

Chemical Analysis Report

WQAP-2021-10-06-01

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-2021-09-27-47**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Jacksonville, FL 32256
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 29-OCT-2021 14:10

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 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: LSJR@ end of Blake Ave

Collection Date/Time: 10/05/2021 11:55

Field ID: NEHAB0029

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2280922	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404617	
		Cylindrospermopsin	0.10	U	ug/L	P404617	
		Desmethyl microcystin LR	0.25	U	ug/L	P404617	
		Microcystin HilR**	0.25	U	ug/L	P404617	
		Microcystin HtyR**	0.25	U	ug/L	P404617	
		Microcystin LA	0.10	U	ug/L	P404617	
		Microcystin LF	0.10	U	ug/L	P404617	
		Microcystin LR	1.0		ug/L	P404617	
		Microcystin LW	0.25	U	ug/L	P404617	
		Microcystin LY	0.10	U	ug/L	P404617	
		Microcystin RR	0.10	U	ug/L	P404617	
		Microcystin WR	0.50	U	ug/L	P404617	
		Microcystin YR	0.25	U	ug/L	P404617	
		Nodularin-R**	0.10	U	ug/L	P404617	
2280928	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P404906	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.89		mg N/L	P404917	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.035		mg N/L	P404848	
	EPA 365.1 Rev. 2.0	Total-P	0.071		mg P/L	P404869	
2280934	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.030		mg P/L	P404684	

Sample Location: Mouth of Deep Bottom Creek

Collection Date/Time: 10/05/2021 11:20

Field ID: NEHAB0047

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2280923	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404617	
		Cylindrospermopsin	0.10	U	ug/L	P404617	
		Desmethyl microcystin LR	0.25	U	ug/L	P404617	
		Microcystin HilR**	0.25	U	ug/L	P404617	
		Microcystin HtyR**	0.25	U	ug/L	P404617	
		Microcystin LA	0.10	U	ug/L	P404617	
		Microcystin LF	0.10	U	ug/L	P404617	
		Microcystin LR	0.47	I	ug/L	P404617	
		Microcystin LW	0.25	U	ug/L	P404617	
		Microcystin LY	0.10	U	ug/L	P404617	
		Microcystin RR	0.10	U	ug/L	P404617	
		Microcystin WR	0.50	U	ug/L	P404617	
		Microcystin YR	0.25	U	ug/L	P404617	
		Nodularin-R**	0.10	U	ug/L	P404617	
2280929	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P404906	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.78		mg N/L	P404917	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.018		mg N/L	P404848	
	EPA 365.1 Rev. 2.0	Total-P	0.064		mg P/L	P404869	
2280935	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.032		mg P/L	P404684	

Sample Location: Plumber's Cove

Collection Date/Time: 10/05/2021 10:45

Field ID: NEHAB0046

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2280924	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404617	
		Cylindrospermopsin	0.10	U	ug/L	P404617	
		Desmethyl microcystin LR	0.25	U	ug/L	P404617	
		Microcystin HIR**	0.25	U	ug/L	P404617	
		Microcystin HtyR**	0.25	U	ug/L	P404617	
		Microcystin LA	0.10	U	ug/L	P404617	
		Microcystin LF	0.10	U	ug/L	P404617	
		Microcystin LR	0.46	I	ug/L	P404617	
		Microcystin LW	0.25	U	ug/L	P404617	
		Microcystin LY	0.10	U	ug/L	P404617	
		Microcystin RR	0.10	U	ug/L	P404617	
		Microcystin WR	0.50	U	ug/L	P404617	
		Microcystin YR	0.25	U	ug/L	P404617	
		Nodularin-R**	0.10	U	ug/L	P404617	
2280930	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P404987	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P404917	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.046		mg N/L	P404848	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P404869	
2280936	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.038		mg P/L	P404684	

Sample Location: Yacht Basin

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

Field ID: NEHAB0042

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2280925	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404617	
		Cylindrospermopsin	0.10	U	ug/L	P404617	
		Desmethyl microcystin LR	0.25	U	ug/L	P404617	
		Microcystin HilR**	0.25	U	ug/L	P404617	
		Microcystin HtyR**	0.25	U	ug/L	P404617	
		Microcystin LA	0.10	U	ug/L	P404617	
		Microcystin LF	0.10	U	ug/L	P404617	
		Microcystin LR	0.51	I	ug/L	P404617	
		Microcystin LW	0.25	U	ug/L	P404617	
		Microcystin LY	0.10	U	ug/L	P404617	
		Microcystin RR	0.10	U	ug/L	P404617	
		Microcystin WR	0.50	U	ug/L	P404617	
		Microcystin YR	0.25	U	ug/L	P404617	
		Nodularin-R**	0.10	U	ug/L	P404617	
2280931	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P404987	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.83		mg N/L	P404917	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.072		mg N/L	P404848	
	EPA 365.1 Rev. 2.0	Total-P	0.078		mg P/L	P404869	
2280937	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.042		mg P/L	P404684	

Sample Location: Mouth of Goodby's Creek

Collection Date/Time: 10/05/2021 09:20

Field ID: NEHAB0040

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2280926	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404636	
		Cylindrospermopsin	0.10	U	ug/L	P404636	
		Desmethyl microcystin LR	0.25	U	ug/L	P404636	
		Microcystin HIR**	0.25	U	ug/L	P404636	
		Microcystin HtyR**	0.25	U	ug/L	P404636	
		Microcystin LA	0.10	U	ug/L	P404636	
		Microcystin LF	0.10	U	ug/L	P404636	
		Microcystin LR	0.82	I	ug/L	P404636	
		Microcystin LW	0.25	U	ug/L	P404636	
		Microcystin LY	0.10	U	ug/L	P404636	
		Microcystin RR	0.10	U	ug/L	P404636	
		Microcystin WR	0.50	U	ug/L	P404636	
		Microcystin YR	0.25	U	ug/L	P404636	
		Nodularin-R**	0.10	U	ug/L	P404636	
2280932	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P404987	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.83		mg N/L	P404991	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.012		mg N/L	P404848	
	EPA 365.1 Rev. 2.0	Total-P	0.072		mg P/L	P404869	
2280938	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.036		mg P/L	P404685	

Sample Location: Christopher Creek below San Jose Blvd

Collection Date/Time: 10/05/2021 09:40

Field ID: NEHAB0024

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2280927	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404636	
		Cylindrospermopsin	0.10	U	ug/L	P404636	
		Desmethyl microcystin LR	0.25	U	ug/L	P404636	
		Microcystin HIR**	0.25	U	ug/L	P404636	
		Microcystin HtyR**	0.25	U	ug/L	P404636	
		Microcystin LA	0.10	U	ug/L	P404636	
		Microcystin LF	0.10	U	ug/L	P404636	
		Microcystin LR	0.50	I	ug/L	P404636	
		Microcystin LW	0.25	U	ug/L	P404636	
		Microcystin LY	0.10	U	ug/L	P404636	
		Microcystin RR	0.10	U	ug/L	P404636	
		Microcystin WR	0.50	U	ug/L	P404636	
		Microcystin YR	0.25	U	ug/L	P404636	
		Nodularin-R**	0.10	U	ug/L	P404636	
2280933	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P404987	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.82		mg N/L	P404991	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.026		mg N/L	P404848	
	EPA 365.1 Rev. 2.0	Total-P	0.066		mg P/L	P404916	
2280939	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.032		mg P/L	P404685	

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404906

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404987

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404917

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404991

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404848

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404869

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404916

Component	Result	Code	Units
Total-P	0.005	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P404684

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P404685

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B
Batch ID: P404617

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 HlIR	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

Reference Method: EPA 8321B
Batch ID: P404636

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 HlIR	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: P404906

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404987

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: P404917

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404991

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404848

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404869

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404916

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P404684

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P404685

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P404617

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	91.5		P	40 - 150
Cylindrospermopsin	98.5		P	40 - 150
Desmethyl microcystin LR	78.5		P	40 - 150
Microcystin HILR	90.7		P	40 - 150
Microcystin HtyR	101		P	40 - 150
Microcystin LA	91.1		P	40 - 150
Microcystin LF	92.6		P	40 - 150
Microcystin LR	83.1		P	40 - 150
Microcystin LW	94.0		P	40 - 150
Microcystin LY	89.1		P	40 - 150
Microcystin RR	102		P	40 - 150
Microcystin WR	101		P	40 - 150
Microcystin YR	89.9		P	40 - 150
Nodularin-R	92.4		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P404636

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	123		P	40 - 150
Cylindrospermopsin	110		P	40 - 150
Desmethyl microcystin LR	119		P	40 - 150
Microcystin HILR	131		P	40 - 150
Microcystin HtyR	134		P	40 - 150
Microcystin LA	110		P	40 - 150
Microcystin LF	96.8		P	40 - 150
Microcystin LR	123		P	40 - 150
Microcystin LW	110		P	40 - 150
Microcystin LY	119		P	40 - 150
Microcystin RR	112		P	40 - 150
Microcystin WR	127		P	40 - 150
Microcystin YR	130		P	40 - 150
Nodularin-R	106		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404906

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280643	Ammonia-N	97.0	98.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404987

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280401	Ammonia-N	96.8	97.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404917

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280930	Kjeldahl Nitrogen	90.9	95.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404991

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280932	Kjeldahl Nitrogen	95.8	93.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404848

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280928	NO2NO3-N	98.1	99.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404869

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280931	Total-P	103	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404916

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2279418	Total-P	106	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P404684

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280747	O-Phosphate-P	97.2	96.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P404685

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2281186	O-Phosphate-P	98.9	99.9	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B

Batch ID: P404617

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280712	Anatoxin-a	86.9	94.7	P/P	40 - 150
2280712	Cylindrospermopsin	86.0	87.8	P/P	40 - 150
2280712	Desmethyl microcystin LR	76.9	79.4	P/P	40 - 150
2280712	Microcystin HilR	80.6	81.1	P/P	40 - 150
2280712	Microcystin HtyR	85.6	86.1	P/P	40 - 150
2280712	Microcystin LA	77.8	79.7	P/P	40 - 150
2280712	Microcystin LF	76.1	73.9	P/P	40 - 150
2280712	Microcystin LR	78.7	75.0	P/P	40 - 150
2280712	Microcystin LW	76.6	77.4	P/P	40 - 150
2280712	Microcystin LY	80.6	74.4	P/P	40 - 150
2280712	Microcystin RR	83.9	88.8	P/P	40 - 150
2280712	Microcystin WR	84.9	86.6	P/P	40 - 150
2280712	Microcystin YR	81.2	78.2	P/P	40 - 150
2280712	Nodularin-R	84.1	83.7	P/P	40 - 150

Reference Method: EPA 8321B

Batch ID: P404636

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280926	Anatoxin-a	129	127	P/P	40 - 150
2280926	Cylindrospermopsin	95.3	98.3	P/P	40 - 150
2280926	Desmethyl microcystin LR	109	108	P/P	40 - 150
2280926	Microcystin HilR	123	117	P/P	40 - 150
2280926	Microcystin HtyR	123	117	P/P	40 - 150
2280926	Microcystin LA	96.4	93.9	P/P	40 - 150
2280926	Microcystin LF	85.3	88.4	P/P	40 - 150
2280926	Microcystin LR	112	115	P/P	40 - 150
2280926	Microcystin LW	92.7	101	P/P	40 - 150
2280926	Microcystin LY	103	107	P/P	40 - 150
2280926	Microcystin RR	102	101	P/P	40 - 150
2280926	Microcystin WR	111	115	P/P	40 - 150
2280926	Microcystin YR	124	115	P/P	40 - 150
2280926	Nodularin-R	101	97.3	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404906

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280643	Ammonia-N	1.60	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404987

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280401	Ammonia-N	0.551	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404917

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280930	Kjeldahl Nitrogen	2.71	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404991

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280932	Kjeldahl Nitrogen	1.20	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404848

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280928	NO2NO3-N	0.862	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404869

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280931	Total-P	2.02	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404916

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279418	Total-P	2.40	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P404684

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280747	O-Phosphate-P	0.389	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P404685

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2281186	O-Phosphate-P	0.877	Spike	P	0 - 20

Reference Method: EPA 8321B
 Batch ID: P404617

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280712	Anatoxin-a	8.51	Spike	P	0 - 30
2280712	Cylindrospermopsin	2.08	Spike	P	0 - 30
2280712	Desmethyl microcystin LR	3.12	Spike	P	0 - 30
2280712	Microcystin HiLR	0.517	Spike	P	0 - 30
2280712	Microcystin HtyR	0.657	Spike	P	0 - 30
2280712	Microcystin LA	2.34	Spike	P	0 - 30
2280712	Microcystin LF	3.05	Spike	P	0 - 30
2280712	Microcystin LR	4.84	Spike	P	0 - 30
2280712	Microcystin LW	0.957	Spike	P	0 - 30
2280712	Microcystin LY	7.95	Spike	P	0 - 30
2280712	Microcystin RR	5.64	Spike	P	0 - 30
2280712	Microcystin WR	1.97	Spike	P	0 - 30
2280712	Microcystin YR	3.74	Spike	P	0 - 30
2280712	Nodularin-R	0.441	Spike	P	0 - 30

Reference Method: EPA 8321B
 Batch ID: P404636

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280926	Anatoxin-a	1.58	Spike	P	0 - 30
2280926	Cylindrospermopsin	3.11	Spike	P	0 - 30
2280926	Desmethyl microcystin LR	1.23	Spike	P	0 - 30
2280926	Microcystin HiLR	4.95	Spike	P	0 - 30
2280926	Microcystin HtyR	4.62	Spike	P	0 - 30
2280926	Microcystin LA	2.53	Spike	P	0 - 30
2280926	Microcystin LF	3.58	Spike	P	0 - 30
2280926	Microcystin LR	2.94	Spike	P	0 - 30
2280926	Microcystin LW	8.21	Spike	P	0 - 30
2280926	Microcystin LY	3.88	Spike	P	0 - 30
2280926	Microcystin RR	1.07	Spike	P	0 - 30
2280926	Microcystin WR	4.01	Spike	P	0 - 30
2280926	Microcystin YR	7.47	Spike	P	0 - 30
2280926	Nodularin-R	3.40	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2280922
Field Sample ID: NEHAB0029

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	63.6	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	48.4	P	30 - 160

Lab Sample ID: 2280923
Field Sample ID: NEHAB0047

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	75.9	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	61.0	P	30 - 160

Lab Sample ID: 2280924
Field Sample ID: NEHAB0046

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	84.5	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	65.3	P	30 - 160

Lab Sample ID: 2280925
Field Sample ID: NEHAB0042

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	85.1	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	67.6	P	30 - 160

Lab Sample ID: 2280926
Field Sample ID: NEHAB0040

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	100	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	96.6	P	30 - 160

Lab Sample ID: 2280927
Field Sample ID: NEHAB0024

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	114	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	110	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A108183

Included Lab Sample IDs: 2280934, 2280935, 2280936, 2280937, 2280938, 2280939

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.6	99.1	P/P	90 - 110
O-Phosphate-P	99.1	98.6	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A108184

Included Lab Sample IDs: 2280922, 2280923, 2280924, 2280925

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	101	102	P/P	50 - 160
Cylindrospermopsin	94.7	96.1	P/P	50 - 160
Desmethyl microcystin LR	78.8	81.3	P/P	50 - 160
Microcystin H1R	84.0	84.5	P/P	50 - 160
Microcystin HtyR	88.2	89.0	P/P	50 - 160
Microcystin LA	86.9	85.5	P/P	50 - 160
Microcystin LF	82.0	79.4	P/P	50 - 160
Microcystin LR	82.9	79.3	P/P	50 - 160
Microcystin LW	78.8	76.3	P/P	50 - 160
Microcystin LY	82.8	81.3	P/P	50 - 160
Microcystin RR	93.2	91.7	P/P	50 - 160
Microcystin WR	88.2	90.9	P/P	50 - 160
Microcystin YR	79.0	79.4	P/P	50 - 160
Nodularin-R	85.9	86.9	P/P	50 - 160

Reference Method: EPA 8321B

Run ID: A108213

Included Lab Sample IDs: 2280926, 2280927

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	120	127	P/P	50 - 160
Cylindrospermopsin	95.9	103	P/P	50 - 160
Desmethyl microcystin LR	103	114	P/P	50 - 160
Microcystin H1R	108	126	P/P	50 - 160
Microcystin HtyR	110	131	P/P	50 - 160
Microcystin LA	94.0	108	P/P	50 - 160
Microcystin LF	88.6	103	P/P	50 - 160
Microcystin LR	105	118	P/P	50 - 160
Microcystin LW	104	118	P/P	50 - 160
Microcystin LY	94.0	113	P/P	50 - 160
Microcystin RR	98.8	108	P/P	50 - 160
Microcystin WR	106	126	P/P	50 - 160
Microcystin YR	110	119	P/P	50 - 160
Nodularin-R	90.7	100	P/P	50 - 160

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108264

Included Lab Sample IDs: 2280928, 2280929, 2280930, 2280931, 2280932, 2280933

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A108277

Included Lab Sample IDs: 2280928, 2280929

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108301

Included Lab Sample IDs: 2280928, 2280929, 2280930, 2280931, 2280932

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	106	107	P/P	90 - 110
Total-P	108	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108304

Included Lab Sample IDs: 2280933

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A108307

Included Lab Sample IDs: 2280930, 2280931, 2280932, 2280933

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.7	97.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A108322

Included Lab Sample IDs: 2280928, 2280929, 2280930, 2280931

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	98.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A108332

Included Lab Sample IDs: 2280932, 2280933

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	99.4	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 350.1 Rev. 2.0	Ammonia-N	98.2	97.0	98.8			1.60
	Ammonia-N	98.2	96.8	97.4			0.551
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	90.9	95.8			2.71
	Kjeldahl Nitrogen	105	95.8	93.8			1.20
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	98.1	99.1			0.862
EPA 365.1 Rev. 2.0	Total-P	103	103	105			2.02
	Total-P	101	106	103			2.40
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.3	97.2	96.8			0.389
	O-Phosphate-P	98.7	98.9	99.9			0.877
EPA 8321B	Anatoxin-a	91.5	86.9	94.7			8.51
	Anatoxin-a	123	129	127			1.58
	Cylindrospermopsin	98.5	86.0	87.8			2.08
	Cylindrospermopsin	110	95.3	98.3			3.11
	Desmethyl microcystin LR	78.5	76.9	79.4			3.12
	Desmethyl microcystin LR	119	109	108			1.23
	Microcystin HiLR	90.7	80.6	81.1			0.517
	Microcystin HiLR	131	123	117			4.95
	Microcystin HtyR	101	85.6	86.1			0.657
	Microcystin HtyR	134	123	117			4.62
	Microcystin LA	91.1	77.8	79.7			2.34
	Microcystin LA	110	96.4	93.9			2.53
	Microcystin LF	92.6	76.1	73.9			3.05
	Microcystin LF	96.8	85.3	88.4			3.58
	Microcystin LR	83.1	78.7	75.0			4.84
	Microcystin LR	123	112	115			2.94
	Microcystin LW	94.0	76.6	77.4			0.957
	Microcystin LW	110	92.7	101			8.21
	Microcystin LY	89.1	80.6	74.4			7.95
	Microcystin LY	119	103	107			3.88
	Microcystin RR	102	83.9	88.8			5.64
	Microcystin RR	112	102	101			1.07
	Microcystin WR	101	84.9	86.6			1.97
	Microcystin WR	127	111	115			4.01
	Microcystin YR	89.9	81.2	78.2			3.74
	Microcystin YR	130	124	115			7.47
	Nodularin-R	92.4	84.1	83.7			0.441
	Nodularin-R	106	101	97.3			3.40

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2280928, 2280929, 2280930, 2280931, 2280932, 2280933
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2280928, 2280929, 2280930, 2280931, 2280932, 2280933
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2280928, 2280929, 2280930, 2280931, 2280932, 2280933
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2280928, 2280929, 2280930, 2280931, 2280932, 2280933
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2280934, 2280935, 2280936, 2280937, 2280938, 2280939
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2280922, 2280923, 2280924, 2280925, 2280926, 2280927

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	10/06/2021			10/11/2021 14:25	Ping Hua	2280928
	10/06/2021			10/11/2021 14:26	Ping Hua	2280929
	10/06/2021			10/12/2021 15:23	Ping Hua	2280930
	10/06/2021			10/12/2021 15:25	Ping Hua	2280931
	10/06/2021			10/12/2021 15:26	Ping Hua	2280932
	10/06/2021			10/12/2021 15:27	Ping Hua	2280933
EPA 351.2 Rev. 2.0	10/06/2021	10/12/2021 11:30	Benjamin T. Nordmann	10/13/2021 13:16	Alexandra J Mattheus	2280928
	10/06/2021	10/12/2021 11:30	Benjamin T. Nordmann	10/13/2021 13:17	Alexandra J Mattheus	2280929
	10/06/2021	10/12/2021 11:30	Benjamin T. Nordmann	10/13/2021 13:19	Alexandra J Mattheus	2280930
	10/06/2021	10/12/2021 11:30	Benjamin T. Nordmann	10/13/2021 13:24	Alexandra J Mattheus	2280931
	10/06/2021	10/13/2021 10:35	Benjamin T. Nordmann	10/14/2021 09:31	Alexandra J Mattheus	2280932
	10/06/2021	10/13/2021 10:35	Benjamin T. Nordmann	10/14/2021 09:36	Alexandra J Mattheus	2280933
EPA 353.2 Rev. 2.0	10/06/2021			10/11/2021 10:28	Beverly Y. Sanders	2280928
	10/06/2021			10/11/2021 10:35	Beverly Y. Sanders	2280929
	10/06/2021			10/11/2021 10:37	Beverly Y. Sanders	2280930
	10/06/2021			10/11/2021 10:38	Beverly Y. Sanders	2280931
	10/06/2021			10/11/2021 10:39	Beverly Y. Sanders	2280932
	10/06/2021			10/11/2021 10:40	Beverly Y. Sanders	2280933
EPA 365.1 Rev. 2.0	10/06/2021	10/11/2021 15:18	Simonne.V. Calhoun	10/12/2021 10:55	Lipi Saha	2280931
	10/06/2021	10/11/2021 15:18	Simonne.V. Calhoun	10/12/2021 11:03	Lipi Saha	2280928
	10/06/2021	10/11/2021 15:18	Simonne.V. Calhoun	10/12/2021 11:04	Lipi Saha	2280929
	10/06/2021	10/11/2021 15:18	Simonne.V. Calhoun	10/12/2021 11:05	Lipi Saha	2280930
	10/06/2021	10/11/2021 15:18	Simonne.V. Calhoun	10/12/2021 11:06	Lipi Saha	2280932
	10/06/2021	10/12/2021 18:10	Simonne.V. Calhoun	10/13/2021 10:35	Lipi Saha	2280933
EPA 365.1 Rev. 2.0 dissolved	10/06/2021			10/06/2021 16:12	James L Waggeberby	2280934
	10/06/2021			10/06/2021 16:13	James L Waggeberby	2280935, 2280936
	10/06/2021			10/06/2021 16:14	James L Waggeberby	2280937
	10/06/2021			10/06/2021 16:24	James L Waggeberby	2280938
	10/06/2021			10/06/2021 16:25	James L Waggeberby	2280939
EPA 8321B	10/06/2021	10/06/2021 12:00	Manjita Shrestha	10/06/2021 16:58	Manjita Shrestha	2280922
	10/06/2021	10/06/2021 12:00	Manjita Shrestha	10/06/2021 17:15	Manjita Shrestha	2280923
	10/06/2021	10/06/2021 12:00	Manjita Shrestha	10/06/2021 17:32	Manjita Shrestha	2280924
	10/06/2021	10/06/2021 12:00	Manjita Shrestha	10/06/2021 17:49	Manjita Shrestha	2280925
	10/06/2021	10/07/2021 11:00	Manjita Shrestha	10/07/2021 16:49	Manjita Shrestha	2280926
	10/06/2021	10/07/2021 11:00	Manjita Shrestha	10/07/2021 17:06	Manjita Shrestha	2280927