

Chemical Analysis Report

WQAP-2022-07-08-01

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

Event Description: **Algal Bloom Response- Alachua Co. for NEROC**
Request ID: **RQ-2022-06-27-48**
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: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 21-JUL-2022 11:17

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: Orange Creek @ Cross Creek

Collection Date/Time: 07/07/2022 09:30

Field ID: Orange Creek @ Cross Creek

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2339868	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P416312	
		Cylindrospermopsin	0.10	U	ug/L	P416311	
		Desmethyl microcystin LR	0.25	U	ug/L	P416311	
		Microcystin HIR	0.25	U	ug/L	P416311	
		Microcystin HtyR	0.25	U	ug/L	P416311	
		Microcystin LA	0.10	U	ug/L	P416311	
		Microcystin LF	0.10	U	ug/L	P416311	
		Microcystin LR	0.25	U	ug/L	P416311	
		Microcystin LW	0.25	U	ug/L	P416311	
		Microcystin LY	0.10	U	ug/L	P416311	
		Microcystin RR	0.10	U	ug/L	P416311	
		Microcystin WR	0.50	U	ug/L	P416311	
		Microcystin YR	0.25	U	ug/L	P416311	
		Nodularin-R	0.10	U	ug/L	P416311	
2339884	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P416422	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P416460	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P416652	
	EPA 365.1 Rev. 2.0	Total-P	0.068		mg P/L	P416635	
2339888	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P416360	

Sample Location: Orange Lake @ McIntosh Bay

Collection Date/Time: 07/07/2022 11:50

Field ID: Orange Lake

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2339869	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P416312	
		Cylindrospermopsin	0.10	U	ug/L	P416311	
		Desmethyl microcystin LR	0.25	U	ug/L	P416311	
		Microcystin HIR	0.25	U	ug/L	P416311	
		Microcystin HtyR	0.25	U	ug/L	P416311	
		Microcystin LA	0.10	U	ug/L	P416311	
		Microcystin LF	0.10	U	ug/L	P416311	
		Microcystin LR	0.25	U	ug/L	P416311	
		Microcystin LW	0.25	U	ug/L	P416311	
		Microcystin LY	0.10	U	ug/L	P416311	
		Microcystin RR	0.10	U	ug/L	P416311	
		Microcystin WR	0.50	U	ug/L	P416311	
		Microcystin YR	0.25	U	ug/L	P416311	
		Nodularin-R	0.10	U	ug/L	P416311	
2339885	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P416422	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P416464	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P416652	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P416635	
2339889	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P416360	

Ref. Method and Comment:

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lake Wauberg @ UF Dock

Collection Date/Time: 07/07/2022 13:15

Field ID: Lake Wauberg

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2339870	EPA 8321B	Anatoxin-a	0.29	I	ug/L	P416312	
		Cylindrospermopsin	0.10	U	ug/L	P416311	
		Desmethyl microcystin LR	0.25	U	ug/L	P416311	
		Microcystin HILR	0.25	U	ug/L	P416311	
		Microcystin HtyR	0.25	U	ug/L	P416311	
		Microcystin LA	0.10	U	ug/L	P416311	
		Microcystin LF	0.10	U	ug/L	P416311	
		Microcystin LR	0.25	U	ug/L	P416311	
		Microcystin LW	0.25	U	ug/L	P416311	
		Microcystin LY	0.10	U	ug/L	P416311	
		Microcystin RR	0.10	U	ug/L	P416311	
		Microcystin WR	0.50	U	ug/L	P416311	
		Microcystin YR	0.25	U	ug/L	P416311	
		Nodularin-R	0.10	U	ug/L	P416311	
2339886	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P416645	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P416623	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P416652	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P416635	
2339890	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.031		mg P/L	P416360	

Ref. Method and Comment:

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Bivens Arm @ State Road 442

Collection Date/Time: 07/07/2022 14:10

Field ID: Bivens Arm

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2339871	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P416312	
		Cylindrospermopsin	0.10	U	ug/L	P416311	
		Desmethyl microcystin LR	0.25	U	ug/L	P416311	
		Microcystin HIR	0.25	U	ug/L	P416311	
		Microcystin HtyR	0.25	U	ug/L	P416311	
		Microcystin LA	0.10	U	ug/L	P416311	
		Microcystin LF	0.10	U	ug/L	P416311	
		Microcystin LR	0.25	U	ug/L	P416311	
		Microcystin LW	0.25	U	ug/L	P416311	
		Microcystin LY	0.10	U	ug/L	P416311	
		Microcystin RR	0.10	U	ug/L	P416311	
		Microcystin WR	0.50	U	ug/L	P416311	
		Microcystin YR	0.25	U	ug/L	P416311	
		Nodularin-R	0.10	U	ug/L	P416311	
2339887	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P416645	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.2		mg N/L	P416623	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P416652	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P416635	
2339891	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P416360	

Ref. Method and Comment:

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P416422

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P416645

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P416460

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P416464

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P416623

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P416652

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P416635

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P416360

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

Reference Method: EPA 8321B
Batch ID: P416311

Component	Result	Code	Units
Cylindrospermopsin	0.10	U	ug/L
Desmethyl microcystin LR	0.25	U	ug/L
Microcystin HtLR	0.25	U	ug/L
Microcystin HtyR	0.25	U	ug/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B

Batch ID: P416311

Component	Result	Code	Units
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: P416312

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P416422

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P416645

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P416460

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P416464

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P416623

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: P416652

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: P416635

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P416360

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

Reference Method: EPA 8321B
Batch ID: P416311

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	94.4		P	40 - 150
Desmethyl microcystin LR	87.2		P	40 - 150
Microcystin H1R	93.9		P	40 - 150
Microcystin HtyR	102		P	40 - 150

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B

Batch ID: P416311

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Microcystin LA	111		P	40 - 150
Microcystin LF	101		P	40 - 150
Microcystin LR	87.2		P	40 - 150
Microcystin LW	111		P	40 - 150
Microcystin LY	109		P	40 - 150
Microcystin RR	89.8		P	40 - 150
Microcystin WR	94.5		P	40 - 150
Microcystin YR	111		P	40 - 150
Nodularin-R	86.6		P	40 - 150

Reference Method: EPA 8321B

Batch ID: P416312

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	91.2		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P416422

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2339687	Ammonia-N	102	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P416645

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2339926	Ammonia-N	97.0	96.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P416460

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2339379	Kjeldahl Nitrogen	101	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P416652

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2339744	NO2NO3-N	95.5	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P416635

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2339557	Total-P	104	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P416360

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2339878	O-Phosphate-P	99.1	99.1	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P416311

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2339800	Cylindrospermopsin	105	85.2	P/P	40 - 150
2339800	Desmethyl microcystin LR	95.9	81.1	P/P	40 - 150
2339800	Microcystin HILR	94.6	84.4	P/P	40 - 150
2339800	Microcystin HtyR	107	94.3	P/P	40 - 150
2339800	Microcystin LA	120	97.2	P/P	40 - 150
2339800	Microcystin LF	114	95.0	P/P	40 - 150
2339800	Microcystin LR	93.6	77.2	P/P	40 - 150
2339800	Microcystin LW	119	91.2	P/P	40 - 150
2339800	Microcystin LY	115	93.0	P/P	40 - 150
2339800	Microcystin RR	94.3	81.8	P/P	40 - 150
2339800	Microcystin WR	98.8	83.7	P/P	40 - 150
2339800	Microcystin YR	121	104	P/P	40 - 150
2339800	Nodularin-R	94.8	82.1	P/P	40 - 150

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P416312

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2339800	Anatoxin-a	101	99.3	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P416422

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2339687	Ammonia-N	0.789	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P416645

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2339926	Ammonia-N	0.572	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P416460

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2339379	Kjeldahl Nitrogen	0.0689	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P416464

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2339885	Kjeldahl Nitrogen	2.07	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P416623

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2339887	Kjeldahl Nitrogen	12.4	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P416652

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2339744	NO2NO3-N	2.07	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P416635

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2339557	Total-P	0.304	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P416360

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2339878	O-Phosphate-P	0.0	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 8321B

Batch ID: P416311

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2339800	Cylindrospermopsin	20.5	Spike	P	0 - 30
2339800	Desmethyl microcystin LR	16.7	Spike	P	0 - 30
2339800	Microcystin H1R	11.4	Spike	P	0 - 30
2339800	Microcystin HtyR	12.4	Spike	P	0 - 30
2339800	Microcystin LA	20.7	Spike	P	0 - 30
2339800	Microcystin LF	18.1	Spike	P	0 - 30
2339800	Microcystin LR	19.2	Spike	P	0 - 30
2339800	Microcystin LW	26.6	Spike	P	0 - 30
2339800	Microcystin LY	20.7	Spike	P	0 - 30
2339800	Microcystin RR	14.1	Spike	P	0 - 30
2339800	Microcystin WR	16.5	Spike	P	0 - 30
2339800	Microcystin YR	14.5	Spike	P	0 - 30
2339800	Nodularin-R	14.3	Spike	P	0 - 30

Reference Method: EPA 8321B

Batch ID: P416312

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2339800	Anatoxin-a	1.26	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2339868

Field Sample ID: Orange Creek @ Cross Creek

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	106	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	89.4	P	30 - 160

Lab Sample ID: 2339869

Field Sample ID: Orange Lake

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	99.9	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	81.5	P	30 - 160

Lab Sample ID: 2339870

Field Sample ID: Lake Wauberg

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	100	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	83.5	P	30 - 160

Lab Sample ID: 2339871

Field Sample ID: Bivens Arm

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	109	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	74.9	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A113386

Included Lab Sample IDs: 2339888, 2339889, 2339890, 2339891

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.3	P/P	90 - 110
O-Phosphate-P	99.3	99.7	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A113391

Included Lab Sample IDs: 2339868, 2339869, 2339870, 2339871

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	85.6	88.2	P/P	50 - 160
Anatoxin-a	88.2	87.2	P/P	50 - 160

Reference Method: EPA 8321B

Run ID: A113392

Included Lab Sample IDs: 2339868, 2339869, 2339870, 2339871

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	95.7	99.7	P/P	60 - 160
Cylindrospermopsin	99.7	103	P/P	60 - 160
Desmethyl microcystin LR	84.9	92.0	P/P	60 - 160
Desmethyl microcystin LR	89.7	84.9	P/P	60 - 160
Microcystin H1R	89.3	89.6	P/P	60 - 160
Microcystin H1R	89.6	91.1	P/P	60 - 160
Microcystin HtyR	97.4	100	P/P	60 - 160
Microcystin HtyR	97.5	97.4	P/P	60 - 160
Microcystin LA	109	112	P/P	50 - 160
Microcystin LA	118	109	P/P	50 - 160
Microcystin LF	104	98.4	P/P	60 - 160
Microcystin LF	98.4	102	P/P	60 - 160
Microcystin LR	81.5	80.8	P/P	60 - 160
Microcystin LR	83.9	81.5	P/P	60 - 160
Microcystin LW	106	107	P/P	60 - 160
Microcystin LW	111	106	P/P	60 - 160
Microcystin LY	113	99.9	P/P	60 - 160
Microcystin LY	99.9	104	P/P	60 - 160
Microcystin RR	87.0	89.5	P/P	60 - 160
Microcystin RR	91.8	87.0	P/P	60 - 160
Microcystin WR	92.5	96.1	P/P	60 - 160
Microcystin WR	96.1	94.4	P/P	60 - 160
Microcystin YR	108	108	P/P	60 - 160
Microcystin YR	108	105	P/P	60 - 160
Nodularin-R	84.2	87.9	P/P	60 - 160
Nodularin-R	89.9	84.2	P/P	60 - 160

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A113417

Included Lab Sample IDs: 2339884, 2339885

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.5	98.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A113498

Included Lab Sample IDs: 2339886, 2339887

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.5	97.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A113503

Included Lab Sample IDs: 2339884, 2339885, 2339886, 2339887

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	96.0	97.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A113524

Included Lab Sample IDs: 2339885

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A113550

Included Lab Sample IDs: 2339884, 2339886, 2339887

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.5	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A113561

Included Lab Sample IDs: 2339884

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A113566

Included Lab Sample IDs: 2339886, 2339887

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	98.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A113568

Included Lab Sample IDs: 2339885

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.8	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		LCS	Precision	MS
						SMP	
EPA 350.1 Rev. 2.0	Ammonia-N	95.6	102	101			0.789
	Ammonia-N	97.6	97.0	96.4			0.572
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108	101	101			0.0689
	Kjeldahl Nitrogen	107					2.07
	Kjeldahl Nitrogen	102					12.4
EPA 353.2 Rev. 2.0	NO2NO3-N	97.5	95.5	97.5			2.07
EPA 365.1 Rev. 2.0	Total-P	102	104	103			0.304
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	99.1	99.1			0.0
EPA 8321B	Anatoxin-a	91.2	101	99.3			1.26
	Cylindrospermopsin	94.4	105	85.2			20.5
	Desmethyl microcystin LR	87.2	95.9	81.1			16.7
	Microcystin HiLR	93.9	94.6	84.4			11.4
	Microcystin HtyR	102	107	94.3			12.4
	Microcystin LA	111	120	97.2			20.7
	Microcystin LF	101	114	95.0			18.1
	Microcystin LR	87.2	93.6	77.2			19.2
	Microcystin LW	111	119	91.2			26.6
	Microcystin LY	109	115	93.0			20.7
	Microcystin RR	89.8	94.3	81.8			14.1
	Microcystin WR	94.5	98.8	83.7			16.5
	Microcystin YR	111	121	104			14.5
	Nodularin-R	86.6	94.8	82.1			14.3

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2339884, 2339885, 2339886, 2339887
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2339884, 2339885, 2339886, 2339887
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2339884, 2339885, 2339886, 2339887
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2339884, 2339885, 2339886, 2339887
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2339888, 2339889, 2339890, 2339891
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2339868, 2339869, 2339870, 2339871
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2339868, 2339869, 2339870, 2339871

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	07/08/2022			07/11/2022 12:34	Ping Hua	2339884
	07/08/2022			07/11/2022 12:35	Ping Hua	2339885
	07/08/2022			07/13/2022 12:57	Ping Hua	2339886
	07/08/2022			07/13/2022 12:59	Ping Hua	2339887
EPA 351.2 Rev. 2.0	07/08/2022	07/13/2022 14:48	Samantha L Bates	07/14/2022 15:17	Alexandra J Mattheus	2339885
	07/08/2022	07/13/2022 14:48	Samantha L Bates	07/18/2022 11:55	Alexandra J Mattheus	2339884
	07/08/2022	07/15/2022 10:00	Samantha L Bates	07/18/2022 13:49	Alexandra J Mattheus	2339886
	07/08/2022	07/15/2022 10:00	Samantha L Bates	07/18/2022 13:51	Alexandra J Mattheus	2339887
EPA 353.2 Rev. 2.0	07/08/2022			07/14/2022 11:15	Judith K. Clark	2339884
	07/08/2022			07/14/2022 11:16	Judith K. Clark	2339885
	07/08/2022			07/14/2022 11:17	Judith K. Clark	2339886
	07/08/2022			07/14/2022 11:18	Judith K. Clark	2339887
EPA 365.1 Rev. 2.0	07/08/2022	07/15/2022 12:25	Simonne.V. Calhoun	07/15/2022 16:37	James L Waggeberby	2339884
	07/08/2022	07/15/2022 12:25	Simonne.V. Calhoun	07/15/2022 16:40	James L Waggeberby	2339886
	07/08/2022	07/15/2022 12:25	Simonne.V. Calhoun	07/15/2022 16:41	James L Waggeberby	2339887
	07/08/2022	07/15/2022 12:25	Simonne.V. Calhoun	07/18/2022 14:33	James L Waggeberby	2339885
EPA 365.1 Rev. 2.0 dissolved	07/08/2022			07/08/2022 14:19	Chandler E Cox	2339888
	07/08/2022			07/08/2022 14:20	Chandler E Cox	2339889
	07/08/2022			07/08/2022 14:25	Chandler E Cox	2339890
	07/08/2022			07/08/2022 14:26	Chandler E Cox	2339891
EPA 8321B	07/08/2022	07/08/2022 11:30	Umesh Chilual	07/08/2022 17:37	Umesh Chilual	2339868
	07/08/2022	07/08/2022 11:30	Umesh Chilual	07/08/2022 18:11	Umesh Chilual	2339869
	07/08/2022	07/08/2022 11:30	Umesh Chilual	07/08/2022 18:28	Umesh Chilual	2339870
	07/08/2022	07/08/2022 11:30	Umesh Chilual	07/08/2022 18:45	Umesh Chilual	2339871
	07/08/2022	07/08/2022 12:00	Manjita Shrestha	07/08/2022 19:07	Manjita Shrestha	2339868
	07/08/2022	07/08/2022 12:00	Manjita Shrestha	07/08/2022 19:35	Manjita Shrestha	2339869
	07/08/2022	07/08/2022 12:00	Manjita Shrestha	07/08/2022 19:49	Manjita Shrestha	2339870
	07/08/2022	07/08/2022 12:00	Manjita Shrestha	07/08/2022 20:03	Manjita Shrestha	2339871