Chemical Analysis Report

TLH-ROC-2018-05-17-03

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

Event Description: **kit A w/ bacteria**
Request ID: **RQ-2018-05-14-31**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
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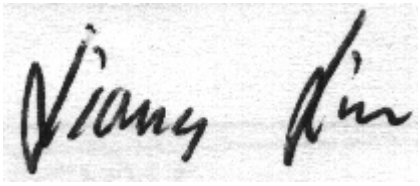
Date Certified: 06-JUN-2018 14:56



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: CHIPOLA RIVER **Collection Date/Time: 05/17/2018 10:30**

Field ID: G2TLHR0011 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1993809	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P345532	
	EPA 300.0 Rev. 2.1	Chloride	5.2	A	mg Cl/L	P345930	
		Sulfate	1.9	A	mg SO4/L	P345933	
	SM 2120 B	Color (true)	4.7	I	PCU	P345591	
	SM 2320 B-97	Total Alkalinity	120		mg CaCO3/L	P345913	
	SM 2540 C-97	TDS	137		mg/L	P345967	
	SM 2540 D-97	TSS	4	I	mg/L	P345808	
	SM 4500 F-C-97	Fluoride	0.063	I	mg F/L	P345916	
1993814	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P345860	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.18	I	mg N/L	P345980	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.6		mg N/L	P345737	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P345664	
	SM 5310 B-00	Organic Carbon	1.2		mg C/L	P345777	
1993819	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.009	I	mg P/L	P345600	

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: CHIPOLA RIVER @ MAGNOLIA R **Collection Date/Time: 05/17/2018 11:35**

Field ID: G2TLHR0016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1993810	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P345532	
	EPA 300.0 Rev. 2.1	Chloride	5.5		mg Cl/L	P345930	
		Sulfate	1.6		mg SO4/L	P345933	
	SM 2120 B	Color (true)	4.5	I	PCU	P345591	
	SM 2320 B-97	Total Alkalinity	129		mg CaCO3/L	P345913	
	SM 2540 C-97	TDS	157		mg/L	P345967	
	SM 2540 D-97	TSS	2	I	mg/L	P345808	
	SM 4500 F-C-97	Fluoride	0.047	I	mg F/L	P345916	
1993815	EPA 350.1 Rev. 2.0	Ammonia-N	0.042		mg N/L	P345860	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.34		mg N/L	P345980	
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.1		mg N/L	P345737	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P345664	
	SM 5310 B-00	Organic Carbon	1.1		mg C/L	P345777	
1993820	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.014		mg P/L	P345600	

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: BLUE HOLE SPRING @ CAVERN **Collection Date/Time: 05/17/2018 12:15**

Field ID: G2TLHR0009 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1993811	EPA 180.1 Rev. 2.0	Turbidity	3.5		NTU	P345532	

Field ID: G2TLHR0009 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1993811	EPA 300.0 Rev. 2.1	Chloride	3.5		mg Cl/L	P345930	
		Sulfate	1.1		mg SO4/L	P345933	
	SM 2120 B	Color (true)	3.9	I	PCU	P345591	
	SM 2320 B-97	Total Alkalinity	158		mg CaCO3/L	P345913	
	SM 2540 C-97	TDS	159		mg/L	P345967	
	SM 2540 D-97	TSS	6	I	mg/L	P345808	
	SM 4500 F-C-97	Fluoride	0.070	I	mg F/L	P345916	
1993816	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P345852	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36		mg N/L	P345980	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P345737	
	EPA 365.1 Rev. 2.0	Total-P	0.030		mg P/L	P345664	
	SM 5310 B-00	Organic Carbon	1.7		mg C/L	P345777	
1993821	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P345600	

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: MARSHALL CREEK @ SR2 **Collection Date/Time: 05/17/2018 12:50**

Field ID: G2TLHR0007 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1993812	EPA 180.1 Rev. 2.0	Turbidity	9.7		NTU	P345532	
	EPA 300.0 Rev. 2.1	Chloride	5.2		mg Cl/L	P345930	
		Sulfate	1.2		mg SO4/L	P345933	
	SM 2120 B	Color (true)	17		PCU	P345591	
	SM 2320 B-97	Total Alkalinity	93		mg CaCO3/L	P345913	
	SM 2540 C-97	TDS	122		mg/L	P345967	
	SM 2540 D-97	TSS	10		mg/L	P345808	
	SM 4500 F-C-97	Fluoride	0.047	I	mg F/L	P345916	
1993817	EPA 350.1 Rev. 2.0	Ammonia-N	0.031		mg N/L	P345852	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.38		mg N/L	P345980	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.3		mg N/L	P345737	
	EPA 365.1 Rev. 2.0	Total-P	0.053		mg P/L	P345664	
	SM 5310 B-00	Organic Carbon	2.0		mg C/L	P345778	
1993822	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.026		mg P/L	P345600	

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: RUSS MILL CREEK @ UNION RD **Collection Date/Time: 05/17/2018 13:15**

Field ID: G2TLHR0037 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1993813	EPA 180.1 Rev. 2.0	Turbidity	4.2		NTU	P345532	
	EPA 300.0 Rev. 2.1	Chloride	5.0		mg Cl/L	P345930	
		Sulfate	2.2		mg SO4/L	P345933	

Field ID: G2TLHR0037 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1993813	SM 2120 B	Color (true)	11	A	PCU	P345594	
	SM 2320 B-97	Total Alkalinity	124		mg CaCO3/L	P345913	
	SM 2540 C-97	TDS	160		mg/L	P345967	
	SM 2540 D-97	TSS	6	IA	mg/L	P345809	
	SM 4500 F-C-97	Fluoride	0.057	I	mg F/L	P345916	
1993818	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P345852	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.31		mg N/L	P345980	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.6		mg N/L	P345737	
	EPA 365.1 Rev. 2.0	Total-P	0.045		mg P/L	P345664	
	SM 5310 B-00	Organic Carbon	1.5		mg C/L	P345778	
1993823	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.024		mg P/L	P345600	

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.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P345532

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345930

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345933

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345852

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345860

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345980

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: P345737

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345664

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345600

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

Reference Method: SM 2120 B
Batch ID: P345591

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P345594

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P345913

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

Reference Method: SM 2540 C-97
Batch ID: P345967

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P345808

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P345809

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P345916

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P345777

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

Reference Method: SM 5310 B-00
Batch ID: P345778

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: P345930

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345933

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345852

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345860

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: P345980

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345737

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345737

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345664

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345600

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

Reference Method: SM 2320 B-97
Batch ID: P345913

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P345916

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.4		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P345777

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.9		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P345778

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.9		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345930

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993809	Chloride	99.7		P	90 - 110
1993872	Chloride	97.8		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345933

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993809	Sulfate	101		P	90 - 110
1993872	Sulfate	98.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345852

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993816	Ammonia-N	99.8	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345860

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993566	Ammonia-N	98.3	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345980

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993818	Kjeldahl Nitrogen	106	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345737

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993802	NO2NO3-N	99.6	99.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345664

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993816	Total-P	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345600

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993755	O-Phosphate-P	99.5	98.9	P/P	90 - 110

Reference Method: SM 5310 B-00
Batch ID: P345777

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993428	Organic Carbon	94.0	96.1	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P345778

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993817	Organic Carbon	94.8	95.6	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P345532

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993753	Turbidity	8.98	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345930

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993809	Chloride	2.06	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993809	Sulfate	1.35	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345852

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993816	Ammonia-N	1.87	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345860

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993566	Ammonia-N	1.96	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345980

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993818	Kjeldahl Nitrogen	0.916	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345737

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993802	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345664

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993816	Total-P	1.15	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345600

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993755	O-Phosphate-P	0.605	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P345591

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993753	Color (true)	0.934	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P345594

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993813	Color (true)	2.86	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P345913

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993851	Total Alkalinity	1.14	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P345967

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993799	TDS	5.26	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P345916

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993851	Fluoride	0.469	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P345777

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993428	Organic Carbon	1.49	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P345778

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993817	Organic Carbon	0.713	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 180.1 Rev. 2.0
Run ID: A83984
Included Lab Sample IDs: 1993809, 1993810, 1993811, 1993812, 1993813

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

Reference Method: SM 2120 B
Run ID: A84019
Included Lab Sample IDs: 1993809, 1993810, 1993811, 1993812, 1993813

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	103	P/P	90 - 115
Color (true)	99.3	100	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A84023
Included Lab Sample IDs: 1993819, 1993820, 1993821, 1993822, 1993823

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.1	100	P/P	90 - 110
O-Phosphate-P	99.5	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A84061
Included Lab Sample IDs: 1993809, 1993810, 1993811, 1993812, 1993813

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.3	103	P/P	90 - 110
Sulfate	99.0	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A84080
Included Lab Sample IDs: 1993814, 1993815, 1993816, 1993817, 1993818

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

Reference Method: SM 5310 B-00
Run ID: A84096
Included Lab Sample IDs: 1993814, 1993815, 1993816, 1993817, 1993818

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.3	96.4	P/P	90 - 110
Organic Carbon	96.4	96.6	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A84126
Included Lab Sample IDs: 1993816, 1993817, 1993818

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.2	99.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A84130
Included Lab Sample IDs: 1993814, 1993815

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.8	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A84131
Included Lab Sample IDs: 1993817

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A84134
Included Lab Sample IDs: 1993814, 1993815, 1993816, 1993818

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

Reference Method: SM 2320 B-97
Run ID: A84146
Included Lab Sample IDs: 1993809, 1993810, 1993811, 1993812, 1993813

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.3	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A84146
Included Lab Sample IDs: 1993809, 1993810, 1993811, 1993812, 1993813

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A84200
Included Lab Sample IDs: 1993814, 1993815, 1993816, 1993817, 1993818

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.0	97.8	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					8.98	
EPA 300.0 Rev. 2.1	Chloride	99.9	99.7	97.8		2.06	
	Sulfate	100	101	98.9		1.35	
EPA 350.1 Rev. 2.0	Ammonia-N	99.8	99.8	102			1.87
	Ammonia-N	101	98.3	101			1.96
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	106	105			0.916
EPA 353.2 Rev. 2.0	NO2NO3-N	102	99.6	99.6			0.0
EPA 365.1 Rev. 2.0	Total-P	99.4	102	101			1.15
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	99.5	98.9			0.605
SM 2120 B	Color (true)					0.934	
	Color (true)					2.86	
SM 2320 B-97	Total Alkalinity	102				1.14	
SM 2540 C-97	TDS					5.26	
SM 4500 F-C-97	Fluoride	96.4					0.469
SM 5310 B-00	Organic Carbon	94.9	94.0	96.1			1.49
	Organic Carbon	94.9	94.8	95.6			0.713

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1993809, 1993810, 1993811, 1993812, 1993813
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1993809, 1993810, 1993811, 1993812, 1993813
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1993809, 1993810, 1993811, 1993812, 1993813
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1993814, 1993815, 1993816, 1993817, 1993818
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1993814, 1993815, 1993816, 1993817, 1993818
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1993814, 1993815, 1993816, 1993817, 1993818
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1993814, 1993815, 1993816, 1993817, 1993818
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1993819, 1993820, 1993821, 1993822, 1993823
SM 2120 B / E31780	True Color measured at 450 nm	1993809, 1993810, 1993811, 1993812, 1993813
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1993809, 1993810, 1993811, 1993812, 1993813
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1993809, 1993810, 1993811, 1993812, 1993813
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	1993809, 1993810, 1993811, 1993812, 1993813
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1993809, 1993810, 1993811, 1993812, 1993813
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1993814, 1993815, 1993816, 1993817, 1993818

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	05/17/2018			05/17/2018 17:09	William L. Brown IV	1993809, 1993810, 1993811, 1993812, 1993813
EPA 300.0 Rev. 2.1	05/17/2018			05/23/2018 20:54	Lipi Saha	1993809
	05/17/2018			05/23/2018 21:41	Lipi Saha	1993810
	05/17/2018			05/23/2018 21:53	Lipi Saha	1993811
	05/17/2018			05/23/2018 22:05	Lipi Saha	1993812
	05/17/2018			05/23/2018 22:17	Lipi Saha	1993813
EPA 350.1 Rev. 2.0	05/17/2018			05/22/2018 11:45	Ping Hua	1993816
	05/17/2018			05/22/2018 11:49	Ping Hua	1993817
	05/17/2018			05/22/2018 11:51	Ping Hua	1993818
	05/17/2018			05/23/2018 14:18	Ping Hua	1993814
	05/17/2018			05/23/2018 14:20	Ping Hua	1993815
EPA 351.2 Rev. 2.0	05/17/2018	05/25/2018 11:00	Adrian Shelby	05/29/2018 11:51	Joseph Suarez	1993814
	05/17/2018	05/25/2018 11:00	Adrian Shelby	05/29/2018 11:53	Joseph Suarez	1993815
	05/17/2018	05/25/2018 11:00	Adrian Shelby	05/29/2018 11:55	Joseph Suarez	1993816
	05/17/2018	05/25/2018 11:00	Adrian Shelby	05/29/2018 11:56	Joseph Suarez	1993817
	05/17/2018	05/25/2018 11:00	Adrian Shelby	05/29/2018 11:58	Joseph Suarez	1993818
EPA 353.2 Rev. 2.0	05/17/2018			05/22/2018 14:21	Lauren Bottorf	1993814
	05/17/2018			05/22/2018 14:22	Lauren Bottorf	1993815
	05/17/2018			05/22/2018 14:24	Lauren Bottorf	1993816
	05/17/2018			05/22/2018 14:25	Lauren Bottorf	1993817
	05/17/2018			05/22/2018 14:26	Lauren Bottorf	1993818
EPA 365.1 Rev. 2.0	05/17/2018	05/21/2018 13:05	Sima Feizi	05/23/2018 13:31	Beverly Y. Sanders	1993817
	05/17/2018	05/21/2018 13:05	Sima Feizi	05/24/2018 09:47	Beverly Y. Sanders	1993814
	05/17/2018	05/21/2018 13:05	Sima Feizi	05/24/2018 09:48	Beverly Y. Sanders	1993815
	05/17/2018	05/21/2018 13:05	Sima Feizi	05/24/2018 09:49	Beverly Y. Sanders	1993816
	05/17/2018	05/21/2018 13:05	Sima Feizi	05/24/2018 09:50	Beverly Y. Sanders	1993818
EPA 365.1 Rev. 2.0 dissolved	05/17/2018			05/18/2018 15:14	Megan Treadwell	1993820
	05/17/2018			05/18/2018 15:15	Megan Treadwell	1993821
	05/17/2018			05/18/2018 15:16	Megan Treadwell	1993822
	05/17/2018			05/18/2018 15:17	Megan Treadwell	1993823
	05/17/2018			05/18/2018 15:51	Megan Treadwell	1993819
SM 2120 B	05/17/2018			05/18/2018 15:30	Tanya Welborn	1993809
	05/17/2018			05/18/2018 15:31	Tanya Welborn	1993810
	05/17/2018			05/18/2018 15:32	Tanya Welborn	1993811, 1993812
	05/17/2018			05/18/2018 16:02	Tanya Welborn	1993813
SM 2320 B-97	05/17/2018			05/24/2018 05:43	Dale L. Simmons	1993809
	05/17/2018			05/24/2018 05:54	Dale L. Simmons	1993810
	05/17/2018			05/24/2018 06:05	Dale L. Simmons	1993811
	05/17/2018			05/24/2018 06:15	Dale L. Simmons	1993812

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	05/17/2018			05/24/2018 06:24	Dale L. Simmons	1993813
SM 2540 C-97	05/17/2018			05/18/2018 16:00	William L. Brown IV	1993809, 1993810, 1993811, 1993812, 1993813
SM 2540 D-97	05/17/2018			05/18/2018 16:00	William L. Brown IV	1993809, 1993810, 1993811, 1993812, 1993813
SM 4500 F-C-97	05/17/2018			05/24/2018 05:43	Dale L. Simmons	1993809
	05/17/2018			05/24/2018 05:54	Dale L. Simmons	1993810
	05/17/2018			05/24/2018 06:05	Dale L. Simmons	1993811
	05/17/2018			05/24/2018 06:15	Dale L. Simmons	1993812
	05/17/2018			05/24/2018 06:24	Dale L. Simmons	1993813
SM 5310 B-00	05/17/2018			05/21/2018 22:53	Megan Treadwell	1993814
	05/17/2018			05/21/2018 23:09	Megan Treadwell	1993815
	05/17/2018			05/21/2018 23:27	Megan Treadwell	1993816
	05/17/2018			05/22/2018 00:14	Megan Treadwell	1993817
	05/17/2018			05/22/2018 01:43	Megan Treadwell	1993818