Chemical Analysis Report

WQAP-2022-07-20-01

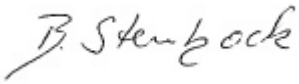
Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Algal Bloom Response- NEROC**
Request ID: **RQ-2022-07-18-44**
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: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 29-JUL-2022 13:31



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: Doctor's Lake @ Mill Cove **Collection Date/Time: 07/19/2022 12:40**

Field ID: NEHAB0057 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2342614	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P416915	
		Cylindrospermopsin	0.10	U	ug/L	P416878	
		Desmethyl microcystin LR	0.25	U	ug/L	P416878	
		Microcystin HilR	0.25	U	ug/L	P416878	
		Microcystin HtyR	0.25	U	ug/L	P416878	
		Microcystin LA	0.10	U	ug/L	P416878	
		Microcystin LF	0.10	U	ug/L	P416878	
		Microcystin LR	5.1		ug/L	P416878	
		Microcystin LW	0.25	U	ug/L	P416878	
		Microcystin LY	0.10	U	ug/L	P416878	
		Microcystin RR	0.10	U	ug/L	P416878	
		Microcystin WR	0.50	U	ug/L	P416878	
		Neosaxitoxin	0.50	U	ug/L	P416915	
		Microcystin YR	0.25	U	ug/L	P416878	
		Saxitoxin	0.50	U	ug/L	P416915	
		Nodularin-R	0.10	U	ug/L	P416878	
2342619	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P417179	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P417154	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P417165	
	EPA 365.1 Rev. 2.0	Total-P	0.099		mg P/L	P416948	
2342624	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.028		mg P/L	P416922	

Sample Location: Dr's Lake End of Lawrence Rd. **Collection Date/Time: 07/19/2022 10:25**

Field ID: NEHAB0073 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2342615	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P416915	
		Cylindrospermopsin	0.10	U	ug/L	P416878	
		Desmethyl microcystin LR	0.25	U	ug/L	P416878	
		Microcystin HilR	0.25	U	ug/L	P416878	
		Microcystin HtyR	0.25	U	ug/L	P416878	
		Microcystin LA	0.10	U	ug/L	P416878	
		Microcystin LF	0.10	U	ug/L	P416878	
		Microcystin LR	4.5		ug/L	P416878	
		Microcystin LW	0.25	U	ug/L	P416878	
		Microcystin LY	0.10	U	ug/L	P416878	
		Microcystin RR	0.10	U	ug/L	P416878	
		Microcystin WR	0.50	U	ug/L	P416878	
		Neosaxitoxin	0.50	U	ug/L	P416915	
		Microcystin YR	0.25	U	ug/L	P416878	
		Saxitoxin	0.50	U	ug/L	P416915	
		Nodularin-R	0.10	U	ug/L	P416878	
2342620	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P417179	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P417154	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P417165	
	EPA 365.1 Rev. 2.0	Total-P	0.083		mg P/L	P416948	
2342625	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.014		mg P/L	P416922	

Sample Location: Swimming Pen Cr @ Whitney's Fish Camp **Collection Date/Time: 07/19/2022 10:00**

Field ID: NEHAB0074 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2342616	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P416915	
		Cylindrospermopsin	0.10	U	ug/L	P416878	
		Desmethyl microcystin LR	0.29	I	ug/L	P416878	
		Microcystin HilR	0.25	U	ug/L	P416878	
		Microcystin HtyR	0.25	U	ug/L	P416878	
		Microcystin LA	0.10	U	ug/L	P416878	
		Microcystin LF	0.10	U	ug/L	P416878	
		Microcystin LR	9.5		ug/L	P416878	
		Microcystin LW	0.25	U	ug/L	P416878	
		Microcystin LY	0.10	U	ug/L	P416878	
		Microcystin RR	0.10	U	ug/L	P416878	
		Microcystin WR	0.50	U	ug/L	P416878	
		Neosaxitoxin	0.50	U	ug/L	P416915	
		Microcystin YR	0.25	U	ug/L	P416878	
		Saxitoxin	0.50	U	ug/L	P416915	
		Nodularin-R	0.10	U	ug/L	P416878	
2342621	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P417179	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P417154	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P417165	
	EPA 365.1 Rev. 2.0	Total-P	0.079		mg P/L	P416948	
2342626	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P416922	

Sample Location: Dr's Lake at Camp Echockotee **Collection Date/Time: 07/19/2022 11:05**

Field ID: NEHAB0085 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2342617	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P416915	
		Cylindrospermopsin	0.10	U	ug/L	P416878	
		Desmethyl microcystin LR	0.25	U	ug/L	P416878	
		Microcystin HilR	0.25	U	ug/L	P416878	
		Microcystin HtyR	0.25	U	ug/L	P416878	
		Microcystin LA	0.10	U	ug/L	P416878	
		Microcystin LF	0.10	U	ug/L	P416878	
		Microcystin LR	3.4		ug/L	P416878	
		Microcystin LW	0.25	U	ug/L	P416878	
		Microcystin LY	0.10	U	ug/L	P416878	
		Microcystin RR	0.10	U	ug/L	P416878	
		Microcystin WR	0.50	U	ug/L	P416878	
		Neosaxitoxin	0.50	U	ug/L	P416915	
		Microcystin YR	0.25	U	ug/L	P416878	
		Saxitoxin	0.50	U	ug/L	P416915	
		Nodularin-R	0.10	U	ug/L	P416878	
2342622	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P417179	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P417154	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P417165	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P416948	
2342627	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.035		mg P/L	P416922	

Sample Location: Dr's Lake Near Lucy Branch **Collection Date/Time: 07/19/2022 10:45**

Field ID: NEHAB0086 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2342618	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P416915	
		Cylindrospermopsin	0.10	U	ug/L	P416878	
		Desmethyl microcystin LR	0.25	U	ug/L	P416878	
		Microcystin HilR	0.25	U	ug/L	P416878	
		Microcystin HtyR	0.25	U	ug/L	P416878	
		Microcystin LA	0.10	U	ug/L	P416878	
		Microcystin LF	0.10	U	ug/L	P416878	
		Microcystin LR	3.5		ug/L	P416878	
		Microcystin LW	0.25	U	ug/L	P416878	
		Microcystin LY	0.10	U	ug/L	P416878	
		Microcystin RR	0.10	U	ug/L	P416878	
		Microcystin WR	0.50	U	ug/L	P416878	
		Neosaxitoxin	0.50	U	ug/L	P416915	
		Microcystin YR	0.25	U	ug/L	P416878	
		Saxitoxin	0.50	U	ug/L	P416915	
		Nodularin-R	0.10	U	ug/L	P416878	
2342623	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P417179	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P417154	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P417165	
	EPA 365.1 Rev. 2.0	Total-P	0.095		mg P/L	P416948	
2342628	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.012		mg P/L	P416922	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417179

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P417154

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P417165

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P416948

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P416922

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

Reference Method: EPA 8321B
Batch ID: P416878

Component	Result	Code	Units
Cylindrospermopsin	0.10	U	ug/L
Desmethyl microcystin LR	0.25	U	ug/L
Microcystin HilR	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: P416915

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
Neosaxitoxin	0.50	U	ug/L
Saxitoxin	0.50	U	ug/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417179

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P417154

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: P417165

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	103		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P416948

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P416922

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.5		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P416878

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	84.5		P	40 - 150
Desmethyl microcystin LR	95.6		P	40 - 150
Microcystin HilR	95.9		P	40 - 150
Microcystin HtyR	93.0		P	40 - 150
Microcystin LA	84.5		P	40 - 150
Microcystin LF	50.7		P	40 - 150
Microcystin LR	86.8		P	40 - 150
Microcystin LW	89.4		P	40 - 150
Microcystin LY	82.0		P	40 - 150
Microcystin RR	84.9		P	40 - 150
Microcystin WR	101		P	40 - 150
Microcystin YR	88.2		P	40 - 150
Nodularin-R	82.4		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P416915

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	94.6		P	40 - 150
Neosaxitoxin	102		P	40 - 150
Saxitoxin	98.4		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417179

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2341487	Ammonia-N	102	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P417154

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2342195	Kjeldahl Nitrogen	98.1	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P417165

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2342620	NO2NO3-N	101	99.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P416948

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2342195	Total-P	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P416922

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2342624	O-Phosphate-P	97.3	97.8	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P416878

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2342570	Cylindrospermopsin	82.5	85.4	P/P	40 - 150
2342570	Desmethyl microcystin LR	109	109	P/P	40 - 150
2342570	Microcystin HilR	110	111	P/P	40 - 150
2342570	Microcystin HtyR	107	109	P/P	40 - 150
2342570	Microcystin LA	85.0	77.7	P/P	40 - 150
2342570	Microcystin LF	72.9	88.8	P/P	40 - 150
2342570	Microcystin LR	97.3	96.2	P/P	40 - 150
2342570	Microcystin LW	88.3	110	P/P	40 - 150
2342570	Microcystin LY	103	79.5	P/P	40 - 150
2342570	Microcystin RR	91.5	89.6	P/P	40 - 150
2342570	Microcystin WR	117	113	P/P	40 - 150
2342570	Microcystin YR	97.5	104	P/P	40 - 150
2342570	Nodularin-R	91.3	91.2	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P416915

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2342570	Anatoxin-a	103	103	P/P	40 - 150
2342570	Neosaxitoxin	84.0	89.9	P/P	40 - 150
2342570	Saxitoxin	68.8	72.8	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417179

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2341487	Ammonia-N	1.39	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P417154

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2342195	Kjeldahl Nitrogen	0.108	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P417165

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2342620	NO2NO3-N	1.50	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P416948

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2342195	Total-P	0.435	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P416922

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2342624	O-Phosphate-P	0.400	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P416878

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2342570	Cylindrospermopsin	3.46	Spike	P	0 - 30
2342570	Desmethyl microcystin LR	0.128	Spike	P	0 - 30
2342570	Microcystin HilR	0.421	Spike	P	0 - 30
2342570	Microcystin HtyR	2.20	Spike	P	0 - 30
2342570	Microcystin LA	8.97	Spike	P	0 - 30
2342570	Microcystin LF	19.6	Spike	P	0 - 30
2342570	Microcystin LR	1.07	Spike	P	0 - 30
2342570	Microcystin LW	21.4	Spike	P	0 - 30
2342570	Microcystin LY	26.2	Spike	P	0 - 30
2342570	Microcystin RR	2.12	Spike	P	0 - 30
2342570	Microcystin WR	3.19	Spike	P	0 - 30
2342570	Microcystin YR	6.40	Spike	P	0 - 30
2342570	Nodularin-R	0.0948	Spike	P	0 - 30

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P416915

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2342570	Anatoxin-a	0.432	Spike	P	0 - 30
2342570	Neosaxitoxin	6.75	Spike	P	0 - 30
2342570	Saxitoxin	5.68	Spike	P	0 - 30

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2342614
Field Sample ID: NEHAB0057

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	85.4	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	81.6	P	30 - 160

Lab Sample ID: 2342615
Field Sample ID: NEHAB0073

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	86.2	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	75.1	P	30 - 160

Lab Sample ID: 2342616
Field Sample ID: NEHAB0074

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	93.9	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	75.0	P	30 - 160

Lab Sample ID: 2342617
Field Sample ID: NEHAB0085

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	85.6	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	72.8	P	30 - 160

Lab Sample ID: 2342618
Field Sample ID: NEHAB0086

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	89.1	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	74.5	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A113618
Included Lab Sample IDs: 2342624, 2342625, 2342626, 2342627, 2342628

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

Reference Method: EPA 8321B
Run ID: A113623
Included Lab Sample IDs: 2342614, 2342615, 2342616, 2342617, 2342618

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	98.5	113	P/P	50 - 160
Neosaxitoxin	105	120	P/P	50 - 160
Saxitoxin	104	107	P/P	50 - 160

Reference Method: EPA 8321B
Run ID: A113639
Included Lab Sample IDs: 2342614, 2342615, 2342616, 2342617, 2342618

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	77.6	77.1	P/P	50 - 160
Cylindrospermopsin	81.5	77.6	P/P	50 - 160
Desmethyl microcystin LR	93.4	91.0	P/P	50 - 160
Desmethyl microcystin LR	93.8	93.4	P/P	50 - 160
Microcystin HilR	92.9	94.7	P/P	50 - 160
Microcystin HilR	93.0	92.9	P/P	50 - 160
Microcystin HtyR	91.9	93.2	P/P	50 - 160
Microcystin HtyR	93.2	90.6	P/P	50 - 160
Microcystin LA	69.3	71.8	P/P	50 - 160
Microcystin LA	71.8	69.8	P/P	50 - 160
Microcystin LF	71.9	75.5	P/P	50 - 160
Microcystin LF	75.5	61.8	P/P	50 - 160
Microcystin LR	83.0	84.8	P/P	50 - 160
Microcystin LR	84.8	84.6	P/P	50 - 160
Microcystin LW	74.5	78.8	P/P	50 - 160
Microcystin LW	75.9	74.5	P/P	50 - 160
Microcystin LY	87.0	99.6	P/P	50 - 160
Microcystin LY	99.4	87.0	P/P	50 - 160
Microcystin RR	83.4	82.1	P/P	50 - 160
Microcystin RR	86.7	83.4	P/P	50 - 160
Microcystin WR	105	102	P/P	50 - 160
Microcystin WR	108	105	P/P	50 - 160
Microcystin YR	84.4	92.6	P/P	50 - 160
Microcystin YR	92.6	88.4	P/P	50 - 160
Nodularin-R	82.3	84.5	P/P	50 - 160
Nodularin-R	84.5	80.0	P/P	50 - 160

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A113693
Included Lab Sample IDs: 2342619, 2342620, 2342621, 2342622, 2342623

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A113707
Included Lab Sample IDs: 2342619, 2342620, 2342621, 2342622, 2342623

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A113711
Included Lab Sample IDs: 2342619, 2342620, 2342621, 2342622, 2342623

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.8	98.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A113731
Included Lab Sample IDs: 2342619, 2342620, 2342621, 2342622, 2342623

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.7	97.6	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	96.6	102	106			1.39
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	98.1	98.2			0.108
EPA 353.2 Rev. 2.0	NO2NO3-N	103	101	99.1			1.50
EPA 365.1 Rev. 2.0	Total-P	99.8	100	100			0.435
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.5	97.3	97.8			0.400
EPA 8321B	Anatoxin-a	94.6	103	103			0.432
	Cylindrospermopsin	84.5	82.5	85.4			3.46
	Desmethyl microcystin LR	95.6	109	109			0.128
	Microcystin HilR	95.9	110	111			0.421
	Microcystin HtyR	93.0	107	109			2.20
	Microcystin LA	84.5	85.0	77.7			8.97
	Microcystin LF	50.7	72.9	88.8			19.6
	Microcystin LR	86.8	97.3	96.2			1.07
	Microcystin LW	89.4	88.3	110			21.4
	Microcystin LY	82.0	103	79.5			26.2
	Microcystin RR	84.9	91.5	89.6			2.12
	Microcystin WR	101	117	113			3.19
	Microcystin YR	88.2	97.5	104			6.40
	Neosaxitoxin	102	84.0	89.9			6.75
	Nodularin-R	82.4	91.3	91.2			0.0948
	Saxitoxin	98.4	68.8	72.8			5.68

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2342619, 2342620, 2342621, 2342622, 2342623
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2342619, 2342620, 2342621, 2342622, 2342623
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2342619, 2342620, 2342621, 2342622, 2342623
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2342619, 2342620, 2342621, 2342622, 2342623
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2342624, 2342625, 2342626, 2342627, 2342628
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2342614, 2342615, 2342616, 2342617, 2342618
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2342614, 2342615, 2342616, 2342617, 2342618

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	07/20/2022			07/26/2022 12:42	Judith K. Clark	2342619
	07/20/2022			07/26/2022 12:43	Judith K. Clark	2342620
	07/20/2022			07/26/2022 12:45	Judith K. Clark	2342621
	07/20/2022			07/26/2022 12:46	Judith K. Clark	2342622
	07/20/2022			07/26/2022 12:47	Judith K. Clark	2342623
EPA 351.2 Rev. 2.0	07/20/2022	07/26/2022 11:30	Simonne.V. Calhoun	07/27/2022 11:44	Samantha L Bates	2342619
	07/20/2022	07/26/2022 11:30	Simonne.V. Calhoun	07/27/2022 11:46	Samantha L Bates	2342620
	07/20/2022	07/26/2022 11:30	Simonne.V. Calhoun	07/27/2022 11:47	Samantha L Bates	2342621
	07/20/2022	07/26/2022 11:30	Simonne.V. Calhoun	07/27/2022 11:49	Samantha L Bates	2342622
	07/20/2022	07/26/2022 11:30	Simonne.V. Calhoun	07/27/2022 11:50	Samantha L Bates	2342623
EPA 353.2 Rev. 2.0	07/20/2022			07/26/2022 10:34	Beverly Y. Sanders	2342620
	07/20/2022			07/26/2022 10:46	Beverly Y. Sanders	2342619
	07/20/2022			07/26/2022 10:47	Beverly Y. Sanders	2342621
	07/20/2022			07/26/2022 10:49	Beverly Y. Sanders	2342622
	07/20/2022			07/26/2022 10:50	Beverly Y. Sanders	2342623
EPA 365.1 Rev. 2.0	07/20/2022	07/22/2022 16:03	Adam P Silver	07/25/2022 14:49	James L Waggerby	2342619
	07/20/2022	07/22/2022 16:03	Adam P Silver	07/25/2022 14:50	James L Waggerby	2342620
	07/20/2022	07/22/2022 16:03	Adam P Silver	07/25/2022 14:51	James L Waggerby	2342621
	07/20/2022	07/22/2022 16:03	Adam P Silver	07/25/2022 14:52	James L Waggerby	2342622
	07/20/2022	07/22/2022 16:03	Adam P Silver	07/25/2022 14:53	James L Waggerby	2342623
EPA 365.1 Rev. 2.0 dissolved	07/20/2022			07/20/2022 14:54	Chandler E Cox	2342624
	07/20/2022			07/20/2022 14:56	Chandler E Cox	2342625
	07/20/2022			07/20/2022 14:57	Chandler E Cox	2342626
	07/20/2022			07/20/2022 14:58	Chandler E Cox	2342627
	07/20/2022			07/20/2022 14:59	Chandler E Cox	2342628
EPA 8321B	07/20/2022	07/21/2022 10:00	Manjita Shrestha	07/21/2022 16:30	Manjita Shrestha	2342614
	07/20/2022	07/21/2022 10:00	Manjita Shrestha	07/21/2022 16:47	Manjita Shrestha	2342615
	07/20/2022	07/21/2022 10:00	Manjita Shrestha	07/21/2022 17:03	Manjita Shrestha	2342616
	07/20/2022	07/21/2022 10:00	Manjita Shrestha	07/21/2022 17:20	Manjita Shrestha	2342617
	07/20/2022	07/21/2022 10:00	Manjita Shrestha	07/21/2022 17:54	Manjita Shrestha	2342618
	07/20/2022	07/21/2022 12:00	Manjita Shrestha	07/22/2022 05:45	Manjita Shrestha	2342614
	07/20/2022	07/21/2022 12:00	Manjita Shrestha	07/22/2022 05:59	Manjita Shrestha	2342615
	07/20/2022	07/21/2022 12:00	Manjita Shrestha	07/22/2022 06:13	Manjita Shrestha	2342616
	07/20/2022	07/21/2022 12:00	Manjita Shrestha	07/22/2022 06:27	Manjita Shrestha	2342617
	07/20/2022	07/21/2022 12:00	Manjita Shrestha	07/22/2022 06:41	Manjita Shrestha	2342618