

Chemical Analysis Report

WQAP-2021-09-30-02

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

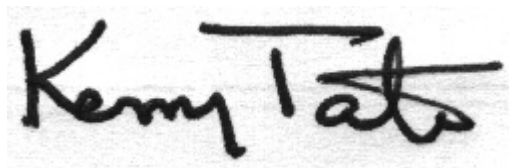
Event Description: **Algal Bloom Response- NEROC**
Request ID: **RQ-2021-09-27-47**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 28-OCT-2021 09:11

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: Plummer's Cove

Collection Date/Time: 09/29/2021 11:00

Field ID: NEHAB0046

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2279605	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404384	
		Cylindrospermopsin	0.10	U	ug/L	P404384	
		Desmethyl microcystin LR	0.25	U	ug/L	P404384	
		Microcystin HIR**	0.25	U	ug/L	P404384	
		Microcystin HtyR**	0.25	U	ug/L	P404384	
		Microcystin LA	0.10	U	ug/L	P404384	
		Microcystin LF	0.10	U	ug/L	P404384	
		Microcystin LR	1.3		ug/L	P404384	
		Microcystin LW	0.25	U	ug/L	P404384	
		Microcystin LY	0.10	U	ug/L	P404384	
		Microcystin RR	0.10	U	ug/L	P404384	
		Microcystin WR	0.50	U	ug/L	P404384	
		Microcystin YR	0.25	U	ug/L	P404384	
		Nodularin-R**	0.10	U	ug/L	P404384	
2279610	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P404888	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P404451	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.027		mg N/L	P404574	
	EPA 365.1 Rev. 2.0	Total-P	0.080		mg P/L	P404621	
2279615	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.034		mg P/L	P404410	

Sample Location: Mouth of Deep Bottom Creek

Collection Date/Time: 09/29/2021 11:25

Field ID: NEHAB0047

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2279606	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404384	
		Cylindrospermopsin	0.10	U	ug/L	P404384	
		Desmethyl microcystin LR	0.27	I	ug/L	P404384	
		Microcystin HilR**	0.25	U	ug/L	P404384	
		Microcystin HtyR**	0.25	U	ug/L	P404384	
		Microcystin LA	0.11	I	ug/L	P404384	
		Microcystin LF	0.10	U	ug/L	P404384	
		Microcystin LR	6.2		ug/L	P404384	
		Microcystin LW	0.25	U	ug/L	P404384	
		Microcystin LY	0.10	U	ug/L	P404384	
		Microcystin RR	0.10	U	ug/L	P404384	
		Microcystin WR	0.50	U	ug/L	P404384	
		Microcystin YR	0.25	U	ug/L	P404384	
		Nodularin-R**	0.10	U	ug/L	P404384	
2279611	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P404888	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.89		mg N/L	P404451	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P404574	
	EPA 365.1 Rev. 2.0	Total-P	0.084		mg P/L	P404621	
2279616	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.023		mg P/L	P404410	

Sample Location: Cedar River @ San Juan

Collection Date/Time: 09/29/2021 13:20

Field ID: NEHAB0048

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2279607	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404384	
		Cylindrospermopsin	0.10	U	ug/L	P404384	
		Desmethyl microcystin LR	0.25	U	ug/L	P404384	
		Microcystin HilR**	0.25	U	ug/L	P404384	
		Microcystin HtyR**	0.25	U	ug/L	P404384	
		Microcystin LA	0.10	U	ug/L	P404384	
		Microcystin LF	0.10	U	ug/L	P404384	
		Microcystin LR	0.25	U	ug/L	P404384	
		Microcystin LW	0.25	U	ug/L	P404384	
		Microcystin LY	0.10	U	ug/L	P404384	
		Microcystin RR	0.10	U	ug/L	P404384	
		Microcystin WR	0.50	U	ug/L	P404384	
		Microcystin YR	0.25	U	ug/L	P404384	
		Nodularin-R**	0.10	U	ug/L	P404384	
2279612	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P404888	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.88		mg N/L	P404451	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.027		mg N/L	P404574	
	EPA 365.1 Rev. 2.0	Total-P	0.16		mg P/L	P404671	
2279617	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.056		mg P/L	P404410	

Sample Location: Trout R @ BM Ramp

Collection Date/Time: 09/29/2021 14:05

Field ID: NEHAB0050

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2279608	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404384	
		Cylindrospermopsin	0.10	U	ug/L	P404384	
		Desmethyl microcystin LR	0.49	I	ug/L	P404384	
		Microcystin HilR**	0.35	I	ug/L	P404384	
		Microcystin HtyR**	0.25	U	ug/L	P404384	
		Microcystin LA	0.17	I	ug/L	P404384	
		Microcystin LF	0.10	U	ug/L	P404384	
		Microcystin LR	8.5		ug/L	P404384	
		Microcystin LW	0.25	U	ug/L	P404384	
		Microcystin LY	0.10	U	ug/L	P404384	
		Microcystin RR	0.10	U	ug/L	P404384	
		Microcystin WR	0.50	U	ug/L	P404384	
		Microcystin YR	0.25	U	ug/L	P404384	
		Nodularin-R**	0.10	U	ug/L	P404384	
2279613	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P404886	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P405517	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.041		mg N/L	P404641	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P405508	
2279618	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.058		mg P/L	P404410	

Sample Location: Trout River @ Main St

Collection Date/Time: 09/29/2021 14:40

Field ID: NEHAB0045

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2279609	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404384	
		Cylindrospermopsin	0.10	U	ug/L	P404384	
		Desmethyl microcystin LR	0.25	U	ug/L	P404384	
		Microcystin HIR**	0.25	U	ug/L	P404384	
		Microcystin HtyR**	0.25	U	ug/L	P404384	
		Microcystin LA	0.10	U	ug/L	P404384	
		Microcystin LF	0.10	U	ug/L	P404384	
		Microcystin LR	0.76	I	ug/L	P404384	
		Microcystin LW	0.25	U	ug/L	P404384	
		Microcystin LY	0.10	U	ug/L	P404384	
		Microcystin RR	0.10	U	ug/L	P404384	
		Microcystin WR	0.50	U	ug/L	P404384	
		Microcystin YR	0.25	U	ug/L	P404384	
		Nodularin-R**	0.10	U	ug/L	P404384	
2279614	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P404888	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.78		mg N/L	P404451	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P404575	
	EPA 365.1 Rev. 2.0	Total-P	0.078		mg P/L	P404671	
2279619	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.043		mg P/L	P404410	

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404886

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404888

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404451

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P405517

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404574

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404575

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404641

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404621

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404671

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
Batch ID: P405508

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P404410

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

Reference Method: EPA 8321B
Batch ID: P404384

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
Cylindrospermopsin	0.10	U	ug/L
Desmethyl microcystin LR	0.25	U	ug/L
Microcystin HllR	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: P404886

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404888

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: P404451

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P405517

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.9		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404574

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404575

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404641

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404621

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404671

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P405508

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P404410

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.4		P	90 - 110

Reference Method: EPA 8321B

Batch ID: P404384

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	57.5		P	40 - 150
Cylindrospermopsin	78.5		P	40 - 150
Desmethyl microcystin LR	84.4		P	40 - 150
Microcystin HllR	84.9		P	40 - 150
Microcystin HtyR	83.7		P	40 - 150
Microcystin LA	77.7		P	40 - 150
Microcystin LF	108		P	40 - 150
Microcystin LR	81.1		P	40 - 150
Microcystin LW	98.0		P	40 - 150
Microcystin LY	82.5		P	40 - 150
Microcystin RR	81.5		P	40 - 150
Microcystin WR	85.2		P	40 - 150
Microcystin YR	86.5		P	40 - 150
Nodularin-R	92.1		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404886

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278813	Ammonia-N	98.4	98.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404888

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2279544	Ammonia-N	98.4	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404451

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2279121	Kjeldahl Nitrogen	92.9	93.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P405517

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2283451	Kjeldahl Nitrogen	99.8	98.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404574

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2279544	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404575

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2279614	NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404641

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280221	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404621

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2279544	Total-P	107	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404671

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2279631	Total-P	107	104	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P405508

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285300	Total-P	101	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P404410

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2279617	O-Phosphate-P	97.5	96.1	P/P	90 - 110

Reference Method: EPA 8321B

Batch ID: P404384

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2279514	Anatoxin-a	89.3	95.5	P/P	40 - 150
2279514	Cylindrospermopsin	80.5	86.4	P/P	40 - 150
2279514	Desmethyl microcystin LR	86.0	101	P/P	40 - 150
2279514	Microcystin HilR	98.8	98.1	P/P	40 - 150
2279514	Microcystin HtyR	84.7	90.6	P/P	40 - 150
2279514	Microcystin LA	78.2	82.4	P/P	40 - 150
2279514	Microcystin LF	110	113	P/P	40 - 150
2279514	Microcystin LR	89.1	96.9	P/P	40 - 150
2279514	Microcystin LW	93.9	97.3	P/P	40 - 150
2279514	Microcystin LY	90.8	97.2	P/P	40 - 150
2279514	Microcystin RR	91.3	88.5	P/P	40 - 150
2279514	Microcystin WR	88.1	89.9	P/P	40 - 150
2279514	Microcystin YR	90.4	92.1	P/P	40 - 150
2279514	Nodularin-R	95.6	105	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404886

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278813	Ammonia-N	0.124	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404888

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279544	Ammonia-N	0.173	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404451

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279121	Kjeldahl Nitrogen	0.304	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P405517

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2283451	Kjeldahl Nitrogen	0.741	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404574

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279544	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404575

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279614	NO2NO3-N	0.936	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404641

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280221	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404621

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279544	Total-P	2.02	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P404671

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279631	Total-P	2.60	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P405508

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285300	Total-P	2.03	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P404410

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279617	O-Phosphate-P	0.918	Spike	P	0 - 20

Reference Method: EPA 8321B

Batch ID: P404384

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279514	Anatoxin-a	6.66	Spike	P	0 - 30
2279514	Cylindrospermopsin	7.10	Spike	P	0 - 30
2279514	Desmethyl microcystin LR	15.9	Spike	P	0 - 30
2279514	Microcystin H1R	0.720	Spike	P	0 - 30
2279514	Microcystin HtyR	6.67	Spike	P	0 - 30
2279514	Microcystin LA	5.02	Spike	P	0 - 30
2279514	Microcystin LF	2.89	Spike	P	0 - 30
2279514	Microcystin LR	4.70	Spike	P	0 - 30
2279514	Microcystin LW	3.60	Spike	P	0 - 30
2279514	Microcystin LY	6.75	Spike	P	0 - 30
2279514	Microcystin RR	3.08	Spike	P	0 - 30
2279514	Microcystin WR	2.05	Spike	P	0 - 30
2279514	Microcystin YR	1.79	Spike	P	0 - 30
2279514	Nodularin-R	9.09	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2279605
Field Sample ID: NEHAB0046

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	95.0	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	123	P	30 - 160

Lab Sample ID: 2279606
Field Sample ID: NEHAB0047

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	89.0	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	114	P	30 - 160

Lab Sample ID: 2279607
Field Sample ID: NEHAB0048

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	101	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	131	P	30 - 160

Lab Sample ID: 2279608
Field Sample ID: NEHAB0050

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	102	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	132	P	30 - 160

Lab Sample ID: 2279609
Field Sample ID: NEHAB0045

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	98.4	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	117	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A108080

Included Lab Sample IDs: 2279615, 2279616, 2279617, 2279618, 2279619

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.5	98.5	P/P	90 - 110
O-Phosphate-P	98.5	97.8	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A108084

Included Lab Sample IDs: 2279605, 2279606, 2279607, 2279608, 2279609

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	92.0	88.4	P/P	50 - 160
Cylindrospermopsin	85.2	81.3	P/P	60 - 160
Desmethyl microcystin LR	84.2	89.0	P/P	60 - 160
Microcystin H1R	88.5	89.1	P/P	60 - 160
Microcystin HtyR	85.7	85.4	P/P	60 - 160
Microcystin LA	81.9	78.8	P/P	50 - 160
Microcystin LF	85.7	95.6	P/P	60 - 160
Microcystin LR	88.4	95.0	P/P	60 - 160
Microcystin LW	86.4	88.3	P/P	60 - 160
Microcystin LY	89.4	80.0	P/P	60 - 160
Microcystin RR	82.6	86.0	P/P	60 - 160
Microcystin WR	78.8	86.3	P/P	60 - 160
Microcystin YR	82.5	83.1	P/P	60 - 160
Nodularin-R	91.6	95.8	P/P	60 - 160

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A108126

Included Lab Sample IDs: 2279610, 2279611, 2279612, 2279614

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	97.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108146

Included Lab Sample IDs: 2279610, 2279611, 2279612, 2279614

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108171

Included Lab Sample IDs: 2279613

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108203

Included Lab Sample IDs: 2279610, 2279611, 2279612, 2279614

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108203

Included Lab Sample IDs: 2279610, 2279611, 2279612, 2279614

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.3	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A108272

Included Lab Sample IDs: 2279610, 2279611, 2279612, 2279613, 2279614

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.1	98.3	P/P	90 - 110
Ammonia-N	98.5	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108525

Included Lab Sample IDs: 2279613

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A108536

Included Lab Sample IDs: 2279613

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.2	98.8	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	97.4	98.4	98.2			0.124
	Ammonia-N	97.8	98.4	98.2			0.173
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	92.9	93.4			0.304
	Kjeldahl Nitrogen	98.9	99.8	98.9			0.741
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	102			0.0
	NO2NO3-N	102	100	102			0.936
	NO2NO3-N	99.0	101	101			0.0
EPA 365.1 Rev. 2.0	Total-P	104	107	104			2.02
	Total-P	104	107	104			2.60
	Total-P	105	101	98.8			2.03
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.4	97.5	96.1			0.918
EPA 8321B	Anatoxin-a	57.5	89.3	95.5			6.66
	Cylindrospermopsin	78.5	80.5	86.4			7.10
	Desmethyl microcystin LR	84.4	86.0	101			15.9
	Microcystin HiIR	84.9	98.8	98.1			0.720
	Microcystin HtyR	83.7	84.7	90.6			6.67
	Microcystin LA	77.7	78.2	82.4			5.02
	Microcystin LF	108	110	113			2.89
	Microcystin LR	81.1	89.1	96.9			4.70
	Microcystin LW	98.0	93.9	97.3			3.60
	Microcystin LY	82.5	90.8	97.2			6.75
	Microcystin RR	81.5	91.3	88.5			3.08
	Microcystin WR	85.2	88.1	89.9			2.05
	Microcystin YR	86.5	90.4	92.1			1.79
	Nodularin-R	92.1	95.6	105			9.09

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2279610, 2279611, 2279612, 2279613, 2279614
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2279610, 2279611, 2279612, 2279613, 2279614
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2279610, 2279611, 2279612, 2279613, 2279614
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2279610, 2279611, 2279612, 2279613, 2279614
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2279615, 2279616, 2279617, 2279618, 2279619
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2279605, 2279606, 2279607, 2279608, 2279609

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	09/30/2021			10/08/2021 12:05	Ping Hua	2279613
	09/30/2021			10/08/2021 12:57	Ping Hua	2279610
	09/30/2021			10/08/2021 12:58	Ping Hua	2279611
	09/30/2021			10/08/2021 12:59	Ping Hua	2279612
	09/30/2021			10/08/2021 13:01	Ping Hua	2279614
EPA 351.2 Rev. 2.0	09/30/2021	10/01/2021 12:37	Benjamin T. Nordmann	10/04/2021 11:20	Alexandra J Mattheus	2279610
	09/30/2021	10/01/2021 12:37	Benjamin T. Nordmann	10/04/2021 11:21	Alexandra J Mattheus	2279611
	09/30/2021	10/01/2021 12:37	Benjamin T. Nordmann	10/04/2021 11:23	Alexandra J Mattheus	2279612
	09/30/2021	10/01/2021 12:37	Benjamin T. Nordmann	10/04/2021 11:26	Alexandra J Mattheus	2279614
	09/30/2021	10/25/2021 12:30	Benjamin T. Nordmann	10/26/2021 12:11	Alexandra J Mattheus	2279613
EPA 353.2 Rev. 2.0	09/30/2021			10/05/2021 09:53	Beverly Y. Sanders	2279610
	09/30/2021			10/05/2021 09:54	Beverly Y. Sanders	2279611
	09/30/2021			10/05/2021 09:56	Beverly Y. Sanders	2279612
	09/30/2021			10/05/2021 10:04	Beverly Y. Sanders	2279614
	09/30/2021			10/06/2021 09:34	Beverly Y. Sanders	2279613
EPA 365.1 Rev. 2.0	09/30/2021	10/06/2021 12:50	Simonne.V. Calhoun	10/07/2021 10:28	Lipi Saha	2279610
	09/30/2021	10/06/2021 12:50	Simonne.V. Calhoun	10/07/2021 10:29	Lipi Saha	2279611
	09/30/2021	10/06/2021 12:50	Simonne.V. Calhoun	10/07/2021 10:38	Lipi Saha	2279612
	09/30/2021	10/06/2021 12:50	Simonne.V. Calhoun	10/07/2021 10:40	Lipi Saha	2279614
	09/30/2021	10/25/2021 13:13	Simonne.V. Calhoun	10/26/2021 10:08	Lipi Saha	2279613
EPA 365.1 Rev. 2.0 dissolved	09/30/2021			09/30/2021 14:41	James L Waggeberby	2279617
	09/30/2021			09/30/2021 14:48	James L Waggeberby	2279615
	09/30/2021			09/30/2021 14:49	James L Waggeberby	2279616
	09/30/2021			09/30/2021 14:50	James L Waggeberby	2279618
	09/30/2021			09/30/2021 14:51	James L Waggeberby	2279619
EPA 8321B	09/30/2021	09/30/2021 11:30	Manjita Shrestha	09/30/2021 19:18	Manjita Shrestha	2279605
	09/30/2021	09/30/2021 11:30	Manjita Shrestha	09/30/2021 19:35	Manjita Shrestha	2279606
	09/30/2021	09/30/2021 11:30	Manjita Shrestha	09/30/2021 19:52	Manjita Shrestha	2279607
	09/30/2021	09/30/2021 11:30	Manjita Shrestha	09/30/2021 20:09	Manjita Shrestha	2279608
	09/30/2021	09/30/2021 11:30	Manjita Shrestha	09/30/2021 20:25	Manjita Shrestha	2279609