

Chemical Analysis Report

WQAP-2023-06-21-02

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

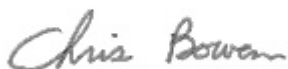
Event Description: **Algal Bloom Response - SE ROC**
Request ID: **RQ-2023-05-29-64**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Jordan Skaggs

For additional information please contact
Colin Wright, Ph.D.
Chris Bowen, B.S.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
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Phone (850) 245-8085

Certified by: Chris Bowen, Environmental Administrator

Date Certified: 05-JUL-2023 12:13



NON-CONFORMANCE REPORT INCLUDED

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: C44 canal - S308C (canal side)

Collection Date/Time: 06/20/2023 12:20

Field ID: FB_06202023

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2418528	EPA 8321B	Anatoxin-a	0.50	U	ug/L	P431555	
		Cylindrospermopsin	0.10	U	ug/L	P431551	
		Desmethyl microcystin LR	0.25	U	ug/L	P431551	
		Microcystin HILR	0.25	U	ug/L	P431551	
		Microcystin HtyR	0.25	U	ug/L	P431551	
		Microcystin LA	0.10	U	ug/L	P431551	
		Microcystin LF	0.10	U	ug/L	P431551	
		Microcystin LR	0.25	U	ug/L	P431551	
		Microcystin LW	0.25	U	ug/L	P431551	
		Microcystin LY	0.10	U	ug/L	P431551	
		Microcystin RR	0.10	U	ug/L	P431551	
		Microcystin WR	0.50	U	ug/L	P431551	
		Neosaxitoxin	1.0	U	ug/L	P431555	
		Microcystin YR	0.25	U	ug/L	P431551	
		Saxitoxin	1.0	U	ug/L	P431555	
		Nodularin-R	0.10	U	ug/L	P431551	
2418529	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	UY	mg N/L	P431819	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	UY	mg N/L	P431701	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	UY	mg N/L	P431814	
	EPA 365.1 Rev. 2.0	Total-P	0.002	UY	mg P/L	P431628	
2418530	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P431585	

Ref. Method and Comment:

EPA 8321B: MDLs are elevated due to required dilution of sample matrix.

EPA 350.1 Rev. 2.0: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 351.2 Rev. 2.0: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 353.2 Rev. 2.0: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 365.1 Rev. 2.0: Total-P: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

Sample Location: Biscayne Canal at NW 67th Ave

Collection Date/Time: 06/20/2023 09:50

Field ID: SEHAB0093

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2418545	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P431555	
		Cylindrospermopsin	0.10	U	ug/L	P431551	
		Desmethyl microcystin LR	0.25	U	ug/L	P431551	
		Microcystin HILR	0.25	U	ug/L	P431551	
		Microcystin HtyR	0.25	U	ug/L	P431551	
		Microcystin LA	0.10	U	ug/L	P431551	
		Microcystin LF	0.10	U	ug/L	P431551	
		Microcystin LR	0.25	U	ug/L	P431551	
		Microcystin LW	0.25	U	ug/L	P431551	
		Microcystin LY	0.10	U	ug/L	P431551	
		Microcystin RR	0.10	U	ug/L	P431551	
		Microcystin WR	0.50	U	ug/L	P431551	
		Neosaxitoxin	0.50	U	ug/L	P431555	
		Microcystin YR	0.25	U	ug/L	P431551	
		Saxitoxin	0.50	U	ug/L	P431555	
		Nodularin-R	0.10	U	ug/L	P431551	
2418548	EPA 350.1 Rev. 2.0	Ammonia-N	0.049		mg N/L	P431838	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.90		mg N/L	P431701	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.25		mg N/L	P431814	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P431631	
2418551	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P431585	

Sample Location: C44 canal - S308C (canal side)

Collection Date/Time: 06/20/2023 12:10

Field ID: SEHAB0063

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2418544	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P431555	
		Cylindrospermopsin	0.10	U	ug/L	P431551	
		Desmethyl microcystin LR	0.27	I	ug/L	P431551	
		Microcystin HILR	0.25	U	ug/L	P431551	
		Microcystin HtyR	0.25	U	ug/L	P431551	
		Microcystin LA	0.10	U	ug/L	P431551	
		Microcystin LF	0.10	U	ug/L	P431551	
		Microcystin LR	5.2		ug/L	P431551	
		Microcystin LW	0.25	U	ug/L	P431551	
		Microcystin LY	0.10	U	ug/L	P431551	
		Microcystin RR	0.10	U	ug/L	P431551	
		Microcystin WR	0.50	U	ug/L	P431551	
		Neosaxitoxin	0.50	U	ug/L	P431555	
		Microcystin YR	0.25	U	ug/L	P431551	
		Saxitoxin	0.50	U	ug/L	P431555	
		Nodularin-R	0.10	U	ug/L	P431551	
2418547	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P431838	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P431701	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P431814	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P431631	
2418550	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.084		mg P/L	P431585	

Sample Location: Lake Okeechobee - S308C (lakeside)

Collection Date/Time: 06/20/2023 12:35

Field ID: SEHAB0062

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2418543	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P431555	
		Cylindrospermopsin	0.10	U	ug/L	P431551	
		Desmethyl microcystin LR	18		ug/L	P431551	
		Microcystin HIR	6.5		ug/L	P431551	
		Microcystin HtyR	0.25	U	ug/L	P431551	
		Microcystin LA	6.4		ug/L	P431551	
		Microcystin LF	0.18	I	ug/L	P431551	
		Microcystin LR	200		ug/L	P431551	
		Microcystin LW	0.25	U	ug/L	P431551	
		Microcystin LY	0.24	I	ug/L	P431551	
		Microcystin RR	0.19	I	ug/L	P431551	
		Microcystin WR	1.6	I	ug/L	P431551	
		Neosaxitoxin	0.50	U	ug/L	P431555	
		Microcystin YR	0.25	U	ug/L	P431551	
		Saxitoxin	0.50	U	ug/L	P431555	
		Nodularin-R	0.10	U	ug/L	P431551	
2418546	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P431838	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	4.6		mg N/L	P431701	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P431814	
	EPA 365.1 Rev. 2.0	Total-P	0.67		mg P/L	P431631	
2418549	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.068		mg P/L	P431585	

Non-Conformance Report

NCR ID: 9931

Event(s)

WQAP-2023-06-21-02

Job(s)

TLH-2023-06-21-12

Sample(s)

2418529

Test(s)

NCR Type: SHIPPING/RECEIVING

NCR Category: Preservation Not Intact

Observation: Sample not preserved to pH < 2.

Resolution: Sample preserved in the laboratory with sulfuric acid.
H2SO4 Lot# SA3013020 | Expiration Date: 01/25/2024

Authorized by/Date: Kyle Klug 6/21/2023

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P431819

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P431838

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P431701

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P431814

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P431628

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P431631

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P431585

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

Reference Method: EPA 8321B
Batch ID: P431551

Component	Result	Code	Units
Cylindrospermopsin	0.10	U	ug/L
Desmethyl microcystin LR	0.25	U	ug/L
Microcystin H1R	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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B
Batch ID: P431551

Component	Result	Code	Units
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: P431555

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: P431819

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P431838

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P431701

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P431814

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	105		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P431628

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P431631

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P431585

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

Reference Method: EPA 8321B
Batch ID: P431551

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	95.7		P	40 - 150
Desmethyl microcystin LR	110		P	40 - 150
Microcystin HIR	114		P	40 - 150
Microcystin HtyR	111		P	40 - 150
Microcystin LA	124		P	40 - 150
Microcystin LF	96.3		P	40 - 150
Microcystin LR	103		P	40 - 150
Microcystin LW	139		P	40 - 150
Microcystin LY	109		P	40 - 150
Microcystin RR	102		P	40 - 150

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P431551

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Microcystin WR	121		P	40 - 150
Microcystin YR	108		P	40 - 150
Nodularin-R	103		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P431555

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	90.2		P	40 - 150
Neosaxitoxin	87.6		P	40 - 150
Saxitoxin	89.2		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P431819

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2418456	Ammonia-N	97.8	99.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P431838

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2418547	Ammonia-N	95.2	97.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P431701

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2418548	Kjeldahl Nitrogen	106	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P431814

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2418547	NO2NO3-N	105	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P431628

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2418475	Total-P	106	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P431631

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2418553	Total-P	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P431585

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2418514	O-Phosphate-P	102	103	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P431551

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2418479	Cylindrospermopsin	98.6	99.3	P/P	40 - 150
2418479	Desmethyl microcystin LR	121	121	P/P	40 - 150
2418479	Microcystin HILR	121	127	P/P	40 - 150
2418479	Microcystin HtyR	120	127	P/P	40 - 150
2418479	Microcystin LA	115	117	P/P	40 - 150
2418479	Microcystin LF	133	110	P/P	40 - 150
2418479	Microcystin LR	119	118	P/P	40 - 150
2418479	Microcystin LW	106	133	P/P	40 - 150
2418479	Microcystin LY	122	131	P/P	40 - 150
2418479	Microcystin RR	107	110	P/P	40 - 150

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P431551

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2418479	Microcystin WR	120	125	P/P	40 - 150
2418479	Microcystin YR	121	123	P/P	40 - 150
2418479	Nodularin-R	111	114	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P431555

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2418479	Anatoxin-a	86.7	86.4	P/P	40 - 150
2418479	Neosaxitoxin	94.4	91.6	P/P	40 - 150
2418479	Saxitoxin	93.6	93.9	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P431819

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2418456	Ammonia-N	1.45	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P431838

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2418547	Ammonia-N	1.49	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P431701

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2418548	Kjeldahl Nitrogen	0.446	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P431814

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2418547	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P431628

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2418475	Total-P	0.211	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P431631

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2418553	Total-P	0.474	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P431585

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2418514	O-Phosphate-P	1.07	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P431551

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2418479	Cylindrospermopsin	0.658	Spike	P	0 - 30
2418479	Desmethyl microcystin LR	0.526	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P431551

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2418479	Microcystin HII R	4.94	Spike	P	0 - 30
2418479	Microcystin Hty R	5.39	Spike	P	0 - 30
2418479	Microcystin LA	2.30	Spike	P	0 - 30
2418479	Microcystin LF	18.5	Spike	P	0 - 30
2418479	Microcystin LR	0.923	Spike	P	0 - 30
2418479	Microcystin LW	22.9	Spike	P	0 - 30
2418479	Microcystin LY	7.02	Spike	P	0 - 30
2418479	Microcystin RR	3.23	Spike	P	0 - 30
2418479	Microcystin WR	4.03	Spike	P	0 - 30
2418479	Microcystin YR	2.33	Spike	P	0 - 30
2418479	Nodularin-R	2.51	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P431555

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2418479	Anatoxin-a	0.299	Spike	P	0 - 30
2418479	Neosaxitoxin	3.07	Spike	P	0 - 30
2418479	Saxitoxin	0.364	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2418528
Field Sample ID: FB_06202023

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	67.6	P	30 - 160
EPA 8321B	Saxitoxin-15N7	109	P	30 - 160

Lab Sample ID: 2418543
Field Sample ID: SEHAB0062

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	145	P	30 - 160
EPA 8321B	Saxitoxin-15N7	67.3	P	30 - 160

Lab Sample ID: 2418544
Field Sample ID: SEHAB0063

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	91.7	P	30 - 160
EPA 8321B	Saxitoxin-15N7	68.6	P	30 - 160

Lab Sample ID: 2418545
Field Sample ID: SEHAB0093

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	73.2	P	30 - 160
EPA 8321B	Saxitoxin-15N7	68.1	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A119945

Included Lab Sample IDs: 2418530, 2418549, 2418550, 2418551

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.2	98.8	P/P	90 - 110
O-Phosphate-P	98.8	99.5	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A119968

Included Lab Sample IDs: 2418528, 2418543, 2418544, 2418545

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	104	106	P/P	50 - 160
Cylindrospermopsin	106	101	P/P	50 - 160
Desmethyl microcystin LR	108	112	P/P	50 - 160
Desmethyl microcystin LR	113	108	P/P	50 - 160
Microcystin HILR	116	119	P/P	50 - 160
Microcystin HILR	119	124	P/P	50 - 160
Microcystin HtyR	115	116	P/P	50 - 160
Microcystin HtyR	116	109	P/P	50 - 160
Microcystin LA	143	115	P/P	50 - 160
Microcystin LA	145	143	P/P	50 - 160
Microcystin LF	102	130	P/P	50 - 160
Microcystin LF	130	115	P/P	50 - 160
Microcystin LR	104	104	P/P	50 - 160
Microcystin LR	108	104	P/P	50 - 160
Microcystin LR	98.4	97.4	P/P	50 - 160
Microcystin LW	126	153	P/P	50 - 160
Microcystin LW	153	103	P/P	50 - 160
Microcystin LY	136	117	P/P	50 - 160
Microcystin LY	154	136	P/P	50 - 160
Microcystin RR	102	103	P/P	50 - 160
Microcystin RR	103	105	P/P	50 - 160
Microcystin WR	123	123	P/P	50 - 160
Microcystin WR	123	124	P/P	50 - 160
Microcystin YR	115	116	P/P	50 - 160
Microcystin YR	118	115	P/P	50 - 160
Nodularin-R	105	105	P/P	50 - 160
Nodularin-R	105	103	P/P	50 - 160

Reference Method: EPA 8321B

Run ID: A119980

Included Lab Sample IDs: 2418528, 2418543, 2418544, 2418545

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	84.2	84.1	P/P	50 - 160
Anatoxin-a	85.6	84.2	P/P	50 - 160
Neosaxitoxin	80.4	78.0	P/P	50 - 160
Neosaxitoxin	81.4	80.4	P/P	50 - 160
Saxitoxin	81.9	79.3	P/P	50 - 160
Saxitoxin	83.1	81.9	P/P	50 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A119994

Included Lab Sample IDs: 2418529, 2418548

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A120004

Included Lab Sample IDs: 2418546, 2418547

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A120032

Included Lab Sample IDs: 2418529, 2418547, 2418548

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.1	96.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A120034

Included Lab Sample IDs: 2418546

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.2	95.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A120043

Included Lab Sample IDs: 2418529, 2418546, 2418547, 2418548

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A120045

Included Lab Sample IDs: 2418529, 2418546, 2418547, 2418548

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	98.6	P/P	90 - 110
Ammonia-N	99.2	99.0	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	98.8	97.8	99.4			1.45
	Ammonia-N	97.8	95.2	97.0			1.49
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.8	106	105			0.446
EPA 353.2 Rev. 2.0	NO2NO3-N	105	105	105			0.0
EPA 365.1 Rev. 2.0	Total-P	99.2	106	107			0.211
	Total-P	104	103	102			0.474
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	102	103			1.07
EPA 8321B	Anatoxin-a	90.2	86.7	86.4			0.299
	Cylindrospermopsin	95.7	98.6	99.3			0.658
	Desmethyl microcystin LR	110	121	121			0.526
	Microcystin HiIR	114	121	127			4.94
	Microcystin HtyR	111	120	127			5.39
	Microcystin LA	124	115	117			2.30
	Microcystin LF	96.3	133	110			18.5
	Microcystin LR	103	119	118			0.923
	Microcystin LW	139	106	133			22.9
	Microcystin LY	109	122	131			7.02
	Microcystin RR	102	107	110			3.23
	Microcystin WR	121	120	125			4.03
	Microcystin YR	108	121	123			2.33
	Neosaxitoxin	87.6	94.4	91.6			3.07
	Nodularin-R	103	111	114			2.51
	Saxitoxin	89.2	93.6	93.9			0.364

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2418529, 2418546, 2418547, 2418548
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2418529, 2418546, 2418547, 2418548
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2418529, 2418546, 2418547, 2418548
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2418529, 2418546, 2418547, 2418548
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2418530, 2418549, 2418550, 2418551
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2418528, 2418543, 2418544, 2418545
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2418528, 2418543, 2418544, 2418545

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	06/21/2023			06/27/2023 12:01	Khloe J Berg	2418529
	06/21/2023			06/27/2023 13:14	Khloe J Berg	2418547
	06/21/2023			06/27/2023 13:18	Khloe J Berg	2418546
	06/21/2023			06/27/2023 13:19	Khloe J Berg	2418548
EPA 351.2 Rev. 2.0	06/21/2023	06/23/2023 13:15	Dana G. Hughes	06/26/2023 11:27	Samantha L Bates	2418529
	06/21/2023	06/23/2023 13:15	Dana G. Hughes	06/26/2023 11:33	Samantha L Bates	2418547
	06/21/2023	06/23/2023 13:15	Dana G. Hughes	06/26/2023 11:35	Samantha L Bates	2418548
	06/21/2023	06/23/2023 13:15	Dana G. Hughes	06/26/2023 14:16	Samantha L Bates	2418546
EPA 353.2 Rev. 2.0	06/21/2023			06/27/2023 10:52	Beverly Y. Sanders	2418547
	06/21/2023			06/27/2023 10:57	Beverly Y. Sanders	2418529
	06/21/2023			06/27/2023 11:01	Beverly Y. Sanders	2418546
	06/21/2023			06/27/2023 11:02	Beverly Y. Sanders	2418548
EPA 365.1 Rev. 2.0	06/21/2023	06/22/2023 13:08	Alexis Price	06/23/2023 11:14	James L Waggeberby	2418529
	06/21/2023	06/22/2023 13:08	Alexis Price	06/23/2023 11:19	James L Waggeberby	2418548
	06/21/2023	06/22/2023 13:08	Alexis Price	06/23/2023 14:06	James L Waggeberby	2418546
	06/21/2023	06/22/2023 13:08	Alexis Price	06/23/2023 14:07	James L Waggeberby	2418547
EPA 365.1 Rev. 2.0 dissolved	06/21/2023			06/21/2023 12:59	Elise M. Gillis	2418530
	06/21/2023			06/21/2023 13:01	Elise M. Gillis	2418549
	06/21/2023			06/21/2023 13:02	Elise M. Gillis	2418550
	06/21/2023			06/21/2023 13:08	Elise M. Gillis	2418551
EPA 8321B	06/21/2023	06/21/2023 16:00	Touraj Touran	06/22/2023 04:46	Touraj Touran	2418528
	06/21/2023	06/21/2023 16:00	Touraj Touran	06/22/2023 05:19	Touraj Touran	2418543
	06/21/2023	06/21/2023 16:00	Touraj Touran	06/22/2023 05:36	Touraj Touran	2418544
	06/21/2023	06/21/2023 16:00	Touraj Touran	06/22/2023 05:53	Touraj Touran	2418545
	06/21/2023	06/21/2023 16:00	Touraj Touran	06/22/2023 11:51	Touraj Touran	2418543
	06/21/2023	06/21/2023 16:00	Touraj Touran	06/23/2023 00:29	Touraj Touran	2418543
	06/21/2023	06/21/2023 16:00	Touraj Touran	06/23/2023 00:43	Touraj Touran	2418544
	06/21/2023	06/21/2023 16:00	Touraj Touran	06/23/2023 00:57	Touraj Touran	2418545
	06/21/2023	06/21/2023 16:00	Touraj Touran	06/23/2023 04:53	Touraj Touran	2418528