Chemical Analysis Report

TLH-ROC-2018-04-23-01

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-2018-04-09-52**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
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2600 Blair Stone Rd
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 10-MAY-2018 13:37

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: MIDDLE OF LAKE FRANCIS **Collection Date/Time: 04/23/2018 11:30**

Field ID: G1TLHR0045 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1986574	EPA 180.1 Rev. 2.0	Turbidity	2.7	A	NTU	P343999	
	EPA 300.0 Rev. 2.1	Chloride	1.8		mg Cl/L	P344132	
		Sulfate	1.6		mg SO4/L	P344134	
	SM 2120 B	Color (true)	7.3		PCU	P343963	
	SM 2320 B-97	Total Alkalinity	68		mg CaCO3/L	P344517	
	SM 2540 C-97	TDS	104		mg/L	P344413	
	SM 2540 D-97	TSS	4	I	mg/L	P344404	
	SM 4500 F-C-97	Fluoride	0.059	I	mg F/L	P344456	
1986579	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P344184	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.63		mg N/L	P34989	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P344119	
	EPA 365.1 Rev. 2.0	Total-P	0.056		mg P/L	P344041	
	SM 5310 B-00	Organic Carbon	5.8		mg C/L	P344289	
1986584	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P343969	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: JUMPING GULLEY CREEK **Collection Date/Time: 04/23/2018 12:20**

Field ID: G1TLHR0033 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1986575	EPA 180.1 Rev. 2.0	Turbidity	6.6		NTU	P343999	
	EPA 300.0 Rev. 2.1	Chloride	6.8		mg Cl/L	P344132	
		Sulfate	5.0		mg SO4/L	P344134	
	SM 2120 B	Color (true)	100	A	PCU	P343963	
	SM 2320 B-97	Total Alkalinity	8.5		mg CaCO3/L	P344517	
	SM 2540 C-97	TDS	64		mg/L	P344413	
	SM 2540 D-97	TSS	4	I	mg/L	P344404	
	SM 4500 F-C-97	Fluoride	0.18		mg F/L	P344456	
1986580	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P344184	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.71	J	mg N/L	P34989	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.57		mg N/L	P344119	
	EPA 365.1 Rev. 2.0	Total-P	0.42		mg P/L	P344041	
	SM 5310 B-00	Organic Carbon	9.9		mg C/L	P344289	
1986585	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.31		mg P/L	P343969	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
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: Refer to the narrative for an explanation of QC Codes.

Sample Location: LITTLE ALAPAHA RIVER **Collection Date/Time: 04/23/2018 13:00**

Field ID: G1TLHR0037 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1986576	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P343999	
	EPA 300.0 Rev. 2.1	Chloride	9.4		mg Cl/L	P344132	
		Sulfate	0.38	I	mg SO4/L	P344134	
	SM 2120 B	Color (true)	510		PCU	P343963	
	SM 2320 B-97	Total Alkalinity	2.0	I	mg CaCO3/L	P344517	
	SM 2540 C-97	TDS	111		mg/L	P344413	
	SM 2540 D-97	TSS	2	I	mg/L	P344404	
	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P344456	
1986581	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P344184	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P344216	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P344119	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P344041	
	SM 5310 B-00	Organic Carbon	60		mg C/L	P344289	
1986586	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.12		mg P/L	P343969	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: SUGAR CREEK @ SUWANNEE RIV **Collection Date/Time: 04/23/2018 13:30**

Field ID: G1TLHR0047 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1986577	EPA 180.1 Rev. 2.0	Turbidity	7.6		NTU	P343999	
	EPA 300.0 Rev. 2.1	Chloride	9.1		mg Cl/L	P344132	
		Sulfate	6.6		mg SO4/L	P344134	
	SM 2120 B	Color (true)	170		PCU	P343963	
	SM 2320 B-97	Total Alkalinity	36		mg CaCO3/L	P344517	
	SM 2540 C-97	TDS	92		mg/L	P344413	
	SM 2540 D-97	TSS	8	I	mg/L	P344404	
	SM 4500 F-C-97	Fluoride	0.47		mg F/L	P344456	
1986582	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P344184	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.66		mg N/L	P34989	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.30		mg N/L	P344119	
	EPA 365.1 Rev. 2.0	Total-P	0.90		mg P/L	P344042	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P344289	
1986587	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.68		mg P/L	P343969	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: BETHEL CREEK @ MILL CREEK **Collection Date/Time: 04/23/2018 14:20**

Field ID: G1TLHR0062 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1986578	EPA 180.1 Rev. 2.0	Turbidity	5.9		NTU	P343999	

Field ID: G1TLHR0062 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1986578	EPA 300.0 Rev. 2.1	Chloride	4.4		mg Cl/L	P344132	
		Sulfate	1.0		mg SO4/L	P344134	
	SM 2120 B	Color (true)	810		PCU	P343963	
	SM 2320 B-97	Total Alkalinity	21		mg CaCO3/L	P344517	
	SM 2540 C-97	TDS	153		mg/L	P344413	
	SM 2540 D-97	TSS	4	IA	mg/L	P344404	
	SM 4500 F-C-97	Fluoride	0.047	I	mg F/L	P344456	
1986583	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P344184	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P344216	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.030		mg N/L	P344119	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P344042	
	SM 5310 B-00	Organic Carbon	61		mg C/L	P344290	
1986588	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.012		mg P/L	P343969	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 5310 B-00: 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: P343999

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344132

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344134

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344184

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P344216

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: P34989

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344119

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344041

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344042

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343969

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

Reference Method: SM 2120 B
Batch ID: P343963

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P344517

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

Reference Method: SM 2540 C-97
Batch ID: P344413

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P344404

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P344456

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P344289

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

Reference Method: SM 5310 B-00
Batch ID: P344290

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: P344132

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344134

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344184

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P344216

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P34989

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: P344119

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: P344119

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344041

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344042

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343969

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.2		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P344517

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

Reference Method: SM 4500 F-C-97
Batch ID: P344456

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.2		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P344289

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

Reference Method: SM 5310 B-00
Batch ID: P344290

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344132

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344132

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1986502	Chloride	95.1		P	90 - 110
1986606	Chloride	95.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344134

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1986606	Sulfate	90.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344184

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1986579	Ammonia-N	100	98.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P344216

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1987202	Kjeldahl Nitrogen	98.6	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P34989

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1986580	Kjeldahl Nitrogen	89.7	96.3	F/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344119

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1986579	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344041

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1986503	Total-P	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344042

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1986607	Total-P	103	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343969

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1986584	O-Phosphate-P	98.9	100	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P344456

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1986604	Fluoride	94.7	95.2	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P344289

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1986322	Organic Carbon	101		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P343999

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986574	Turbidity	1.83	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344132

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986502	Chloride	0.464	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344134

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986502	Sulfate	0.610	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344184

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986579	Ammonia-N	1.60	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P344216

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987202	Kjeldahl Nitrogen	1.85	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P34989

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P34989

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986580	Kjeldahl Nitrogen	4.35	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344119

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986579	NO2NO3-N	0.489	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344041

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986503	Total-P	0.173	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344042

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986607	Total-P	0.968	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343969

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986584	O-Phosphate-P	1.12	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P343963

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986575	Color (true)	1.17	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P344517

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986604	Total Alkalinity	0.603	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P344413

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986794	TDS	2.44	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P344456

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986604	Fluoride	0.479	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P344289

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986322	Organic Carbon	0.376	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P344290

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986583	Organic Carbon	0.174	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 300.0 Rev. 2.1
Run ID: A83415
Included Lab Sample IDs: 1986574, 1986575, 1986576, 1986577, 1986578

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	103	P/P	90 - 110
Chloride	105	102	P/P	90 - 110
Sulfate	101	103	P/P	90 - 110
Sulfate	104	101	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A83425
Included Lab Sample IDs: 1986574, 1986575, 1986576, 1986577, 1986578

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	102	P/P	90 - 115
Color (true)	98.2	101	P/P	90 - 115
Color (true)	99.4	100	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A83428
Included Lab Sample IDs: 1986584, 1986585, 1986586, 1986587, 1986588

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.8	96.8	P/P	90 - 110
O-Phosphate-P	98.0	98.2	P/P	90 - 110
O-Phosphate-P	99.0	99.4	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A83437
Included Lab Sample IDs: 1986574, 1986575, 1986576, 1986577, 1986578

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.0	99.5	P/P	95 - 105

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A83467
Included Lab Sample IDs: 1986579, 1986580, 1986582

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.6	95.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A83479
Included Lab Sample IDs: 1986579, 1986580, 1986581, 1986582, 1986583

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A83494
Included Lab Sample IDs: 1986579, 1986580, 1986581, 1986582, 1986583

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A83513
Included Lab Sample IDs: 1986579, 1986583

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

Reference Method: SM 5310 B-00
Run ID: A83539
Included Lab Sample IDs: 1986579, 1986580, 1986581, 1986582, 1986583

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.3	98.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A83540
Included Lab Sample IDs: 1986580, 1986581, 1986582

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	103	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A83543
Included Lab Sample IDs: 1986581, 1986583

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A83543
Included Lab Sample IDs: 1986581, 1986583

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A83593
Included Lab Sample IDs: 1986574, 1986575, 1986576, 1986577, 1986578

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

Reference Method: SM 2320 B-97
Run ID: A83608
Included Lab Sample IDs: 1986574, 1986575, 1986576, 1986577, 1986578

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.7	P/P	90 - 110
Total Alkalinity	99.7	103	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					1.83	
EPA 300.0 Rev. 2.1	Chloride	97.7	95.1	95.9		0.464	
	Sulfate	97.7	90.6			0.610	
EPA 350.1 Rev. 2.0	Ammonia-N	102	100	98.3			1.60
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	110	98.6	102			1.85
	Kjeldahl Nitrogen	103	89.7	96.3			4.35
EPA 353.2 Rev. 2.0	NO2NO3-N	99.0	102	102			0.489
EPA 365.1 Rev. 2.0	Total-P	103	101	101			0.173
	Total-P	102	103	104			0.968
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.2	98.9	100			1.12
SM 2120 B	Color (true)					1.17	
SM 2320 B-97	Total Alkalinity	102				0.603	
SM 2540 C-97	TDS					2.44	
SM 4500 F-C-97	Fluoride	95.2	94.7	95.2			0.479
SM 5310 B-00	Organic Carbon	96.1	101				0.376
	Organic Carbon	96.6					0.174

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1986574, 1986575, 1986576, 1986577, 1986578

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1986574, 1986575, 1986576, 1986577, 1986578
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1986574, 1986575, 1986576, 1986577, 1986578
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1986579, 1986580, 1986581, 1986582, 1986583
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1986579, 1986580, 1986581, 1986582, 1986583
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1986579, 1986580, 1986581, 1986582, 1986583
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1986579, 1986580, 1986581, 1986582, 1986583
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1986584, 1986585, 1986586, 1986587, 1986588
SM 2120 B / E31780	True Color measured at 450 nm	1986574, 1986575, 1986576, 1986577, 1986578
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1986574, 1986575, 1986576, 1986577, 1986578
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1986574, 1986575, 1986576, 1986577, 1986578
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1986574, 1986575, 1986576, 1986577, 1986578
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1986574, 1986575, 1986576, 1986577, 1986578
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1986579, 1986580, 1986581, 1986582, 1986583

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	04/23/2018			04/24/2018 16:04	William L. Brown IV	1986574, 1986575, 1986576, 1986577, 1986578
EPA 300.0 Rev. 2.1	04/23/2018			04/25/2018 15:11	Lipi Saha	1986574
	04/23/2018			04/25/2018 15:23	Lipi Saha	1986575
	04/23/2018			04/25/2018 15:59	Lipi Saha	1986576
	04/23/2018			04/25/2018 16:11	Lipi Saha	1986577
	04/23/2018			04/25/2018 16:23	Lipi Saha	1986578
EPA 350.1 Rev. 2.0	04/23/2018			04/25/2018 12:01	Ping Hua	1986579
	04/23/2018			04/25/2018 12:11	Ping Hua	1986580
	04/23/2018			04/25/2018 12:13	Ping Hua	1986581
	04/23/2018			04/25/2018 12:14	Ping Hua	1986582
	04/23/2018			04/25/2018 12:16	Ping Hua	1986583
EPA 351.2 Rev. 2.0	04/23/2018	04/25/2018 10:20	Adrian Shelby	04/25/2018 16:07	Tanya Welborn	1986579
	04/23/2018	04/25/2018 10:20	Adrian Shelby	04/25/2018 16:09	Tanya Welborn	1986580
	04/23/2018	04/25/2018 10:20	Adrian Shelby	04/25/2018 16:15	Tanya Welborn	1986582
	04/23/2018	04/27/2018 11:00	Adrian Shelby	04/30/2018 10:03	Joseph Suarez	1986581
	04/23/2018	04/27/2018 11:00	Adrian Shelby	04/30/2018 10:04	Joseph Suarez	1986583
EPA 353.2 Rev. 2.0	04/23/2018			04/26/2018 11:08	Lauren Bottorf	1986579
	04/23/2018			04/26/2018 11:15	Lauren Bottorf	1986580
	04/23/2018			04/26/2018 11:17	Lauren Bottorf	1986581
	04/23/2018			04/26/2018 11:18	Lauren Bottorf	1986582
	04/23/2018			04/26/2018 11:19	Lauren Bottorf	1986583
EPA 365.1 Rev. 2.0	04/23/2018	04/25/2018 13:20	Sima Feizi	04/27/2018 13:15	Beverly Y. Sanders	1986579
	04/23/2018	04/25/2018 13:20	Sima Feizi	04/27/2018 13:24	Beverly Y. Sanders	1986583
	04/23/2018	04/25/2018 13:20	Sima Feizi	04/30/2018 10:34	Beverly Y. Sanders	1986580
	04/23/2018	04/25/2018 13:20	Sima Feizi	04/30/2018 10:35	Beverly Y. Sanders	1986581
	04/23/2018	04/25/2018 13:20	Sima Feizi	04/30/2018 10:42	Beverly Y. Sanders	1986582
EPA 365.1 Rev. 2.0 dissolved	04/23/2018			04/24/2018 14:25	Megan Treadwell	1986584
	04/23/2018			04/24/2018 14:50	Megan Treadwell	1986586
	04/23/2018			04/24/2018 14:52	Megan Treadwell	1986588
	04/23/2018			04/24/2018 15:18	Megan Treadwell	1986585
	04/23/2018			04/24/2018 15:19	Megan Treadwell	1986587
SM 2120 B	04/23/2018			04/24/2018 15:01	Tanya Welborn	1986574
	04/23/2018			04/24/2018 15:03	Tanya Welborn	1986575
	04/23/2018			04/24/2018 15:30	Tanya Welborn	1986576, 1986577
	04/23/2018			04/24/2018 15:33	Tanya Welborn	1986578
SM 2320 B-97	04/23/2018			05/02/2018 20:16	Dale L. Simmons	1986574
	04/23/2018			05/02/2018 20:23	Dale L. Simmons	1986575
	04/23/2018			05/02/2018 20:51	Dale L. Simmons	1986576
	04/23/2018			05/02/2018 20:59	Dale L. Simmons	1986577

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	04/23/2018			05/02/2018 21:07	Dale L. Simmons	1986578
SM 2540 C-97	04/23/2018			04/26/2018 14:20	Yijie Li	1986574, 1986575, 1986576, 1986577, 1986578
SM 2540 D-97	04/23/2018			04/26/2018 14:20	Yijie Li	1986574, 1986575, 1986576, 1986577, 1986578
SM 4500 F-C-97	04/23/2018			05/02/2018 02:50	Dale L. Simmons	1986574
	04/23/2018			05/02/2018 03:00	Dale L. Simmons	1986575
	04/23/2018			05/02/2018 03:10	Dale L. Simmons	1986576
	04/23/2018			05/02/2018 03:20	Dale L. Simmons	1986577
	04/23/2018			05/02/2018 03:56	Dale L. Simmons	1986578
SM 5310 B-00	04/23/2018			04/28/2018 01:00	Julia Storbeck	1986579
	04/23/2018			04/28/2018 01:15	Julia Storbeck	1986580
	04/23/2018			04/28/2018 01:30	Julia Storbeck	1986581
	04/23/2018			04/28/2018 01:46	Julia Storbeck	1986582
	04/23/2018			04/28/2018 02:30	Julia Storbeck	1986583