Chemical Analysis Report

WQAP-2022-05-24-01

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

Event Description: **Algae Bloom Response-as needed**
Request ID: **RQ-2022-05-23-47**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
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Certified by: Colin Wright, Program Administrator

Date Certified: 15-JUN-2022 10:45

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: Rod Res Dam East **Collection Date/Time: 05/23/2022 12:40**

Field ID: NEHAB0078 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2329341	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P414152	
		Cylindrospermopsin	0.10	U	ug/L	P414153	
		Desmethyl microcystin LR	0.25	U	ug/L	P414153	
		Microcystin HilR**	0.25	U	ug/L	P414153	
		Microcystin HtyR**	0.25	U	ug/L	P414153	
		Microcystin LA	0.10	U	ug/L	P414153	
		Microcystin LF	0.10	U	ug/L	P414153	
		Microcystin LR	0.25	U	ug/L	P414153	
		Microcystin LW	0.25	U	ug/L	P414153	
		Microcystin LY	0.10	U	ug/L	P414153	
		Microcystin RR	0.10	U	ug/L	P414153	
		Microcystin WR	0.50	U	ug/L	P414153	
		Neosaxitoxin**	0.50	U	ug/L	P414152	
		Microcystin YR	0.25	U	ug/L	P414153	
		Saxitoxin	0.50	U	ug/L	P414152	
		Nodularin-R**	0.10	U	ug/L	P414153	
2329353	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P414451	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.57		mg N/L	P414561	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P414819	
	EPA 365.1 Rev. 2.0	Total-P	0.030		mg P/L	P414407	
2329356	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P414310	

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: Dr's Lake end of Lawrence Rd **Collection Date/Time: 05/23/2022 15:50**

Field ID: NEHAB0073 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2329342	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P414152	
		Cylindrospermopsin	0.10	U	ug/L	P414153	
		Desmethyl microcystin LR	0.25	U	ug/L	P414153	
		Microcystin HilR**	0.25	U	ug/L	P414153	
		Microcystin HtyR**	0.25	U	ug/L	P414153	
		Microcystin LA	0.10	U	ug/L	P414153	
		Microcystin LF	0.10	U	ug/L	P414153	
		Microcystin LR	0.25	U	ug/L	P414153	
		Microcystin LW	0.25	U	ug/L	P414153	
		Microcystin LY	0.10	U	ug/L	P414153	
		Microcystin RR	0.10	U	ug/L	P414153	
		Microcystin WR	0.50	U	ug/L	P414153	
		Neosaxitoxin**	0.50	U	ug/L	P414152	
		Microcystin YR	0.25	U	ug/L	P414153	
		Saxitoxin	0.50	U	ug/L	P414152	
		Nodularin-R**	0.10	U	ug/L	P414153	
2329354	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P414450	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.94		mg N/L	P414617	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P415032	
	EPA 365.1 Rev. 2.0	Total-P	0.063		mg P/L	P414402	MS
2329357	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P414311	

Sample Location: Swimming Pen Cr @ Whitey's Fish Camp **Collection Date/Time: 05/23/2022 15:15**

Field ID: NEHAB0074 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2329343	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P414152	
		Cylindrospermopsin	0.10	U	ug/L	P414153	
		Desmethyl microcystin LR	0.25	U	ug/L	P414153	
		Microcystin HilR**	0.25	U	ug/L	P414153	
		Microcystin HtyR**	0.25	U	ug/L	P414153	
		Microcystin LA	0.10	U	ug/L	P414153	
		Microcystin LF	0.10	U	ug/L	P414153	
		Microcystin LR	0.25	U	ug/L	P414153	
		Microcystin LW	0.25	U	ug/L	P414153	
		Microcystin LY	0.10	U	ug/L	P414153	
		Microcystin RR	0.10	U	ug/L	P414153	
		Microcystin WR	0.50	U	ug/L	P414153	
		Neosaxitoxin**	0.50	U	ug/L	P414152	
		Microcystin YR	0.25	U	ug/L	P414153	
		Saxitoxin	0.50	U	ug/L	P414152	
		Nodularin-R**	0.10	U	ug/L	P414153	
2329355	EPA 350.1 Rev. 2.0	Ammonia-N	0.050		mg N/L	P414450	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P414617	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P414712	
	EPA 365.1 Rev. 2.0	Total-P	0.086		mg P/L	P414402	MS
2329358	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.020		mg P/L	P414311	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P414450

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P414451

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414561

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414617

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P414712

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P414819

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P415032

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414402

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414407

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P414310

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P414311

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

Reference Method: EPA 8321B
Batch ID: P414152

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

Reference Method: EPA 8321B
Batch ID: P414153

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P414450

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P414451

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414561

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414617

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: P414712

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P414819

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P415032

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414402

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414407

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P414310

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P414311

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

Reference Method: EPA 8321B
Batch ID: P414152

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	79.3		P	40 - 150
Neosaxitoxin	87.3		P	40 - 150
Saxitoxin	81.7		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P414153

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	80.5		P	40 - 150
Desmethyl microcystin LR	81.8		P	40 - 150
Microcystin HilR	69.2		P	40 - 150
Microcystin HtyR	70.1		P	40 - 150
Microcystin LA	58.6		P	40 - 150
Microcystin LF	85.6		P	40 - 150
Microcystin LR	73.0		P	40 - 150
Microcystin LW	55.5		P	40 - 150
Microcystin LY	56.2		P	40 - 150
Microcystin RR	81.1		P	40 - 150
Microcystin WR	68.9		P	40 - 150
Microcystin YR	68.5		P	40 - 150
Nodularin-R	65.1		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P414450

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2329737	Ammonia-N	98.4	97.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P414451

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2327901	Ammonia-N	95.2	97.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414617

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2327402	Kjeldahl Nitrogen	95.1	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P414712

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2328964	NO2NO3-N	98.3	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P414819

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2329353	NO2NO3-N	105	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P415032

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2329737	NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414402

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2328683	Total-P	90.0	89.4	P/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414407

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2329305	Total-P	99.6	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P414310

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2329411	O-Phosphate-P	96.9	97.5	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P414311

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2329357	O-Phosphate-P	96.0	96.1	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P414152

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2328697	Anatoxin-a	102	102	P/P	40 - 150
2328697	Neosaxitoxin	55.4	53.0	P/P	40 - 150
2328697	Saxitoxin	57.6	55.2	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P414153

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2328629	Cylindrospermopsin	81.5	82.7	P/P	40 - 150
2328629	Desmethyl microcystin LR	86.6	92.0	P/P	40 - 150
2328629	Microcystin HilR	76.5	82.7	P/P	40 - 150
2328629	Microcystin HtyR	75.7	79.3	P/P	40 - 150
2328629	Microcystin LA	64.2	71.6	P/P	40 - 150
2328629	Microcystin LF	60.1	70.4	P/P	40 - 150
2328629	Microcystin LR	94.6	92.1	P/P	40 - 150
2328629	Microcystin LW	54.6	65.3	P/P	40 - 150
2328629	Microcystin LY	60.7	52.2	P/P	40 - 150
2328629	Microcystin RR	88.4	92.6	P/P	40 - 150
2328629	Microcystin WR	78.8	91.1	P/P	40 - 150
2328629	Microcystin YR	76.3	81.4	P/P	40 - 150
2328629	Nodularin-R	72.8	80.0	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P414450

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2329737	Ammonia-N	0.892	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P414451

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2327901	Ammonia-N	1.77	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414561

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2328842	Kjeldahl Nitrogen	0.945	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414617

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2327402	Kjeldahl Nitrogen	9.56	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P414712

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2328964	NO2NO3-N	0.361	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P414819

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2329353	NO2NO3-N	2.41	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P415032

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2329737	NO2NO3-N	1.34	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414402

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2328683	Total-P	0.708	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414407

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2329305	Total-P	2.12	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P414310

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2329411	O-Phosphate-P	0.617	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P414311

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2329357	O-Phosphate-P	0.0999	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P414152

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2328697	Anatoxin-a	0.0782	Spike	P	0 - 30
2328697	Neosaxitoxin	4.45	Spike	P	0 - 30
2328697	Saxitoxin	4.35	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P414153

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2328629	Cylindrospermopsin	1.47	Spike	P	0 - 30
2328629	Desmethyl microcystin LR	5.99	Spike	P	0 - 30
2328629	Microcystin HilR	7.75	Spike	P	0 - 30
2328629	Microcystin HtyR	4.76	Spike	P	0 - 30
2328629	Microcystin LA	10.8	Spike	P	0 - 30
2328629	Microcystin LF	15.8	Spike	P	0 - 30
2328629	Microcystin LR	2.69	Spike	P	0 - 30
2328629	Microcystin LW	17.8	Spike	P	0 - 30
2328629	Microcystin LY	15.0	Spike	P	0 - 30
2328629	Microcystin RR	4.55	Spike	P	0 - 30
2328629	Microcystin WR	14.5	Spike	P	0 - 30
2328629	Microcystin YR	6.55	Spike	P	0 - 30
2328629	Nodularin-R	9.39	Spike	P	0 - 30

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2329341
Field Sample ID: NEHAB0078

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	59.1	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	68.5	P	30 - 160

Lab Sample ID: 2329342
Field Sample ID: NEHAB0073

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	66.6	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	48.9	P	30 - 160

Lab Sample ID: 2329343
Field Sample ID: NEHAB0074

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	64.7	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	51.8	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A112366
Included Lab Sample IDs: 2329356, 2329357, 2329358

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.7	99.0	P/P	90 - 110
O-Phosphate-P	99.0	98.5	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A112405
Included Lab Sample IDs: 2329341, 2329342, 2329343

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	82.0	88.3	P/P	50 - 160
Cylindrospermopsin	88.3	87.0	P/P	50 - 160
Desmethyl microcystin LR	90.4	91.7	P/P	50 - 160
Desmethyl microcystin LR	91.7	90.5	P/P	50 - 160
Microcystin HilR	80.5	82.9	P/P	50 - 160
Microcystin HilR	82.9	80.1	P/P	50 - 160
Microcystin HtyR	84.3	84.4	P/P	50 - 160
Microcystin HtyR	84.4	84.6	P/P	50 - 160
Microcystin LA	69.1	72.9	P/P	50 - 160
Microcystin LA	72.9	63.0	P/P	50 - 160
Microcystin LF	115	87.5	P/P	50 - 160
Microcystin LF	87.5	67.0	P/P	50 - 160
Microcystin LR	86.2	91.3	P/P	50 - 160
Microcystin LR	89.4	86.2	P/P	50 - 160
Microcystin LW	72.3	71.6	P/P	50 - 160
Microcystin LW	74.8	72.3	P/P	50 - 160
Microcystin LY	61.6	61.9	P/P	50 - 160
Microcystin LY	61.9	74.1	P/P	50 - 160
Microcystin RR	92.1	94.4	P/P	50 - 160
Microcystin RR	94.4	95.0	P/P	50 - 160
Microcystin WR	81.2	83.0	P/P	50 - 160
Microcystin WR	82.4	81.2	P/P	50 - 160
Microcystin YR	81.5	79.1	P/P	50 - 160
Microcystin YR	81.5	81.5	P/P	50 - 160
Nodularin-R	75.9	77.5	P/P	50 - 160
Nodularin-R	77.5	77.1	P/P	50 - 160

Reference Method: EPA 8321B
Run ID: A112408
Included Lab Sample IDs: 2329341, 2329342, 2329343

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	89.9	91.8	P/P	50 - 160
Neosaxitoxin	96.4	99.8	P/P	50 - 160
Saxitoxin	94.8	96.1	P/P	50 - 160

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A112440
Included Lab Sample IDs: 2329353, 2329354, 2329355

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.0	97.7	P/P	90 - 110
Ammonia-N	97.7	97.9	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A112467
Included Lab Sample IDs: 2329354, 2329355

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A112531
Included Lab Sample IDs: 2329353

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.5	97.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A112598
Included Lab Sample IDs: 2329355

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A112613
Included Lab Sample IDs: 2329353

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.7	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A112636
Included Lab Sample IDs: 2329354, 2329355

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	97.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A112645
Included Lab Sample IDs: 2329353

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A112733
Included Lab Sample IDs: 2329354

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	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	98.0	98.4	97.2			0.892
	Ammonia-N	96.0	95.2	97.0			1.77
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102					0.945
	Kjeldahl Nitrogen	105	95.1	106			9.56
EPA 353.2 Rev. 2.0	NO2NO3-N	100	98.3	98.8			0.361
	NO2NO3-N	100	105	102			2.41
	NO2NO3-N	99.5	102	101			1.34
EPA 365.1 Rev. 2.0	Total-P	99.9	90.0	89.4			0.708
	Total-P	101	99.6	102			2.12
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.2	96.9	97.5			0.617
	O-Phosphate-P	99.4	96.0	96.1			0.0999
EPA 8321B	Anatoxin-a	79.3	102	102			0.0782
	Cylindrospermopsin	80.5	81.5	82.7			1.47
	Desmethyl microcystin LR	81.8	86.6	92.0			5.99
	Microcystin HilR	69.2	76.5	82.7			7.75
	Microcystin HtyR	70.1	75.7	79.3			4.76
	Microcystin LA	58.6	64.2	71.6			10.8
	Microcystin LF	85.6	60.1	70.4			15.8
	Microcystin LR	73.0	94.6	92.1			2.69
	Microcystin LW	55.5	54.6	65.3			17.8
	Microcystin LY	56.2	60.7	52.2			15.0
	Microcystin RR	81.1	88.4	92.6			4.55
	Microcystin WR	68.9	78.8	91.1			14.5
	Microcystin YR	68.5	76.3	81.4			6.55
	Neosaxitoxin	87.3	55.4	53.0			4.45
	Nodularin-R	65.1	72.8	80.0			9.39
	Saxitoxin	81.7	57.6	55.2			4.35

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2329353, 2329354, 2329355
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2329353, 2329354, 2329355
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2329353, 2329354, 2329355
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2329353, 2329354, 2329355
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2329356, 2329357, 2329358
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2329341, 2329342, 2329343
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2329341, 2329342, 2329343

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	05/24/2022			05/26/2022 13:35	Ping Hua	2329354
	05/24/2022			05/26/2022 13:36	Ping Hua	2329355
	05/24/2022			05/26/2022 14:04	Ping Hua	2329353
EPA 351.2 Rev. 2.0	05/24/2022	06/02/2022 15:43	Samantha L Bates	06/03/2022 13:49	Alexandra J Mattheus	2329353
	05/24/2022	06/03/2022 11:24	Samantha L Bates	06/07/2022 10:16	Alexandra J Mattheus	2329354
	05/24/2022	06/03/2022 11:24	Samantha L Bates	06/07/2022 10:18	Alexandra J Mattheus	2329355
EPA 353.2 Rev. 2.0	05/24/2022			06/02/2022 15:16	Nathaniel J Jones	2329355
	05/24/2022			06/06/2022 18:22	Touraj Touran	2329353
	05/24/2022			06/09/2022 15:20	Nathaniel J Jones	2329354
EPA 365.1 Rev. 2.0	05/24/2022	05/26/2022 15:35	Simonne.V. Calhoun	05/27/2022 14:37	James L Waggerby	2329354
	05/24/2022	05/26/2022 15:35	Simonne.V. Calhoun	05/27/2022 14:38	James L Waggerby	2329355
	05/24/2022	05/27/2022 16:17	Adam P Silver	05/31/2022 15:45	James L Waggerby	2329353
EPA 365.1 Rev. 2.0 dissolved	05/24/2022			05/24/2022 15:37	James L Waggerby	2329356
	05/24/2022			05/24/2022 15:45	James L Waggerby	2329357
	05/24/2022			05/24/2022 15:47	James L Waggerby	2329358
EPA 8321B	05/24/2022	05/25/2022 09:00	Manjita Shrestha	05/25/2022 19:26	Manjita Shrestha	2329341
	05/24/2022	05/25/2022 09:00	Manjita Shrestha	05/25/2022 19:43	Manjita Shrestha	2329342
	05/24/2022	05/25/2022 09:00	Manjita Shrestha	05/25/2022 20:17	Manjita Shrestha	2329343
	05/24/2022	05/25/2022 12:00	Manjita Shrestha	05/26/2022 07:27	Manjita Shrestha	2329341
	05/24/2022	05/25/2022 12:00	Manjita Shrestha	05/26/2022 07:41	Manjita Shrestha	2329342
	05/24/2022	05/25/2022 12:00	Manjita Shrestha	05/26/2022 07:55	Manjita Shrestha	2329343