Chemical Analysis Report

NW-DIST-2018-06-21-01

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

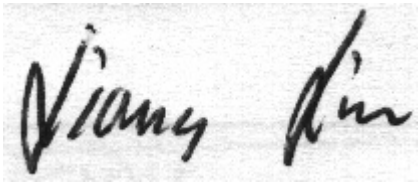
Event Description: **Choctawhatchee South run**
Request ID: **RQ-2018-06-11-32**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 208
Pensacola, FL 32502-5794
Attn: Cheryl Bunch

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: 17-JUL-2018 13:44



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: CHOCTAWHATCHEE RIVER ABOVE SMOKEHOUSE LAKE

Collection Date/Time: 06/20/2018 11:45

Field ID: G3NW0073

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2002586	EPA 180.1 Rev. 2.0	Turbidity	17	A	NTU	P347295	
	EPA 300.0 Rev. 2.1	Chloride	3.6	A	mg Cl/L	P347633	
		Sulfate	1.3	A	mg SO4/L	P347636	
	SM 2120 B	Color (true)	44	A	PCU	P347282	
	SM 2320 B-97	Total Alkalinity	28		mg CaCO3/L	P347843	
	SM 2540 C-97	TDS	64		mg/L	P347649	
	SM 2540 D-97	TSS	10		mg/L	P347562	
	SM 4500 F-C-97	Fluoride	0.041	I	mg F/L	P347847	
2002588	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P347557	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40		mg N/L	P348017	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.21		mg N/L	P347515	
	EPA 365.1 Rev. 2.0	Total-P	0.048		mg P/L	P348076	
	SM 5310 B-00	Organic Carbon	7.0		mg C/L	P347794	
2002590	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.015		mg P/L	P347290	

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: SISTER RIVER MOUTH **Collection Date/Time: 06/20/2018 12:05**

Field ID: G3NW0154 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2002587	EPA 180.1 Rev. 2.0	Turbidity	9.5		NTU	P347295	
	EPA 300.0 Rev. 2.1	Chloride	4.3		mg Cl/L	P347633	
		Sulfate	1.2		mg SO4/L	P347636	
	SM 2120 B	Color (true)	130	A	PCU	P347280	
	SM 2320 B-97	Total Alkalinity	25		mg CaCO3/L	P347843	
	SM 2540 C-97	TDS	61		mg/L	P347649	
	SM 2540 D-97	TSS	4	I	mg/L	P347563	
	SM 4500 F-C-97	Fluoride	0.037	I	mg F/L	P347847	
2002589	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P347557	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44		mg N/L	P348017	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.15		mg N/L	P347517	
	EPA 365.1 Rev. 2.0	Total-P	0.036		mg P/L	P347561	
	SM 5310 B-00	Organic Carbon	8.9		mg C/L	P347794	
2002591	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.013		mg P/L	P347288	

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: BASIN BAYOU AT INLET **Collection Date/Time: 06/20/2018 13:20**

Field ID: G3NW0101 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2002580	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P347295	
	SM 2320 B-97	Total Alkalinity	2.6		mg CaCO3/L	P347843	
	SM 2540 D-97	TSS	2	I	mg/L	P347562	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P347847	
2002582	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P347557	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.38		mg N/L	P348017	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P347517	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P347561	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P347794	
2002584	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P347291	

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: BASIN BAYOU AT INLET **Collection Date/Time: 06/20/2018 13:30**

Field ID: G3NW0101_DUP Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2002581	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P347295	
	SM 2320 B-97	Total Alkalinity	2.2	I	mg CaCO3/L	P347843	
	SM 2540 D-97	TSS	2	U	mg/L	P347562	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P347847	
2002583	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P347557	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.38		mg N/L	P348017	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P347517	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P347561	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P347794	
2002585	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P347291	

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: BASIN BAYOU AT INLET **Collection Date/Time: 06/20/2018 13:40**

Field ID: BLANK_06202018 Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2002592	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P347295	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P347843	
	SM 2540 D-97	TSS	2	U	mg/L	P347563	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P347847	
2002593	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P347557	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P348017	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P347517	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P347561	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P347794	
2002594	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P347288	

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P347295

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347633

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347636

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347557

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348017

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347515

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347517

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347561

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348076

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: P347288

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347290

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347291

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

Reference Method: SM 2120 B
Batch ID: P347280

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P347282

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P347843

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

Reference Method: SM 2540 C-97
Batch ID: P347649

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P347562

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P347563

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P347847

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P347794

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: P347633

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347636

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347557

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	93.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348017

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347515

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347517

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: P347561

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348076

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347288

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347290

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347291

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: P347843

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

Reference Method: SM 4500 F-C-97
Batch ID: P347847

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.8		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P347794

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.5		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347633

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002586	Chloride	102		P	90 - 110
2002678	Chloride	99.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347636

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002586	Sulfate	102		P	90 - 110
2002678	Sulfate	99.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347557

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002495	Ammonia-N	92.8	94.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348017

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002589	Kjeldahl Nitrogen	91.9	94.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347515

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002470	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347517

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002589	NO2NO3-N	99.0	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347561

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002588	Total-P	93.1	90.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348076

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2004305	Total-P	98.2	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347288

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002434	O-Phosphate-P	98.4	99.3	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347290

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002590	O-Phosphate-P	98.2	97.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347291

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002713	O-Phosphate-P	95.5	95.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P347847

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002468	Fluoride	96.8	97.3	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P347794

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002588	Organic Carbon	98.3	99.2	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P347295

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002586	Turbidity	5.95	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347633

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002586	Chloride	2.15	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347636

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002586	Sulfate	1.33	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347557

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002495	Ammonia-N	0.807	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348017

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002589	Kjeldahl Nitrogen	1.80	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347515

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002470	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347517

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002589	NO2NO3-N	0.576	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347561

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002588	Total-P	2.23	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348076

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2004305	Total-P	3.77	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347288

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002434	O-Phosphate-P	0.667	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347290

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002590	O-Phosphate-P	0.801	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347291

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002713	O-Phosphate-P	0.133	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P347280

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002587	Color (true)	0.750	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P347282

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002586	Color (true)	1.52	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P347843

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002468	Total Alkalinity	1.01	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P347649

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002468	TDS	1.85	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P347847

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002468	Fluoride	0.472	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P347794

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002588	Organic Carbon	0.673	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: SM 2120 B
Run ID: A84757
Included Lab Sample IDs: 2002586, 2002587

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	103	P/P	90 - 115
Color (true)	103	102	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A84758
Included Lab Sample IDs: 2002584, 2002585, 2002590, 2002591, 2002594

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	100	P/P	90 - 110
O-Phosphate-P	99.5	99.0	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A84760
Included Lab Sample IDs: 2002580, 2002581, 2002586, 2002587, 2002592

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A84842
Included Lab Sample IDs: 2002582, 2002583, 2002588, 2002589, 2002593

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A84847
Included Lab Sample IDs: 2002586, 2002587

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A84852
Included Lab Sample IDs: 2002582, 2002583, 2002588, 2002589, 2002593

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	94.7	95.4	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A84954
Included Lab Sample IDs: 2002582, 2002583, 2002588, 2002589, 2002593

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.2	96.8	P/P	90 - 110
Organic Carbon	96.8	96.4	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A84969
Included Lab Sample IDs: 2002580, 2002581, 2002586, 2002587, 2002592

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

Reference Method: SM 4500 F-C-97
Run ID: A84969
Included Lab Sample IDs: 2002580, 2002581, 2002586, 2002587, 2002592

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A84970
Included Lab Sample IDs: 2002582, 2002583, 2002589, 2002593

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A85079
Included Lab Sample IDs: 2002582, 2002583, 2002588, 2002589, 2002593

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	91.2	95.5	P/P	90 - 110
Kjeldahl Nitrogen	95.5	91.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A85110
Included Lab Sample IDs: 2002588

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	104	99.5	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					5.95	
EPA 300.0 Rev. 2.1	Chloride	100	102	99.7		2.15	
	Sulfate	102	102	99.9		1.33	
EPA 350.1 Rev. 2.0	Ammonia-N	93.4	92.8	94.0			0.807
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.6	91.9	94.2			1.80
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	102			0.0
	NO2NO3-N	102	99.0	100			0.576
EPA 365.1 Rev. 2.0	Total-P	94.8	93.1	90.8			2.23
	Total-P	96.6	98.2	103			3.77
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	98.4	99.3			0.667
	O-Phosphate-P	99.0	98.2	97.3			0.801
	O-Phosphate-P	99.2	95.5	95.7			0.133
SM 2120 B	Color (true)					0.750	
	Color (true)					1.52	
SM 2320 B-97	Total Alkalinity	103				1.01	
SM 2540 C-97	TDS					1.85	
SM 4500 F-C-97	Fluoride	98.8	96.8	97.3			0.472
SM 5310 B-00	Organic Carbon	97.5	98.3	99.2			0.673

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2002580, 2002581, 2002586, 2002587, 2002592
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2002586, 2002587
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2002586, 2002587
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2002582, 2002583, 2002588, 2002589, 2002593
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2002582, 2002583, 2002588, 2002589, 2002593
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2002582, 2002583, 2002588, 2002589, 2002593
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2002582, 2002583, 2002588, 2002589, 2002593
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2002584, 2002585, 2002590, 2002591, 2002594
SM 2120 B / E31780	True Color measured at 450 nm	2002586, 2002587
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2002580, 2002581, 2002586, 2002587, 2002592
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2002586, 2002587
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2002580, 2002581, 2002586, 2002587, 2002592
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2002580, 2002581, 2002586, 2002587, 2002592
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2002582, 2002583, 2002588, 2002589, 2002593

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	06/21/2018			06/21/2018 17:00	William L. Brown IV	2002580, 2002581, 2002586, 2002587, 2002592
EPA 300.0 Rev. 2.1	06/21/2018			06/26/2018 18:25	Lipi Saha	2002586
	06/21/2018			06/26/2018 19:13	Lipi Saha	2002587
EPA 350.1 Rev. 2.0	06/21/2018			06/26/2018 13:51	Adrian Shelby	2002582
	06/21/2018			06/26/2018 13:52	Adrian Shelby	2002583
	06/21/2018			06/26/2018 13:54	Adrian Shelby	2002588
	06/21/2018			06/26/2018 13:55	Adrian Shelby	2002589
	06/21/2018			06/26/2018 13:57	Adrian Shelby	2002593
EPA 351.2 Rev. 2.0	06/21/2018	07/06/2018 11:15	Adrian Shelby	07/09/2018 10:59	Joseph Suarez	2002582
	06/21/2018	07/06/2018 11:15	Adrian Shelby	07/09/2018 11:00	Joseph Suarez	2002583
	06/21/2018	07/06/2018 11:15	Adrian Shelby	07/09/2018 11:02	Joseph Suarez	2002588
	06/21/2018	07/06/2018 11:15	Adrian Shelby	07/09/2018 11:03	Joseph Suarez	2002589
	06/21/2018	07/06/2018 11:15	Adrian Shelby	07/09/2018 11:11	Joseph Suarez	2002593
EPA 353.2 Rev. 2.0	06/21/2018			06/26/2018 14:02	Lauren Bottorf	2002588
	06/21/2018			06/26/2018 14:09	Lauren Bottorf	2002589
	06/21/2018			06/26/2018 14:15	Lauren Bottorf	2002593
	06/21/2018			06/26/2018 14:16	Lauren Bottorf	2002582
	06/21/2018			06/26/2018 14:18	Lauren Bottorf	2002583
EPA 365.1 Rev. 2.0	06/21/2018	06/26/2018 12:45	Sima Feizi	07/02/2018 14:45	Beverly Y. Sanders	2002582
	06/21/2018	06/26/2018 12:45	Sima Feizi	07/02/2018 14:46	Beverly Y. Sanders	2002583
	06/21/2018	06/26/2018 12:45	Sima Feizi	07/02/2018 14:47	Beverly Y. Sanders	2002589
	06/21/2018	06/26/2018 12:45	Sima Feizi	07/02/2018 14:48	Beverly Y. Sanders	2002593
	06/21/2018	07/09/2018 12:30	Lipi Saha	07/10/2018 11:32	Beverly Y. Sanders	2002588
EPA 365.1 Rev. 2.0 dissolved	06/21/2018			06/21/2018 15:09	Megan Treadwell	2002590
	06/21/2018			06/21/2018 15:44	Megan Treadwell	2002584
	06/21/2018			06/21/2018 15:45	Megan Treadwell	2002585
	06/21/2018			06/21/2018 15:46	Megan Treadwell	2002591
	06/21/2018			06/21/2018 15:47	Megan Treadwell	2002594
SM 2120 B	06/21/2018			06/21/2018 15:14	Tanya Welborn	2002587
	06/21/2018			06/21/2018 15:34	Tanya Welborn	2002586
SM 2320 B-97	06/21/2018			07/02/2018 03:18	Dale L. Simmons	2002586
	06/21/2018			07/02/2018 03:29	Dale L. Simmons	2002587
	06/21/2018			07/02/2018 03:42	Dale L. Simmons	2002592
	06/21/2018			07/02/2018 06:40	Dale L. Simmons	2002580
	06/21/2018			07/02/2018 06:52	Dale L. Simmons	2002581
SM 2540 C-97	06/21/2018			06/22/2018 15:16	William L. Brown IV	2002586, 2002587
SM 2540 D-97	06/21/2018			06/22/2018 15:16	William L. Brown IV	2002580, 2002581, 2002586, 2002587, 2002592
SM 4500 F-C-97	06/21/2018			07/02/2018 03:18	Dale L. Simmons	2002586

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-97	06/21/2018			07/02/2018 03:29	Dale L. Simmons	2002587
	06/21/2018			07/02/2018 03:42	Dale L. Simmons	2002592
	06/21/2018			07/02/2018 06:40	Dale L. Simmons	2002580
	06/21/2018			07/02/2018 06:52	Dale L. Simmons	2002581
SM 5310 B-00	06/21/2018			06/29/2018 15:44	Megan Treadwell	2002588
	06/21/2018			06/29/2018 18:31	Megan Treadwell	2002582
	06/21/2018			06/29/2018 18:49	Megan Treadwell	2002583
	06/21/2018			06/29/2018 19:03	Megan Treadwell	2002589
	06/21/2018			06/29/2018 19:20	Megan Treadwell	2002593