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P348714

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008401	Color (true)	1.43	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P348715

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008403	Color (true)	2.02	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P348843

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008487	Total Alkalinity	0.776	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P349268

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007831	TDS	5.30	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P349270

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008242	TDS	0.590	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P349271

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008433	TDS	3.25	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 2540 D-97
Batch ID: P349277

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008433	TSS	5.90	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P348849

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008487	Fluoride	0.474	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P348930

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008367	Organic Carbon	0.274	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: A85316
Included Lab Sample IDs: 2008411, 2008412, 2008413, 2008414, 2008415, 2008416, 2008417, 2008420

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.0	98.5	P/P	90 - 110
O-Phosphate-P	98.3	98.0	P/P	90 - 110
O-Phosphate-P	98.6	98.3	P/P	90 - 110
O-Phosphate-P	99.6	98.5	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A85317
Included Lab Sample IDs: 2008397, 2008398, 2008399, 2008400, 2008401, 2008402, 2008403, 2008418

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.0	98.5	P/P	95 - 105
Turbidity	98.5	98.0	P/P	95 - 105

Reference Method: SM 2120 B
Run ID: A85321
Included Lab Sample IDs: 2008397, 2008398, 2008399, 2008400, 2008401, 2008402, 2008403, 2008418

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	105	108	P/P	90 - 115
Color (true)	108	108	P/P	90 - 115
Color (true)	108	109	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A85343
Included Lab Sample IDs: 2008404, 2008405, 2008406, 2008407, 2008408, 2008409, 2008410, 2008419

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.5	99.0	P/P	90 - 110
NO2NO3-N	99.0	98.5	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A85366
Included Lab Sample IDs: 2008397, 2008398, 2008399, 2008400, 2008401, 2008402, 2008403, 2008418

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

Reference Method: SM 4500 F-C-97
Run ID: A85366
Included Lab Sample IDs: 2008397, 2008398, 2008399, 2008400, 2008401, 2008402, 2008403, 2008418

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

Reference Method: SM 5310 B-00
Run ID: A85392
Included Lab Sample IDs: 2008404, 2008405, 2008406, 2008407, 2008408, 2008409, 2008410, 2008419

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.2	97.4	P/P	90 - 110
Organic Carbon	97.4	97.0	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A85405
Included Lab Sample IDs: 2008409, 2008410, 2008419

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.7	95.2	P/P	90 - 110
Kjeldahl Nitrogen	97.3	95.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A85407
Included Lab Sample IDs: 2008404, 2008405, 2008406, 2008407, 2008408

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.2	96.7	P/P	90 - 110
Kjeldahl Nitrogen	96.7	98.0	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A85417
Included Lab Sample IDs: 2008397, 2008398, 2008399, 2008400, 2008401, 2008402, 2008403, 2008418

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	99.2	P/P	90 - 110
Chloride	103	103	P/P	90 - 110
Chloride	99.2	103	P/P	90 - 110
Sulfate	102	99.4	P/P	90 - 110
Sulfate	104	104	P/P	90 - 110
Sulfate	99.4	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A85425
Included Lab Sample IDs: 2008406, 2008407, 2008408, 2008409, 2008410, 2008419

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A85427
Included Lab Sample IDs: 2008404, 2008405, 2008406, 2008407, 2008408, 2008409, 2008410, 2008419

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	102	P/P	90 - 110
Ammonia-N	102	104	P/P	90 - 110
Ammonia-N	102	101	P/P	90 - 110
Ammonia-N	98.6	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A85584
Included Lab Sample IDs: 2008404, 2008405

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	101	P/P	90 - 110
Total-P	101	101	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	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					7.34	
	Turbidity					4.79	
EPA 300.0 Rev. 2.1	Chloride	99.0	98.7	108		2.45	
	Chloride	101	105	103		5.84	
	Sulfate	99.4	97.7	106		2.30	
	Sulfate	100	100	105		6.71	
EPA 350.1 Rev. 2.0	Ammonia-N	102	97.3	99.2			1.50
	Ammonia-N	105	102	103			0.828
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	99.8	98.1			1.40
	Kjeldahl Nitrogen	109	106	99.3			6.09
EPA 353.2 Rev. 2.0	NO2NO3-N	98.0	99.2				0.429
	NO2NO3-N	99.5	98.5				0.186
EPA 365.1 Rev. 2.0	Total-P	99.0	95.9	98.0			2.10
	Total-P	97.8	96.2	95.3			0.837
	Total-P	97.4	93.1	92.3			0.770
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.1	94.9	96.4			1.25
	O-Phosphate-P	99.3	102	99.5			2.09
SM 2120 B	Color (true)	109				0.238	
	Color (true)	106				1.43	
	Color (true)	105				2.02	
SM 2320 B-97	Total Alkalinity	103				0.776	
SM 2540 C-97	TDS					5.30	
	TDS					0.590	
	TDS					3.25	
SM 2540 D-97	TSS					5.90	
SM 4500 F-C-97	Fluoride	97.8	97.6	97.0			0.474
SM 5310 B-00	Organic Carbon	95.2	101				0.274

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2008397, 2008398, 2008399, 2008400, 2008401, 2008402, 2008403, 2008418
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2008397, 2008398, 2008399, 2008400, 2008401, 2008402, 2008403, 2008418
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2008397, 2008398, 2008399, 2008400, 2008401, 2008402, 2008403, 2008418
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2008404, 2008405, 2008406, 2008407, 2008408, 2008409, 2008410, 2008419
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2008404, 2008405, 2008406, 2008407, 2008408, 2008409, 2008410, 2008419
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2008404, 2008405, 2008406, 2008407, 2008408, 2008409, 2008410, 2008419
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2008404, 2008405, 2008406, 2008407, 2008408, 2008409, 2008410, 2008419
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2008411, 2008412, 2008413, 2008414, 2008415, 2008416, 2008417, 2008420
SM 2120 B / E31780	True Color measured at 450 nm	2008397, 2008398, 2008399, 2008400, 2008401, 2008402, 2008403, 2008418
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2008397, 2008398, 2008399, 2008400, 2008401, 2008402, 2008403, 2008418
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2008397, 2008398, 2008399, 2008400, 2008401, 2008402, 2008403, 2008418
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2008397, 2008398, 2008399, 2008400, 2008401, 2008402, 2008403, 2008418

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2008397, 2008398, 2008399, 2008400, 2008401, 2008402, 2008403, 2008418
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2008404, 2008405, 2008406, 2008407, 2008408, 2008409, 2008410, 2008419

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	07/18/2018			07/18/2018 16:18	William L. Brown IV	2008397, 2008398, 2008399, 2008400, 2008401, 2008402, 2008403, 2008418
EPA 300.0 Rev. 2.1	07/18/2018			07/23/2018 18:33	Lipi Saha	2008397
	07/18/2018			07/23/2018 20:33	Lipi Saha	2008398
	07/18/2018			07/23/2018 20:45	Lipi Saha	2008399
	07/18/2018			07/23/2018 20:57	Lipi Saha	2008400
	07/18/2018			07/23/2018 21:09	Lipi Saha	2008401
	07/18/2018			07/23/2018 21:21	Lipi Saha	2008402
	07/18/2018			07/23/2018 21:57	Lipi Saha	2008403
	07/18/2018			07/23/2018 22:09	Lipi Saha	2008418
EPA 350.1 Rev. 2.0	07/18/2018			07/24/2018 09:34	Ping Hua	2008406
	07/18/2018			07/24/2018 09:49	Ping Hua	2008404
	07/18/2018			07/24/2018 09:50	Ping Hua	2008405
	07/18/2018			07/24/2018 10:07	Ping Hua	2008407
	07/18/2018			07/24/2018 10:11	Ping Hua	2008408
	07/18/2018			07/24/2018 10:13	Ping Hua	2008409
	07/18/2018			07/24/2018 10:14	Ping Hua	2008410
	07/18/2018			07/24/2018 10:29	Ping Hua	2008419
EPA 351.2 Rev. 2.0	07/18/2018	07/20/2018 11:00	Adrian Shelby	07/23/2018 11:53	Joseph Suarez	2008409
	07/18/2018	07/20/2018 11:00	Adrian Shelby	07/23/2018 11:57	Joseph Suarez	2008410
	07/18/2018	07/20/2018 11:00	Adrian Shelby	07/23/2018 12:02	Joseph Suarez	2008419
	07/18/2018	07/20/2018 11:00	Adrian Shelby	07/23/2018 13:18	Joseph Suarez	2008404
	07/18/2018	07/20/2018 11:00	Adrian Shelby	07/23/2018 13:23	Joseph Suarez	2008405
	07/18/2018	07/20/2018 11:00	Adrian Shelby	07/23/2018 13:27	Joseph Suarez	2008406
	07/18/2018	07/20/2018 11:00	Adrian Shelby	07/23/2018 13:29	Joseph Suarez	2008407
	07/18/2018	07/20/2018 11:00	Adrian Shelby	07/23/2018 13:30	Joseph Suarez	2008408
EPA 353.2 Rev. 2.0	07/18/2018			07/19/2018 11:59	Lauren Bottorf	2008404
	07/18/2018			07/19/2018 12:00	Lauren Bottorf	2008405
	07/18/2018			07/19/2018 12:05	Lauren Bottorf	2008406
	07/18/2018			07/19/2018 12:06	Lauren Bottorf	2008407
	07/18/2018			07/19/2018 12:13	Lauren Bottorf	2008408
	07/18/2018			07/19/2018 12:19	Lauren Bottorf	2008419
	07/18/2018			07/19/2018 12:20	Lauren Bottorf	2008409
	07/18/2018			07/19/2018 12:21	Lauren Bottorf	2008410
EPA 365.1 Rev. 2.0	07/18/2018	07/23/2018 12:25	Sima Feizi	07/24/2018 11:06	Beverly Y. Sanders	2008406
	07/18/2018	07/23/2018 12:25	Sima Feizi	07/24/2018 11:07	Beverly Y. Sanders	2008407
	07/18/2018	07/23/2018 12:25	Sima Feizi	07/24/2018 11:08	Beverly Y. Sanders	2008408
	07/18/2018	07/23/2018 12:25	Sima Feizi	07/24/2018 11:10	Beverly Y. Sanders	2008419
	07/18/2018	07/23/2018 12:25	Sima Feizi	07/24/2018 11:11	Beverly Y. Sanders	2008409
	07/18/2018	07/23/2018 12:25	Sima Feizi	07/24/2018 11:12	Beverly Y. Sanders	2008410

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	07/18/2018	07/30/2018 11:20	Sima Feizi	07/31/2018 13:47	Beverly Y. Sanders	2008404
	07/18/2018	07/30/2018 11:20	Sima Feizi	07/31/2018 13:55	Beverly Y. Sanders	2008405
EPA 365.1 Rev. 2.0 dissolved	07/18/2018			07/18/2018 15:14	Julia Storbeck	2008416
	07/18/2018			07/18/2018 15:35	Julia Storbeck	2008420
	07/18/2018			07/18/2018 15:37	Julia Storbeck	2008411
	07/18/2018			07/18/2018 15:38	Julia Storbeck	2008412
	07/18/2018			07/18/2018 15:42	Julia Storbeck	2008413
	07/18/2018			07/18/2018 15:53	Julia Storbeck	2008414
	07/18/2018			07/18/2018 15:54	Julia Storbeck	2008415
	07/18/2018			07/18/2018 15:59	Julia Storbeck	2008417
SM 2120 B	07/18/2018			07/18/2018 17:38	Tanya Welborn	2008397
	07/18/2018			07/18/2018 17:39	Tanya Welborn	2008398
	07/18/2018			07/18/2018 17:44	Tanya Welborn	2008399, 2008401
	07/18/2018			07/18/2018 17:45	Tanya Welborn	2008400
	07/18/2018			07/18/2018 17:46	Tanya Welborn	2008402
	07/18/2018			07/18/2018 17:47	Tanya Welborn	2008418
	07/18/2018			07/18/2018 17:55	Tanya Welborn	2008403
SM 2320 B-97	07/18/2018			07/20/2018 04:31	Dale L. Simmons	2008397
	07/18/2018			07/20/2018 04:42	Dale L. Simmons	2008398
	07/18/2018			07/20/2018 04:53	Dale L. Simmons	2008399
	07/18/2018			07/20/2018 05:05	Dale L. Simmons	2008400
	07/18/2018			07/20/2018 05:15	Dale L. Simmons	2008401
	07/18/2018			07/20/2018 05:26	Dale L. Simmons	2008402
	07/18/2018			07/20/2018 05:35	Dale L. Simmons	2008403
	07/18/2018			07/20/2018 05:44	Dale L. Simmons	2008418
SM 2540 C-97	07/18/2018			07/20/2018 14:31	Yijie Li	2008397, 2008398, 2008399, 2008400, 2008401, 2008402, 2008403, 2008418
SM 2540 D-97	07/18/2018			07/20/2018 14:31	Yijie Li	2008397, 2008398, 2008399, 2008400, 2008401, 2008402, 2008403, 2008418
SM 4500 F-C-97	07/18/2018			07/20/2018 04:31	Dale L. Simmons	2008397
	07/18/2018			07/20/2018 04:42	Dale L. Simmons	2008398
	07/18/2018			07/20/2018 04:53	Dale L. Simmons	2008399
	07/18/2018			07/20/2018 05:05	Dale L. Simmons	2008400
	07/18/2018			07/20/2018 05:15	Dale L. Simmons	2008401
	07/18/2018			07/20/2018 05:26	Dale L. Simmons	2008402
	07/18/2018			07/20/2018 05:35	Dale L. Simmons	2008403
	07/18/2018			07/20/2018 05:44	Dale L. Simmons	2008418
SM 5310 B-00	07/18/2018			07/20/2018 06:37	Megan Treadwell	2008404
	07/18/2018			07/20/2018 06:50	Megan Treadwell	2008405
	07/18/2018			07/20/2018 07:05	Megan Treadwell	2008406

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	07/18/2018			07/20/2018 07:18	Megan Treadwell	2008407
	07/18/2018			07/20/2018 07:31	Megan Treadwell	2008408
	07/18/2018			07/20/2018 08:16	Megan Treadwell	2008409
	07/18/2018			07/20/2018 08:33	Megan Treadwell	2008410
	07/18/2018			07/20/2018 08:49	Megan Treadwell	2008419