

Chemical Analysis Report

WQAP-2021-10-05-01

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

Event Description: **Algal Bloom Response- NEROC**
Request ID: **RQ-2021-09-27-51**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Jacksonville, FL 32256
Attn: Jeremy Parrish

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: 28-OCT-2021 09:25

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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 groups are included in this report: Nutrients and Pesticides.

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: COJ St. Johns Marina

Collection Date/Time: 10/04/2021 11:05

Field ID: NEHAB0037

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2280266	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404546	
		Cylindrospermopsin	0.10	U	ug/L	P404546	
		Desmethyl microcystin LR	0.25	U	ug/L	P404546	
		Microcystin HilR**	0.25	U	ug/L	P404546	
		Microcystin HtyR**	0.25	U	ug/L	P404546	
		Microcystin LA	0.10	U	ug/L	P404546	
		Microcystin LF	0.10	U	ug/L	P404546	
		Microcystin LR	0.42	I	ug/L	P404546	
		Microcystin LW	0.25	U	ug/L	P404546	
		Microcystin LY	0.10	U	ug/L	P404546	
		Microcystin RR	0.10	U	ug/L	P404546	
		Microcystin WR	0.50	U	ug/L	P404546	
		Microcystin YR	0.25	U	ug/L	P404546	
		Nodularin-R**	0.10	U	ug/L	P404546	
2280272	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P404904	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.81		mg N/L	P404802	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.087		mg N/L	P404641	
	EPA 365.1 Rev. 2.0	Total-P	0.089		mg P/L	P404741	
2280278	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.045		mg P/L	P404597	

Sample Location: LSJR @ South End of Hart Bridge

Collection Date/Time: 10/04/2021 11:40

Field ID: NEHAB0043

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2280267	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404546	
		Cylindrospermopsin	0.10	U	ug/L	P404546	
		Desmethyl microcystin LR	0.25	U	ug/L	P404546	
		Microcystin HIR**	0.25	U	ug/L	P404546	
		Microcystin HtyR**	0.25	U	ug/L	P404546	
		Microcystin LA	0.10	U	ug/L	P404546	
		Microcystin LF	0.10	U	ug/L	P404546	
		Microcystin LR	0.35	I	ug/L	P404546	
		Microcystin LW	0.25	U	ug/L	P404546	
		Microcystin LY	0.10	U	ug/L	P404546	
		Microcystin RR	0.10	U	ug/L	P404546	
		Microcystin WR	0.50	U	ug/L	P404546	
		Microcystin YR	0.25	U	ug/L	P404546	
		Nodularin-R**	0.10	U	ug/L	P404546	
2280273	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P404904	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.71		mg N/L	P404802	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.099		mg N/L	P404642	
	EPA 365.1 Rev. 2.0	Total-P	0.082		mg P/L	P404741	
2280279	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.051		mg P/L	P404597	

Sample Location: Canal to Marco Lake

Collection Date/Time: 10/04/2021 12:50

Field ID: NEHAB0038

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2280268	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404546	
		Cylindrospermopsin	0.10	U	ug/L	P404546	
		Desmethyl microcystin LR	0.25	U	ug/L	P404546	
		Microcystin HIR**	0.25	U	ug/L	P404546	
		Microcystin HtyR**	0.25	U	ug/L	P404546	
		Microcystin LA	0.10	U	ug/L	P404546	
		Microcystin LF	0.10	U	ug/L	P404546	
		Microcystin LR	0.34	I	ug/L	P404546	
		Microcystin LW	0.25	U	ug/L	P404546	
		Microcystin LY	0.10	U	ug/L	P404546	
		Microcystin RR	0.10	U	ug/L	P404546	
		Microcystin WR	0.50	U	ug/L	P404546	
		Microcystin YR	0.25	U	ug/L	P404546	
		Nodularin-R**	0.10	U	ug/L	P404546	
2280274	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P404903	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.88		mg N/L	P404801	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P404780	
	EPA 365.1 Rev. 2.0	Total-P	0.086		mg P/L	P404739	
2280280	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.031		mg P/L	P404595	

Sample Location: LSJR @ Worth Dr. S

Collection Date/Time: 10/04/2021 13:20

Field ID: NEHAB0041

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2280269	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404546	
		Cylindrospermopsin	0.10	U	ug/L	P404546	
		Desmethyl microcystin LR	0.25	U	ug/L	P404546	
		Microcystin HIR**	0.25	U	ug/L	P404546	
		Microcystin HtyR**	0.25	U	ug/L	P404546	
		Microcystin LA	0.10	U	ug/L	P404546	
		Microcystin LF	0.10	U	ug/L	P404546	
		Microcystin LR	0.65	I	ug/L	P404546	
		Microcystin LW	0.25	U	ug/L	P404546	
		Microcystin LY	0.10	U	ug/L	P404546	
		Microcystin RR	0.10	U	ug/L	P404546	
		Microcystin WR	0.50	U	ug/L	P404546	
		Microcystin YR	0.25	U	ug/L	P404546	
		Nodularin-R**	0.10	U	ug/L	P404546	
2280275	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P404903	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.92		mg N/L	P404801	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P404780	
	EPA 365.1 Rev. 2.0	Total-P	0.079		mg P/L	P404739	
2280281	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.031		mg P/L	P404595	

Sample Location: LSJR @ Marina Ortega Land

Collection Date/Time: 10/04/2021 14:15

Field ID: NEHAB0034

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2280270	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404546	
		Cylindrospermopsin	0.10	U	ug/L	P404546	
		Desmethyl microcystin LR	0.25	U	ug/L	P404546	
		Microcystin HilR**	0.25	U	ug/L	P404546	
		Microcystin HtyR**	0.25	U	ug/L	P404546	
		Microcystin LA	0.10	U	ug/L	P404546	
		Microcystin LF	0.10	U	ug/L	P404546	
		Microcystin LR	0.33	I	ug/L	P404546	
		Microcystin LW	0.25	U	ug/L	P404546	
		Microcystin LY	0.10	U	ug/L	P404546	
		Microcystin RR	0.10	U	ug/L	P404546	
		Microcystin WR	0.50	U	ug/L	P404546	
		Microcystin YR	0.25	U	ug/L	P404546	
		Nodularin-R**	0.10	U	ug/L	P404546	
2280276	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P404905	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.90		mg N/L	P404801	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.020		mg N/L	P404780	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P404739	
2280282	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.054		mg P/L	P404595	

Sample Location: LSJR @ St. Vincent Riverside

Collection Date/Time: 10/04/2021 14:55

Field ID: NEHAB0033

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2280271	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404546	
		Cylindrospermopsin	0.10	U	ug/L	P404546	
		Desmethyl microcystin LR	0.25	U	ug/L	P404546	
		Microcystin HilR**	0.25	U	ug/L	P404546	
		Microcystin HtyR**	0.25	U	ug/L	P404546	
		Microcystin LA	0.10	U	ug/L	P404546	
		Microcystin LF	0.10	U	ug/L	P404546	
		Microcystin LR	0.58	I	ug/L	P404546	
		Microcystin LW	0.25	U	ug/L	P404546	
		Microcystin LY	0.10	U	ug/L	P404546	
		Microcystin RR	0.10	U	ug/L	P404546	
		Microcystin WR	0.50	U	ug/L	P404546	
		Microcystin YR	0.25	U	ug/L	P404546	
		Nodularin-R**	0.10	U	ug/L	P404546	
2280277	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P404905	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.86		mg N/L	P404801	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.033		mg N/L	P404780	
	EPA 365.1 Rev. 2.0	Total-P	0.085		mg P/L	P404739	
2280283	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.037		mg P/L	P404595	

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404903

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404904

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404905

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404801

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404802

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404641

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404642

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404780

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404739

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
Batch ID: P404741

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P404595

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P404597

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

Reference Method: EPA 8321B
Batch ID: P404546

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
Cylindrospermopsin	0.10	U	ug/L
Desmethyl microcystin LR	0.25	U	ug/L
Microcystin HIR	0.25	U	ug/L
Microcystin HtyR	0.25	U	ug/L
Microcystin LA	0.10	U	ug/L
Microcystin LF	0.10	U	ug/L
Microcystin LR	0.25	U	ug/L
Microcystin LW	0.25	U	ug/L
Microcystin LY	0.10	U	ug/L
Microcystin RR	0.10	U	ug/L
Microcystin WR	0.50	U	ug/L
Microcystin YR	0.25	U	ug/L
Nodularin-R	0.10	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404903

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404904

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404905

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404801

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404802

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404641

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404642

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: P404780

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404739

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	108		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P404741

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P404595

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P404597

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.6		P	90 - 110

Reference Method: EPA 8321B
 Batch ID: P404546

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	101		P	40 - 150
Cylindrospermopsin	96.4		P	40 - 150
Desmethyl microcystin LR	81.2		P	40 - 150
Microcystin HILR	89.9		P	40 - 150
Microcystin HtyR	91.1		P	40 - 150
Microcystin LA	93.9		P	40 - 150
Microcystin LF	91.2		P	40 - 150
Microcystin LR	72.8		P	40 - 150
Microcystin LW	90.0		P	40 - 150
Microcystin LY	93.7		P	40 - 150
Microcystin RR	98.4		P	40 - 150
Microcystin WR	93.9		P	40 - 150
Microcystin YR	94.2		P	40 - 150
Nodularin-R	92.3		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404903

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2279962	Ammonia-N	98.4	99.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404904

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280223	Ammonia-N	103	105	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404905

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280276	Ammonia-N	99.0	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404801

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280274	Kjeldahl Nitrogen	102	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404802

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280227	Kjeldahl Nitrogen	100	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404641

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280221	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404642

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280273	NO2NO3-N	99.0	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404780

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280275	NO2NO3-N	99.0	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404739

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280274	Total-P	104	108	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P404741

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280356	Total-P	106	109	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P404595

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280281	O-Phosphate-P	96.9	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P404597

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280278	O-Phosphate-P	98.0	99.4	P/P	90 - 110

Reference Method: EPA 8321B

Batch ID: P404546

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280181	Anatoxin-a	107	114	P/P	40 - 150
2280181	Cylindrospermopsin	91.2	103	P/P	40 - 150
2280181	Desmethyl microcystin LR	81.9	93.2	P/P	40 - 150
2280181	Microcystin HilR	92.1	103	P/P	40 - 150
2280181	Microcystin HtyR	95.6	104	P/P	40 - 150
2280181	Microcystin LA	88.6	92.0	P/P	40 - 150
2280181	Microcystin LF	83.7	88.5	P/P	40 - 150
2280181	Microcystin LR	82.6	92.4	P/P	40 - 150
2280181	Microcystin LW	79.8	89.6	P/P	40 - 150
2280181	Microcystin LY	91.8	97.6	P/P	40 - 150
2280181	Microcystin RR	95.8	106	P/P	40 - 150
2280181	Microcystin WR	84.5	95.6	P/P	40 - 150
2280181	Microcystin YR	90.1	101	P/P	40 - 150
2280181	Nodularin-R	94.5	100	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404903

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279962	Ammonia-N	1.08	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404904

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280223	Ammonia-N	2.01	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404905

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280276	Ammonia-N	0.290	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404801

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280274	Kjeldahl Nitrogen	1.10	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404802

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280227	Kjeldahl Nitrogen	1.34	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404641

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280221	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404642

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280273	NO2NO3-N	0.338	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404780

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280275	NO2NO3-N	0.971	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P404739

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280274	Total-P	2.65	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P404741

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280356	Total-P	1.77	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P404595

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280281	O-Phosphate-P	0.701	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P404597

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280278	O-Phosphate-P	0.974	Spike	P	0 - 20

Reference Method: EPA 8321B
 Batch ID: P404546

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280181	Anatoxin-a	5.92	Spike	P	0 - 30
2280181	Cylindrospermopsin	11.9	Spike	P	0 - 30
2280181	Desmethyl microcystin LR	12.8	Spike	P	0 - 30
2280181	Microcystin H1LR	11.1	Spike	P	0 - 30
2280181	Microcystin HtyR	8.01	Spike	P	0 - 30
2280181	Microcystin LA	3.74	Spike	P	0 - 30
2280181	Microcystin LF	5.50	Spike	P	0 - 30
2280181	Microcystin LR	10.6	Spike	P	0 - 30
2280181	Microcystin LW	11.5	Spike	P	0 - 30
2280181	Microcystin LY	6.20	Spike	P	0 - 30
2280181	Microcystin RR	10.3	Spike	P	0 - 30
2280181	Microcystin WR	12.3	Spike	P	0 - 30
2280181	Microcystin YR	11.5	Spike	P	0 - 30
2280181	Nodularin-R	6.11	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2280266
Field Sample ID: NEHAB0037

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	91.4	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	80.7	P	30 - 160

Lab Sample ID: 2280267
Field Sample ID: NEHAB0043

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	83.0	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	80.1	P	30 - 160

Lab Sample ID: 2280268
Field Sample ID: NEHAB0038

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	91.0	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	83.3	P	30 - 160

Lab Sample ID: 2280269
Field Sample ID: NEHAB0041

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	91.1	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	77.6	P	30 - 160

Lab Sample ID: 2280270
Field Sample ID: NEHAB0034

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	86.0	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	74.5	P	30 - 160

Lab Sample ID: 2280271
Field Sample ID: NEHAB0033

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	84.6	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	77.2	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A108152

Included Lab Sample IDs: 2280278, 2280279, 2280280, 2280281, 2280282, 2280283

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.5	97.8	P/P	90 - 110
O-Phosphate-P	98.6	97.5	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A108156

Included Lab Sample IDs: 2280266, 2280267, 2280268, 2280269, 2280270, 2280271

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	96.5	93.5	P/P	50 - 160
Cylindrospermopsin	96.4	92.9	P/P	50 - 160
Desmethyl microcystin LR	81.8	82.5	P/P	50 - 160
Microcystin H1R	86.2	85.5	P/P	50 - 160
Microcystin HtyR	92.2	91.6	P/P	50 - 160
Microcystin LA	89.5	88.8	P/P	50 - 160
Microcystin LF	88.5	84.0	P/P	50 - 160
Microcystin LR	79.9	75.8	P/P	50 - 160
Microcystin LW	86.1	80.7	P/P	50 - 160
Microcystin LY	90.4	87.8	P/P	50 - 160
Microcystin RR	101	96.3	P/P	50 - 160
Microcystin WR	92.9	84.2	P/P	50 - 160
Microcystin YR	91.2	85.2	P/P	50 - 160
Nodularin-R	91.0	91.3	P/P	50 - 160

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108171

Included Lab Sample IDs: 2280272, 2280273

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	99.0	P/P	90 - 110
NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108229

Included Lab Sample IDs: 2280274, 2280275, 2280276, 2280277

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108233

Included Lab Sample IDs: 2280274, 2280275, 2280276, 2280277

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108234

Included Lab Sample IDs: 2280272, 2280273

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108234

Included Lab Sample IDs: 2280272, 2280273

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A108263

Included Lab Sample IDs: 2280272, 2280273, 2280274, 2280275, 2280276, 2280277

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	105	P/P	90 - 110
Kjeldahl Nitrogen	105	107	P/P	90 - 110
Kjeldahl Nitrogen	107	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A108277

Included Lab Sample IDs: 2280272, 2280273, 2280274, 2280275, 2280276, 2280277

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.6	99.1	P/P	90 - 110
Ammonia-N	99.0	98.2	P/P	90 - 110
Ammonia-N	99.1	99.9	P/P	90 - 110
Ammonia-N	99.9	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 350.1 Rev. 2.0	Ammonia-N	99.4	98.4	99.6			1.08
	Ammonia-N	98.4	103	105			2.01
	Ammonia-N	98.2	99.0	98.6			0.290
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.9	102	104			1.10
	Kjeldahl Nitrogen	101	100	102			1.34
EPA 353.2 Rev. 2.0	NO2NO3-N	99.0	101	101			0.0
	NO2NO3-N	98.0	99.0	98.5			0.338
	NO2NO3-N	101	99.0	100			0.971
EPA 365.1 Rev. 2.0	Total-P	108	104	108			2.65
	Total-P	107	106	109			1.77
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.2	96.9	97.8			0.701
	O-Phosphate-P	97.6	98.0	99.4			0.974
EPA 8321B	Anatoxin-a	101	107	114			5.92
	Cylindrospermopsin	96.4	91.2	103			11.9
	Desmethyl microcystin LR	81.2	81.9	93.2			12.8
	Microcystin HiLR	89.9	92.1	103			11.1
	Microcystin HtyR	91.1	95.6	104			8.01
	Microcystin LA	93.9	88.6	92.0			3.74
	Microcystin LF	91.2	83.7	88.5			5.50
	Microcystin LR	72.8	82.6	92.4			10.6
	Microcystin LW	90.0	79.8	89.6			11.5
	Microcystin LY	93.7	91.8	97.6			6.20
	Microcystin RR	98.4	95.8	106			10.3
	Microcystin WR	93.9	84.5	95.6			12.3
	Microcystin YR	94.2	90.1	101			11.5
	Nodularin-R	92.3	94.5	100			6.11

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2280272, 2280273, 2280274, 2280275, 2280276, 2280277
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2280272, 2280273, 2280274, 2280275, 2280276, 2280277
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2280272, 2280273, 2280274, 2280275, 2280276, 2280277
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2280272, 2280273, 2280274, 2280275, 2280276, 2280277
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2280278, 2280279, 2280280, 2280281, 2280282, 2280283
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2280266, 2280267, 2280268, 2280269, 2280270, 2280271

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 350.1 Rev. 2.0	10/05/2021			10/11/2021 13:05	Ping Hua	2280275
	10/05/2021			10/11/2021 13:29	Ping Hua	2280272
	10/05/2021			10/11/2021 13:30	Ping Hua	2280273
	10/05/2021			10/11/2021 13:46	Ping Hua	2280276
	10/05/2021			10/11/2021 13:50	Ping Hua	2280277
	10/05/2021			10/11/2021 14:40	Ping Hua	2280274
EPA 351.2 Rev. 2.0	10/05/2021	10/08/2021 13:05	Benjamin T. Nordmann	10/11/2021 11:07	Alexandra J Mattheus	2280274
	10/05/2021	10/08/2021 13:05	Benjamin T. Nordmann	10/11/2021 11:12	Alexandra J Mattheus	2280275
	10/05/2021	10/08/2021 13:05	Benjamin T. Nordmann	10/11/2021 11:14	Alexandra J Mattheus	2280276
	10/05/2021	10/08/2021 13:05	Benjamin T. Nordmann	10/11/2021 11:16	Alexandra J Mattheus	2280277
	10/05/2021	10/08/2021 13:05	Benjamin T. Nordmann	10/11/2021 11:35	Alexandra J Mattheus	2280272
	10/05/2021	10/08/2021 13:05	Benjamin T. Nordmann	10/11/2021 11:40	Alexandra J Mattheus	2280273
EPA 353.2 Rev. 2.0	10/05/2021			10/06/2021 09:44	Beverly Y. Sanders	2280272
	10/05/2021			10/06/2021 09:51	Beverly Y. Sanders	2280273
	10/05/2021			10/08/2021 10:18	Beverly Y. Sanders	2280275
	10/05/2021			10/08/2021 10:27	Beverly Y. Sanders	2280274
	10/05/2021			10/08/2021 10:28	Beverly Y. Sanders	2280276
	10/05/2021			10/08/2021 10:29	Beverly Y. Sanders	2280277
EPA 365.1 Rev. 2.0	10/05/2021	10/07/2021 15:09	Simonne.V. Calhoun	10/08/2021 10:57	Lipi Saha	2280274
	10/05/2021	10/07/2021 15:09	Simonne.V. Calhoun	10/08/2021 11:02	Lipi Saha	2280275
	10/05/2021	10/07/2021 15:09	Simonne.V. Calhoun	10/08/2021 11:05	Lipi Saha	2280276
	10/05/2021	10/07/2021 15:09	Simonne.V. Calhoun	10/08/2021 11:06	Lipi Saha	2280277
	10/05/2021	10/07/2021 15:09	Simonne.V. Calhoun	10/08/2021 12:58	Lipi Saha	2280272
	10/05/2021	10/07/2021 15:09	Simonne.V. Calhoun	10/08/2021 12:59	Lipi Saha	2280273
EPA 365.1 Rev. 2.0 dissolved	10/05/2021			10/05/2021 14:15	James L Waggeberby	2280281
	10/05/2021			10/05/2021 14:19	James L Waggeberby	2280280
	10/05/2021			10/05/2021 14:20	James L Waggeberby	2280282
	10/05/2021			10/05/2021 14:21	James L Waggeberby	2280283
	10/05/2021			10/05/2021 14:52	James L Waggeberby	2280278
	10/05/2021			10/05/2021 14:55	James L Waggeberby	2280279
EPA 8321B	10/05/2021	10/05/2021 12:00	Manjita Shrestha	10/06/2021 00:03	Manjita Shrestha	2280266
	10/05/2021	10/05/2021 12:00	Manjita Shrestha	10/06/2021 00:20	Manjita Shrestha	2280267
	10/05/2021	10/05/2021 12:00	Manjita Shrestha	10/06/2021 00:37	Manjita Shrestha	2280268
	10/05/2021	10/05/2021 12:00	Manjita Shrestha	10/06/2021 00:53	Manjita Shrestha	2280269
	10/05/2021	10/05/2021 12:00	Manjita Shrestha	10/06/2021 01:10	Manjita Shrestha	2280270
	10/05/2021	10/05/2021 12:00	Manjita Shrestha	10/06/2021 01:27	Manjita Shrestha	2280271