Chemical Analysis Report

TLH-ROC-2018-05-17-02

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:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
Attn: Michael Eckles

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: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 06-JUN-2018 13:47

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: 05/17/2018 10:10**

Field ID: G1TLHR0045 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1993797	EPA 180.1 Rev. 2.0	Turbidity	3.3		NTU	P345532	
	EPA 300.0 Rev. 2.1	Chloride	1.8		mg Cl/L	P345791	
		Sulfate	0.66		mg SO4/L	P345793	
	SM 2120 B	Color (true)	9.1		PCU	P345591	
	SM 2320 B-97	Total Alkalinity	59		mg CaCO3/L	P345913	
	SM 2540 C-97	TDS	74		mg/L	P345967	
	SM 2540 D-97	TSS	4	I	mg/L	P345808	
	SM 4500 F-C-97	Fluoride	0.061	I	mg F/L	P345916	
1993801	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P345860	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.48		mg N/L	P345819	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P345736	
	EPA 365.1 Rev. 2.0	Total-P	0.098		mg P/L	P345663	
	SM 5310 B-00	Organic Carbon	5.5		mg C/L	P345777	
1993805	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.044		mg P/L	P345600	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low 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 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: BETHEL CREEK @ MILL CREEK **Collection Date/Time: 05/17/2018 11:00**

Field ID: G1TLHR0062 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1993798	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P345532	
	EPA 300.0 Rev. 2.1	Chloride	3.8		mg Cl/L	P345791	
		Sulfate	2.4		mg SO4/L	P345793	
	SM 2120 B	Color (true)	350		PCU	P345591	
	SM 2320 B-97	Total Alkalinity	103		mg CaCO3/L	P345913	
	SM 2540 C-97	TDS	157		mg/L	P345967	
	SM 2540 D-97	TSS	2	U	mg/L	P345808	
	SM 4500 F-C-97	Fluoride	0.096	I	mg F/L	P345916	
1993802	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P345860	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.56		mg N/L	P345819	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.050		mg N/L	P345737	
	EPA 365.1 Rev. 2.0	Total-P	0.035		mg P/L	P345663	
	SM 5310 B-00	Organic Carbon	22		mg C/L	P345777	
1993806	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.019		mg P/L	P345600	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low 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 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: MEARSON SPRING **Collection Date/Time: 05/17/2018 12:05**

Field ID: G1TLHR0025 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1993799	EPA 180.1 Rev. 2.0	Turbidity	0.65		NTU	P345532	
	EPA 300.0 Rev. 2.1	Chloride	7.0		mg Cl/L	P345791	
		Sulfate	18		mg SO4/L	P345793	
	SM 2120 B	Color (true)	2.5	U	PCU	P345591	
	SM 2320 B-97	Total Alkalinity	173		mg CaCO3/L	P345913	
	SM 2540 C-97	TDS	228	A	mg/L	P345967	
	SM 2540 D-97	TSS	2	UA	mg/L	P345808	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P345916	
1993803	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P345860	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P345980	
	EPA 353.2 Rev. 2.0	NO2NO3-N	3.5		mg N/L	P345737	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P345663	
	SM 5310 B-00	Organic Carbon	0.63	I	mg C/L	P345777	
1993807	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.022		mg P/L	P345600	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low 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 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: SUGAR CREEK @ SUWANNEE RIV **Collection Date/Time: 05/17/2018 13:35**

Field ID: G1TLHR0047 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1993800	EPA 180.1 Rev. 2.0	Turbidity	12		NTU	P345532	
	EPA 300.0 Rev. 2.1	Chloride	9.2		mg Cl/L	P345791	
		Sulfate	9.5		mg SO4/L	P345793	
	SM 2120 B	Color (true)	130		PCU	P345591	
	SM 2320 B-97	Total Alkalinity	38		mg CaCO3/L	P345913	
	SM 2540 C-97	TDS	107		mg/L	P345967	
	SM 2540 D-97	TSS	12		mg/L	P345808	
	SM 4500 F-C-97	Fluoride	0.47		mg F/L	P345916	
1993804	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P345860	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.69		mg N/L	P345980	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.26		mg N/L	P345737	
	EPA 365.1 Rev. 2.0	Total-P	0.91		mg P/L	P345663	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P345777	
1993808	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.68		mg P/L	P345600	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low 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 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

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: P345791

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345793

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/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: P345819

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345736

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

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: P345663

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

Quality Assurance Report
Method Blank Results

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 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 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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345791

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345793

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345793

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.3		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: P345819

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.8		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: P345736

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

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: P345663

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

Quality Assurance Report
Laboratory Control Sample Accuracy

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345791

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993753	Chloride	101		P	90 - 110
1993851	Chloride	98.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345793

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993753	Sulfate	100		P	90 - 110
1993851	Sulfate	99.0		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: P345736

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993450	NO2NO3-N	100	101	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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345663

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993801	Total-P	101	100	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

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: P345791

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993851	Chloride	0.0890	Sample	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: P345819

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993565	Kjeldahl Nitrogen	3.94	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

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345736

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993450	NO2NO3-N	0.738	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: P345663

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993801	Total-P	1.14	Spike	P	0 - 20

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 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

Quality Assurance Report
Precision

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

* 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: 1993797, 1993798, 1993799, 1993800

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: 1993797, 1993798, 1993799, 1993800

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: 1993805, 1993806, 1993807, 1993808

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.9	P/P	90 - 110
O-Phosphate-P	100	98.7	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A84061
Included Lab Sample IDs: 1993797, 1993798, 1993799, 1993800

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.1	101	P/P	90 - 110
Sulfate	99.9	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A84080
Included Lab Sample IDs: 1993801, 1993802, 1993803, 1993804

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110
NO2NO3-N	101	101	P/P	90 - 110
NO2NO3-N	102	102	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A84096
Included Lab Sample IDs: 1993801, 1993802, 1993803, 1993804

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.3	96.4	P/P	90 - 110
Organic Carbon	97.2	96.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A84130
Included Lab Sample IDs: 1993801, 1993802, 1993803, 1993804

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: 1993801, 1993804

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A84134
Included Lab Sample IDs: 1993802, 1993803

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A84135
Included Lab Sample IDs: 1993801, 1993802

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.0	93.7	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A84146
Included Lab Sample IDs: 1993797, 1993798, 1993799, 1993800

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: 1993797, 1993798, 1993799, 1993800

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: 1993803, 1993804

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A84200
Included Lab Sample IDs: 1993803, 1993804

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	95.0	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					8.98	
EPA 300.0 Rev. 2.1	Chloride	97.2	98.9	101		0.0890	
	Sulfate	97.3	99.0	100			
EPA 350.1 Rev. 2.0	Ammonia-N	101	98.3	101			1.96
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	95.8					3.94
	Kjeldahl Nitrogen	103	106	105			0.916
EPA 353.2 Rev. 2.0	NO2NO3-N	101	100	101			0.738
	NO2NO3-N	102	99.6	99.6			0.0
EPA 365.1 Rev. 2.0	Total-P	101	101	100			1.14
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	99.5	98.9			0.605
SM 2120 B	Color (true)					0.934	
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

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1993797, 1993798, 1993799, 1993800
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1993797, 1993798, 1993799, 1993800
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1993797, 1993798, 1993799, 1993800
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1993801, 1993802, 1993803, 1993804
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1993801, 1993802, 1993803, 1993804
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1993801, 1993802, 1993803, 1993804
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1993801, 1993802, 1993803, 1993804
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1993805, 1993806, 1993807, 1993808
SM 2120 B / E31780	True Color measured at 450 nm	1993797, 1993798, 1993799, 1993800
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1993797, 1993798, 1993799, 1993800
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1993797, 1993798, 1993799, 1993800
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	1993797, 1993798, 1993799, 1993800
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1993797, 1993798, 1993799, 1993800

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1993801, 1993802, 1993803, 1993804

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	1993797, 1993798, 1993799, 1993800
EPA 300.0 Rev. 2.1	05/17/2018			05/22/2018 17:10	Lipi Saha	1993797
	05/17/2018			05/22/2018 17:21	Lipi Saha	1993798
	05/17/2018			05/22/2018 17:33	Lipi Saha	1993799
	05/17/2018			05/22/2018 17:45	Lipi Saha	1993800
EPA 350.1 Rev. 2.0	05/17/2018			05/23/2018 14:12	Ping Hua	1993801
	05/17/2018			05/23/2018 14:14	Ping Hua	1993802
	05/17/2018			05/23/2018 14:15	Ping Hua	1993803
	05/17/2018			05/23/2018 14:17	Ping Hua	1993804
EPA 351.2 Rev. 2.0	05/17/2018	05/23/2018 16:00	Adrian Shelby	05/24/2018 10:58	Joseph Suarez	1993801
	05/17/2018	05/23/2018 16:00	Adrian Shelby	05/24/2018 10:59	Joseph Suarez	1993802
	05/17/2018	05/25/2018 11:00	Adrian Shelby	05/29/2018 11:45	Joseph Suarez	1993803
	05/17/2018	05/25/2018 11:00	Adrian Shelby	05/29/2018 11:47	Joseph Suarez	1993804
EPA 353.2 Rev. 2.0	05/17/2018			05/22/2018 12:25	Lauren Bottorf	1993801
	05/17/2018			05/22/2018 12:32	Lauren Bottorf	1993802
	05/17/2018			05/22/2018 14:19	Lauren Bottorf	1993803
	05/17/2018			05/22/2018 14:20	Lauren Bottorf	1993804
EPA 365.1 Rev. 2.0	05/17/2018	05/21/2018 13:05	Sima Feizi	05/23/2018 13:07	Beverly Y. Sanders	1993801
	05/17/2018	05/21/2018 13:05	Sima Feizi	05/23/2018 13:20	Beverly Y. Sanders	1993804
	05/17/2018	05/21/2018 13:05	Sima Feizi	05/24/2018 09:37	Beverly Y. Sanders	1993802
	05/17/2018	05/21/2018 13:05	Sima Feizi	05/24/2018 09:38	Beverly Y. Sanders	1993803
EPA 365.1 Rev. 2.0 dissolved	05/17/2018			05/18/2018 15:23	Megan Treadwell	1993805
	05/17/2018			05/18/2018 15:24	Megan Treadwell	1993806
	05/17/2018			05/18/2018 15:25	Megan Treadwell	1993807
	05/17/2018			05/18/2018 16:01	Megan Treadwell	1993808
SM 2120 B	05/17/2018			05/18/2018 15:27	Tanya Welborn	1993797
	05/17/2018			05/18/2018 15:29	Tanya Welborn	1993799, 1993800
	05/17/2018			05/18/2018 16:02	Tanya Welborn	1993798
SM 2320 B-97	05/17/2018			05/24/2018 05:02	Dale L. Simmons	1993797
	05/17/2018			05/24/2018 05:12	Dale L. Simmons	1993798
	05/17/2018			05/24/2018 05:23	Dale L. Simmons	1993799
	05/17/2018			05/24/2018 05:33	Dale L. Simmons	1993800
SM 2540 C-97	05/17/2018			05/18/2018 16:00	William L. Brown IV	1993797, 1993798, 1993799, 1993800
SM 2540 D-97	05/17/2018			05/18/2018 16:00	William L. Brown IV	1993797, 1993798, 1993799, 1993800
SM 4500 F-C-97	05/17/2018			05/24/2018 05:02	Dale L. Simmons	1993797
	05/17/2018			05/24/2018 05:12	Dale L. Simmons	1993798
	05/17/2018			05/24/2018 05:23	Dale L. Simmons	1993799
	05/17/2018			05/24/2018 05:33	Dale L. Simmons	1993800
SM 5310 B-00	05/17/2018			05/21/2018 21:23	Megan Treadwell	1993801
	05/17/2018			05/21/2018 22:08	Megan Treadwell	1993802

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	05/17/2018			05/21/2018 22:23	Megan Treadwell	1993803
	05/17/2018			05/21/2018 22:39	Megan Treadwell	1993804