

Chemical Analysis Report

NW-DIST-2019-05-21-03

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

Event Description: **Choctawhatchee Bay-Aqualab**

Request ID: **RQ-2019-04-15-14**

Customer: **NW-DIST**

Project ID: **DISTRICT**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 308
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: 05-JUN-2019 16:16

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored background.

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 by the Florida Department of Health Environmental Laboratory Certification Program 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: Equipment Blank

Collection Date/Time: 05/19/2019 07:45

Field ID: EB

Matrix: W-EQPMT-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2087875	EPA 120.1	Specific_Conductance	2.0	U	umhos/cm	P364855	
	SM 2540 D-97	TSS	2	U	mg/L	P364886	
2087884	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P364804	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P364750	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P364523	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P364714	

Sample Location: SRS@CINCO BAYOU (WEST SIDE)

Collection Date/Time: 05/19/2019 15:45

Field ID: 3

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2087876	EPA 120.1	Specific_Conductance	3.41E+04		umhos/cm	P364855	
	SM 2540 D-97	TSS	6	I	mg/L	P364889	
2087885	EPA 350.1 Rev. 2.0	Ammonia-N	0.034		mg N/L	P364801	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.20	I	mg N/L	P364820	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P364567	
	EPA 365.1 Rev. 2.0	Total-P	0.009	I	mg P/L	P364691	

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: GARNIER BAYOU, HAND COVE

Collection Date/Time: 05/19/2019 10:50

Field ID: 4

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2087877	EPA 120.1	Specific_Conductance	3.15E+04		umhos/cm	P364855	
	SM 2540 D-97	TSS	6	I	mg/L	P364889	
2087886	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P364802	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.18	I	mg N/L	P364820	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.020		mg N/L	P364567	
	EPA 365.1 Rev. 2.0	Total-P	0.009	I	mg P/L	P364691	

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: REGATTA BAY, SE END OF MIDBAY BR

Collection Date/Time: 05/19/2019 07:55

Field ID: 9

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2087878	EPA 120.1	Specific_Conductance	3.04E+04	A	umhos/cm	P364855	
	SM 2540 D-97	TSS	3	U	mg/L	P364889	
2087887	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P364802	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P364820	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P364567	
	EPA 365.1 Rev. 2.0	Total-P	0.009	I	mg P/L	P364691	

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: HOGTOWN BAYOU, CESSNA PRK

Collection Date/Time: 05/19/2019 15:15

Field ID: 13

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2087879	EPA 120.1	Specific_Conductance	3.16E+04		umhos/cm	P364855	
	SM 2540 D-97	TSS	12		mg/L	P364889	
2087888	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P364802	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.42		mg N/L	P364820	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P364567	
	EPA 365.1 Rev. 2.0	Total-P	0.027		mg P/L	P364691	

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: TUCKER BAYOU

Collection Date/Time: 05/19/2019 14:10

Field ID: 16

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2087880	EPA 120.1	Specific_Conductance	2.08E+04		umhos/cm	P364855	
	SM 2540 D-97	TSS	6	I	mg/L	P364889	
2087889	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P364802	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29	I	mg N/L	P364820	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P364568	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P364715	

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: OLD PASS LAGOON AT MARINA

Collection Date/Time: 05/19/2019 08:25

Field ID: 17

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2087881	EPA 120.1	Specific_Conductance	3.44E+04		umhos/cm	P364855	
	SM 2540 D-97	TSS	5	IA	mg/L	P364890	
2087890	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P364802	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21	I	mg N/L	P364820	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P364568	
	EPA 365.1 Rev. 2.0	Total-P	0.033		mg P/L	P364715	

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: JOE'S BAYOU

Collection Date/Time: 05/19/2019 10:42

Field ID: 20

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2087882	EPA 120.1	Specific_Conductance	3.37E+04		umhos/cm	P364855	
	SM 2540 D-97	TSS	5	I	mg/L	P364890	
2087891	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P364802	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	U	mg N/L	P364822	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P364568	
	EPA 365.1 Rev. 2.0	Total-P	0.010		mg P/L	P364715	

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: GARNIER BAYOU at LONGWOOD PRK

Collection Date/Time: 05/19/2019 10:30

Field ID: 21

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2087883	EPA 120.1	Specific_Conductance	2.82E+04		umhos/cm	P364855	
	SM 2540 D-97	TSS	4	I	mg/L	P364890	
2087892	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P364802	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P364822	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.048		mg N/L	P364568	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P364715	

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 120.1
Batch ID: P364855

Component	Result	Code	Units
Specific_Conductance	2.0	U	umhos/cm

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364801

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364802

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364804

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364750

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364820

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364822

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364523

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364567

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364568

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364691

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364714

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364715

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

Reference Method: SM 2540 D-97
Batch ID: P364886

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P364889

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P364890

Component	Result	Code	Units
TSS	3	U	mg/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 120.1
Batch ID: P364855

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364801

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364802

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364804

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364750

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364820

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364822

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364523

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364567

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	97.0		P	90 - 110

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364568

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	97.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364691

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364714

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364715

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.9		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364801

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2087827	Ammonia-N	102	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364802

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2087886	Ammonia-N	103	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364804

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2087962	Ammonia-N	102	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364750

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2087911	Kjeldahl Nitrogen	102	99.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364820

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2087832	Kjeldahl Nitrogen	103	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364822

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2087891	Kjeldahl Nitrogen	109	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364523

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2087911	NO2NO3-N	95.0	94.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364567

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2087830	NO2NO3-N	99.2	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364568

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2087889	NO2NO3-N	96.1	96.1	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364691

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2087830	Total-P	94.6	93.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364714

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2087911	Total-P	95.8	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364715

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2087889	Total-P	99.4	96.9	P/P	90 - 110

Quality Assurance Report Precision

Reference Method: EPA 120.1

Batch ID: P364855

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2087878	Specific_Conductance	0.0	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P364801

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2087827	Ammonia-N	1.69	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P364802

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2087886	Ammonia-N	0.240	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P364804

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2087962	Ammonia-N	0.749	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P364750

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2087911	Kjeldahl Nitrogen	1.16	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P364820

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2087832	Kjeldahl Nitrogen	3.76	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P364822

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2087891	Kjeldahl Nitrogen	5.78	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P364523

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2087911	NO2NO3-N	0.167	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P364567

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2087830	NO2NO3-N	0.917	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P364568

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2087889	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P364691

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2087830	Total-P	1.73	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P364714

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2087911	Total-P	4.16	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P364715

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2087889	Total-P	2.42	Spike	P	0 - 20

Reference Method: SM 2540 D-97
 Batch ID: P364886

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088082	TSS	6.90	Sample	P	0 - 10

* 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 353.2 Rev. 2.0

Run ID: A91657

Included Lab Sample IDs: 2087884

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A91682

Included Lab Sample IDs: 2087885, 2087886, 2087887, 2087888, 2087889, 2087891, 2087892

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	96.5	97.5	P/P	90 - 110
NO2NO3-N	97.0	96.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A91760

Included Lab Sample IDs: 2087885, 2087886, 2087887, 2087888

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	99.2	P/P	90 - 110
Total-P	99.2	98.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A91780

Included Lab Sample IDs: 2087884, 2087885, 2087886, 2087887, 2087888, 2087889, 2087890, 2087891, 2087892

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A91790

Included Lab Sample IDs: 2087884, 2087889, 2087890, 2087891, 2087892

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	101	P/P	90 - 110
Total-P	99.8	100	P/P	90 - 110

Reference Method: EPA 120.1

Run ID: A91798

Included Lab Sample IDs: 2087875, 2087876, 2087877, 2087878, 2087879, 2087880, 2087881, 2087882, 2087883

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Specific_Conductance	103	104	P/P	85 - 115
Specific_Conductance	104	105	P/P	85 - 115

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A91810

Included Lab Sample IDs: 2087884, 2087885, 2087886, 2087887, 2087888, 2087889, 2087890, 2087891, 2087892

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	101	P/P	90 - 110
Kjeldahl Nitrogen	105	104	P/P	90 - 110

Quality Assurance Report

Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A91810

Included Lab Sample IDs: 2087884, 2087885, 2087886, 2087887, 2087888, 2087889, 2087890, 2087891, 2087892

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	105	P/P	90 - 110
Kjeldahl Nitrogen	99.4	105	P/P	90 - 110
Kjeldahl Nitrogen	100	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		LCS	Precision	MS
						SMP	
EPA 120.1	Specific_Conductance	104				0.0	
EPA 350.1 Rev. 2.0	Ammonia-N	101	102	104			1.69
	Ammonia-N	102	103	103			0.240
	Ammonia-N	100	102	101			0.749
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.8	102	99.7			1.16
	Kjeldahl Nitrogen	100	103	99.2			3.76
	Kjeldahl Nitrogen	102	109	103			5.78
EPA 353.2 Rev. 2.0	NO2NO3-N	98.0	95.0	94.8			0.167
	NO2NO3-N	97.0	99.2	98.2			0.917
	NO2NO3-N	97.5	96.1	96.1			0.0
EPA 365.1 Rev. 2.0	Total-P	98.2	94.6	93.0			1.73
	Total-P	97.2	95.8	101			4.16
	Total-P	97.9	99.4	96.9			2.42
SM 2540 D-97	TSS					6.90	

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 120.1 / E31780	Specific Conductivity in aqueous matrices (umhos/cm at 25 deg C).	2087875, 2087876, 2087877, 2087878, 2087879, 2087880, 2087881, 2087882, 2087883
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2087884, 2087885, 2087886, 2087887, 2087888, 2087889, 2087890, 2087891, 2087892
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2087884, 2087885, 2087886, 2087887, 2087888, 2087889, 2087890, 2087891, 2087892
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2087884, 2087885, 2087886, 2087887, 2087888, 2087889, 2087890, 2087891, 2087892
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2087884, 2087885, 2087886, 2087887, 2087888, 2087889, 2087890, 2087891, 2087892
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2087875, 2087876, 2087877, 2087878, 2087879, 2087880, 2087881, 2087882, 2087883

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 120.1	05/21/2019			06/01/2019 04:57	Dale L. Simmons	2087875
	05/21/2019			06/01/2019 05:02	Dale L. Simmons	2087878
	05/21/2019			06/01/2019 05:04	Dale L. Simmons	2087876
	05/21/2019			06/01/2019 05:07	Dale L. Simmons	2087877
	05/21/2019			06/01/2019 05:09	Dale L. Simmons	2087879
	05/21/2019			06/01/2019 05:12	Dale L. Simmons	2087880
	05/21/2019			06/01/2019 06:12	Dale L. Simmons	2087881
	05/21/2019			06/01/2019 06:15	Dale L. Simmons	2087882
	05/21/2019			06/01/2019 06:17	Dale L. Simmons	2087883
	05/21/2019			05/24/2019 11:29	Ping Hua	2087885
EPA 350.1 Rev. 2.0	05/21/2019			05/24/2019 11:40	Ping Hua	2087886
	05/21/2019			05/24/2019 11:44	Ping Hua	2087887
	05/21/2019			05/24/2019 11:46	Ping Hua	2087888
	05/21/2019			05/24/2019 11:47	Ping Hua	2087889
	05/21/2019			05/24/2019 11:49	Ping Hua	2087890
	05/21/2019			05/24/2019 11:50	Ping Hua	2087891
	05/21/2019			05/24/2019 11:58	Ping Hua	2087892
	05/21/2019			05/24/2019 12:56	Ping Hua	2087884
	05/21/2019	05/30/2019 18:00	Adrian Shelby	06/03/2019 10:10	Joseph Suarez	2087884
	05/21/2019	05/31/2019 13:15	Adrian Shelby	06/03/2019 11:31	Joseph Suarez	2087885
EPA 351.2 Rev. 2.0	05/21/2019	05/31/2019 13:15	Adrian Shelby	06/03/2019 11:32	Joseph Suarez	2087886
	05/21/2019	05/31/2019 13:15	Adrian Shelby	06/03/2019 11:37	Joseph Suarez	2087887
	05/21/2019	05/31/2019 13:15	Adrian Shelby	06/03/2019 11:39	Joseph Suarez	2087888
	05/21/2019	05/31/2019 13:15	Adrian Shelby	06/03/2019 11:40	Joseph Suarez	2087889
	05/21/2019	05/31/2019 13:15	Adrian Shelby	06/03/2019 11:42	Joseph Suarez	2087890
	05/21/2019	05/31/2019 13:15	Adrian Shelby	06/03/2019 12:10	Joseph Suarez	2087891
	05/21/2019	05/31/2019 13:15	Adrian Shelby	06/03/2019 12:18	Joseph Suarez	2087892
	05/21/2019			05/24/2019 12:18	Beverly Y. Sanders	2087884
	05/21/2019			05/28/2019 10:22	Beverly Y. Sanders	2087885
	05/21/2019			05/28/2019 10:23	Beverly Y. Sanders	2087886
EPA 353.2 Rev. 2.0	05/21/2019			05/28/2019 10:24	Beverly Y. Sanders	2087887
	05/21/2019			05/28/2019 10:26	Beverly Y. Sanders	2087888
	05/21/2019			05/28/2019 10:33	Beverly Y. Sanders	2087889
	05/21/2019			05/28/2019 10:39	Beverly Y. Sanders	2087890
	05/21/2019			05/28/2019 10:40	Beverly Y. Sanders	2087891
	05/21/2019			05/28/2019 10:41	Beverly Y. Sanders	2087892
	05/21/2019	05/29/2019 14:30	Joseph Suarez	05/30/2019 13:13	Rosalyn Ballman	2087885
	05/21/2019	05/29/2019 14:30	Joseph Suarez	05/30/2019 13:14	Rosalyn Ballman	2087886
	05/21/2019	05/29/2019 14:30	Joseph Suarez	05/30/2019 13:22	Rosalyn Ballman	2087887
	05/21/2019	05/29/2019 14:30	Joseph Suarez	05/30/2019 13:23	Rosalyn Ballman	2087888

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 365.1 Rev. 2.0	05/21/2019	05/30/2019 10:32	Joseph Suarez	05/31/2019 15:12	Rosalyn Ballman	2087884
	05/21/2019	05/30/2019 10:32	Joseph Suarez	05/31/2019 15:27	Rosalyn Ballman	2087889
	05/21/2019	05/30/2019 10:32	Joseph Suarez	05/31/2019 15:28	Rosalyn Ballman	2087890
	05/21/2019	05/30/2019 10:32	Joseph Suarez	05/31/2019 15:29	Rosalyn Ballman	2087891
	05/21/2019	05/30/2019 10:32	Joseph Suarez	05/31/2019 15:30	Rosalyn Ballman	2087892
SM 2540 D-97	05/21/2019			05/23/2019 16:02	Yijie Li	2087875, 2087876, 2087877, 2087878, 2087879, 2087880, 2087881, 2087882, 2087883