Chemical Analysis Report

NW-DIST-2020-02-11-02

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

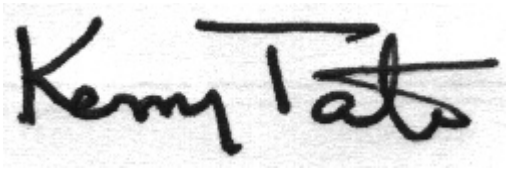
Event Description: **Bayou Chico BMAP**
Request ID: **RQ-2020-01-13-08**
Customer: **NW-DIST**
Project ID: **BMAP**

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: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 04-MAR-2020 10:17



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: Pensacola Bay at Sanders Beach **Collection Date/Time: 02/10/2020 10:25**

Field ID: 33020J10 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2156512	EPA 180.1 Rev. 2.0	Turbidity	3.1		NTU	P378686	
2156513	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P379069	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.34	I	mg N/L	P379037	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.093		mg N/L	P379256	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P379499	

Sample Location: Bayou Chico at Mandalay Drive **Collection Date/Time: 02/10/2020 10:50**

Field ID: 33020JD4 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2156500	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P378686	
2156503	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P379083	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.30	I	mg N/L	P379026	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.17		mg N/L	P379256	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P379277	

Sample Location: Jackson Creek @ Old Corry Road **Collection Date/Time: 02/10/2020 12:00**

Field ID: 33020221 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2156506	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P378686	
2156509	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P379067	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.14	I	mg N/L	P378930	
	EPA 353.2 Rev. 2.0	NO2NO3-N	3.0		mg N/L	P379428	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P379358	

Sample Location: Jackson Creek at New Warrington Road **Collection Date/Time: 02/10/2020 12:15**

Field ID: 33020222 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2156507	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P378686	
2156510	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P379067	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	I	mg N/L	P378930	
	EPA 353.2 Rev. 2.0	NO2NO3-N	3.1		mg N/L	P379428	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P379358	

Sample Location: Jones Creek Upstream of New Warrington Rd. **Collection Date/Time: 02/10/2020 12:35**

Field ID: 33020117 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2156508	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P378686	
2156511	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P379067	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.45		mg N/L	P378930	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.047		mg N/L	P379429	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P379358	

Sample Location: Bayou Chico at Navy Blvd. Bridge **Collection Date/Time: 02/10/2020 13:40**

Field ID: 3302JE20 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2156501	EPA 180.1 Rev. 2.0	Turbidity	3.5		NTU	P378686	
2156504	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P379083	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.30	I	mg N/L	P379026	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.68		mg N/L	P379256	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P379277	

Sample Location: Bayou Chico at W St. Bridge **Collection Date/Time: 02/10/2020 14:00**

Field ID: 33020JF1 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2156502	EPA 180.1 Rev. 2.0	Turbidity	7.5	A	NTU	P378686	
2156505	EPA 350.1 Rev. 2.0	Ammonia-N	0.042		mg N/L	P379083	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.60		mg N/L	P379026	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.2		mg N/L	P379256	
	EPA 365.1 Rev. 2.0	Total-P	0.062		mg P/L	P379385	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P378686

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379067

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379069

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379083

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P378930

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379026

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379037

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379256

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379428

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: P379429

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379277

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379358

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379385

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379499

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379067

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379069

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: P379083

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: P378930

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.5		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379026

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379037

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379256

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379428

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: P379429

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379277

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379358

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379385

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379499

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	106		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379067

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156509	Ammonia-N	99.8	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379069

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156513	Ammonia-N	103	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379083

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156400	Ammonia-N	106	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P378930

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156427	Kjeldahl Nitrogen	101	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379026

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156503	Kjeldahl Nitrogen	95.6	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379037

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156594	Kjeldahl Nitrogen	96.7	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379256

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156400	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379428

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156361	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379429

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156511	NO2NO3-N	98.4	99.9	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379277

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156087	Total-P	106	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379358

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156406	Total-P	106	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379385

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156505	Total-P	106	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379499

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156513	Total-P	90.3	102	P/P	90 - 110

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P378686

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156502	Turbidity	0.266	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379067

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156509	Ammonia-N	0.360	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379069

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156513	Ammonia-N	1.18	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379083

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156400	Ammonia-N	0.209	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P378930

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156427	Kjeldahl Nitrogen	0.425	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379026

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156503	Kjeldahl Nitrogen	5.15	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379037

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156594	Kjeldahl Nitrogen	6.57	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379256

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156400	NO2NO3-N	0.0	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379428

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156361	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379429

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156511	NO2NO3-N	1.22	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379277

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156087	Total-P	1.64	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379358

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156406	Total-P	0.393	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379385

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156505	Total-P	0.986	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379499

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156513	Total-P	11.8	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A97441
Included Lab Sample IDs: 2156500, 2156501, 2156502, 2156506, 2156507, 2156508, 2156512

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	100	P/P	95 - 105

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A97580
Included Lab Sample IDs: 2156509, 2156510, 2156511

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.5	97.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A97588
Included Lab Sample IDs: 2156509, 2156510, 2156511, 2156513

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A97592
Included Lab Sample IDs: 2156503, 2156504, 2156505

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A97615
Included Lab Sample IDs: 2156503, 2156504, 2156505, 2156513

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.9	100	P/P	90 - 110
Kjeldahl Nitrogen	98.8	97.9	P/P	90 - 110
Kjeldahl Nitrogen	98.8	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A97644
Included Lab Sample IDs: 2156503, 2156504, 2156505, 2156513

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	102	P/P	90 - 110
NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A97741
Included Lab Sample IDs: 2156509, 2156510, 2156511

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A97757
Included Lab Sample IDs: 2156503, 2156504

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.2	98.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A97846
Included Lab Sample IDs: 2156505, 2156509, 2156510, 2156511

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.8	99.0	P/P	90 - 110
Total-P	99.0	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A97933
Included Lab Sample IDs: 2156513

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	99.2	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					0.266	
EPA 350.1 Rev. 2.0	Ammonia-N	103	99.8	100			0.360
	Ammonia-N	102	103	102			1.18
	Ammonia-N	101	106	106			0.209
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.5	101	100			0.425
	Kjeldahl Nitrogen	104	95.6	101			5.15
	Kjeldahl Nitrogen	104	96.7	104			6.57
EPA 353.2 Rev. 2.0	NO2NO3-N	100	102	102			0.0
	NO2NO3-N	102	102	102			0.0
	NO2NO3-N	102	98.4	99.9			1.22
EPA 365.1 Rev. 2.0	Total-P	104	106	104			1.64
	Total-P	106	106	107			0.393
	Total-P	106	106	107			0.986
	Total-P	106	90.3	102			11.8

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2156500, 2156501, 2156502, 2156506, 2156507, 2156508, 2156512
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2156503, 2156504, 2156505, 2156509, 2156510, 2156511, 2156513
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2156503, 2156504, 2156505, 2156509, 2156510, 2156511, 2156513
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2156503, 2156504, 2156505, 2156509, 2156510, 2156511, 2156513
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2156503, 2156504, 2156505, 2156509, 2156510, 2156511, 2156513

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	02/11/2020			02/11/2020 14:57	Yen Ta	2156500, 2156501, 2156502, 2156506, 2156507, 2156508, 2156512
EPA 350.1 Rev. 2.0	02/11/2020			02/17/2020 09:26	Ping Hua	2156509
	02/11/2020			02/17/2020 09:47	Ping Hua	2156510
	02/11/2020			02/17/2020 09:48	Ping Hua	2156511
	02/11/2020			02/17/2020 10:22	Ping Hua	2156503
	02/11/2020			02/17/2020 10:24	Ping Hua	2156504
	02/11/2020			02/17/2020 10:25	Ping Hua	2156505
	02/11/2020			02/17/2020 10:26	Ping Hua	2156513
EPA 351.2 Rev. 2.0	02/11/2020	02/14/2020 09:30	Elliott Rodriguez	02/17/2020 12:39	Jhamieka S. Greenwood	2156509
	02/11/2020	02/14/2020 09:30	Elliott Rodriguez	02/17/2020 12:40	Jhamieka S. Greenwood	2156510
	02/11/2020	02/14/2020 09:30	Elliott Rodriguez	02/17/2020 12:42	Jhamieka S. Greenwood	2156511
	02/11/2020	02/17/2020 15:05	Sima Feizi	02/18/2020 12:08	Jhamieka S. Greenwood	2156503
	02/11/2020	02/17/2020 15:05	Sima Feizi	02/18/2020 12:27	Jhamieka S. Greenwood	2156504
	02/11/2020	02/17/2020 15:05	Sima Feizi	02/18/2020 12:28	Jhamieka S. Greenwood	2156505
	02/11/2020	02/17/2020 15:05	Sima Feizi	02/18/2020 12:41	Jhamieka S. Greenwood	2156513
EPA 353.2 Rev. 2.0	02/11/2020			02/19/2020 10:59	Beverly Y. Sanders	2156503
	02/11/2020			02/19/2020 11:00	Beverly Y. Sanders	2156504
	02/11/2020			02/19/2020 12:18	Beverly Y. Sanders	2156505
	02/11/2020			02/19/2020 12:20	Beverly Y. Sanders	2156513
	02/11/2020			02/20/2020 11:34	Beverly Y. Sanders	2156511
	02/11/2020			02/20/2020 12:09	Beverly Y. Sanders	2156509
	02/11/2020			02/20/2020 12:14	Beverly Y. Sanders	2156510
EPA 365.1 Rev. 2.0	02/11/2020	02/20/2020 15:00	Lipi Saha	02/24/2020 12:19	Benjamin T. Nordmann	2156503
	02/11/2020	02/20/2020 15:00	Lipi Saha	02/24/2020 12:20	Benjamin T. Nordmann	2156504
	02/11/2020	02/21/2020 14:16	Yen Ta	02/26/2020 14:55	Benjamin T. Nordmann	2156509
	02/11/2020	02/21/2020 14:16	Yen Ta	02/26/2020 14:56	Benjamin T. Nordmann	2156510
	02/11/2020	02/21/2020 14:16	Yen Ta	02/26/2020 14:57	Benjamin T. Nordmann	2156511
	02/11/2020	02/21/2020 14:16	Yen Ta	02/26/2020 15:06	Benjamin T. Nordmann	2156505
	02/11/2020	02/24/2020 16:08	Yen Ta	03/02/2020 14:49	Lipi Saha	2156513