

Chemical Analysis Report

SE-DIST-2024-05-23-01

Florida DEP Laboratory
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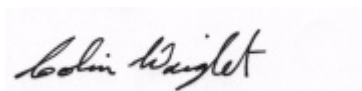
Event Description: **Algal Bloom Response - SE ROC**
Request ID: **RQ-2024-04-15-68**
Customer: **SE-DIST**
Project ID: **BLOOM-RESP**

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

Date Certified: 10-JUN-2024 12:29



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: Lake Okeechobee - S308C (lakeside)

Collection Date/Time: 05/22/2024 10:55

Field ID: SEHAB0062

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2488857	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P445640	
		Cylindrospermopsin	0.10	U	ug/L	P445639	
		Desmethyl microcystin LR	0.25	U	ug/L	P445639	
		Microcystin H1LR	0.25	U	ug/L	P445639	
		Microcystin HtyR	0.25	U	ug/L	P445639	
		Microcystin LA	0.10	U	ug/L	P445639	
		Microcystin LF	0.10	U	ug/L	P445639	
		Microcystin LR	0.50	I	ug/L	P445639	
		Microcystin LW	0.25	U	ug/L	P445639	
		Microcystin LY	0.10	U	ug/L	P445639	
		Microcystin RR	0.10	U	ug/L	P445639	
		Microcystin WR	0.50	U	ug/L	P445639	
		Neosaxitoxin	0.50	U	ug/L	P445640	
		Microcystin YR	0.25	U	ug/L	P445639	
		Saxitoxin	0.50	U	ug/L	P445640	
		Nodularin-R	0.10	U	ug/L	P445639	
2488867	EPA 350.1 Rev. 2.0	Ammonia-N	0.031		mg N/L	P445780	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P445760	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.18		mg N/L	P445879	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P445679	

Sample Location: C44 canal - S308C (canal side)

Collection Date/Time: 05/22/2024 11:00

Field ID: SEHAB0063

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2488858	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P445640	
		Cylindrospermopsin	0.10	U	ug/L	P445639	
		Desmethyl microcystin LR	0.25	U	ug/L	P445639	
		Microcystin HILR	0.25	U	ug/L	P445639	
		Microcystin HtyR	0.25	U	ug/L	P445639	
		Microcystin LA	0.12	I	ug/L	P445639	
		Microcystin LF	0.10	U	ug/L	P445639	
		Microcystin LR	2.4		ug/L	P445639	
		Microcystin LW	0.25	U	ug/L	P445639	
		Microcystin LY	0.10	U	ug/L	P445639	
		Microcystin RR	0.10	U	ug/L	P445639	
		Microcystin WR	0.50	U	ug/L	P445639	
		Neosaxitoxin	0.50	U	ug/L	P445640	
		Microcystin YR	0.25	U	ug/L	P445639	
		Saxitoxin	0.50	U	ug/L	P445640	
		Nodularin-R	0.10	U	ug/L	P445639	
2488868	EPA 350.1 Rev. 2.0	Ammonia-N	0.11		mg N/L	P445780	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P445760	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.23		mg N/L	P445879	
	EPA 365.1 Rev. 2.0	Total-P	0.17		mg P/L	P445770	

Sample Location: St. Lucie Canal - 96th Street Bridge

Collection Date/Time: 05/22/2024 12:10

Field ID: SEHAB0111			Matrix: W-SURF-FRH				
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2488859	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P445640	
		Cylindrospermopsin	0.10	U	ug/L	P445639	
		Desmethyl microcystin LR	0.25	U	ug/L	P445639	
		Microcystin HILR	0.25	U	ug/L	P445639	
		Microcystin HtyR	0.25	U	ug/L	P445639	
		Microcystin LA	0.10	U	ug/L	P445639	
		Microcystin LF	0.10	U	ug/L	P445639	
		Microcystin LR	0.25	U	ug/L	P445639	
		Microcystin LW	0.25	U	ug/L	P445639	
		Microcystin LY	0.10	U	ug/L	P445639	
		Microcystin RR	0.10	U	ug/L	P445639	
		Microcystin WR	0.50	U	ug/L	P445639	
		Neosaxitoxin	0.50	U	ug/L	P445640	
		Microcystin YR	0.25	U	ug/L	P445639	
		Saxitoxin	0.50	U	ug/L	P445640	
		Nodularin-R	0.10	U	ug/L	P445639	
2488869	EPA 350.1 Rev. 2.0	Ammonia-N	0.034		mg N/L	P445780	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P445760	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.044		mg N/L	P445879	
	EPA 365.1 Rev. 2.0	Total-P	0.069		mg P/L	P445770	

Sample Location: St. Lucie River - at Four Rivers

Collection Date/Time: 05/22/2024 13:00

Field ID: SEHAB0112

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2488860	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P445640	
		Cylindrospermopsin	0.10	U	ug/L	P445639	
		Desmethyl microcystin LR	0.25	U	ug/L	P445639	
		Microcystin HILR	0.25	U	ug/L	P445639	
		Microcystin HtyR	0.25	U	ug/L	P445639	
		Microcystin LA	0.10	U	ug/L	P445639	
		Microcystin LF	0.10	U	ug/L	P445639	
		Microcystin LR	0.25	U	ug/L	P445639	
		Microcystin LW	0.25	U	ug/L	P445639	
		Microcystin LY	0.10	U	ug/L	P445639	
		Microcystin RR	0.10	U	ug/L	P445639	
		Microcystin WR	0.50	U	ug/L	P445639	
		Neosaxitoxin	0.50	U	ug/L	P445640	
		Microcystin YR	0.25	U	ug/L	P445639	
		Saxitoxin	0.50	U	ug/L	P445640	
		Nodularin-R	0.10	U	ug/L	P445639	
2488870	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P445831	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.72		mg N/L	P445759	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P445793	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P445680	

Sample Location: St. Lucie River - at Palm City Bridge

Collection Date/Time: 05/22/2024 13:15

Field ID: SEHAB0113

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2488861	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P445640	
		Cylindrospermopsin	0.10	U	ug/L	P445639	
		Desmethyl microcystin LR	0.25	U	ug/L	P445639	
		Microcystin HILR	0.25	U	ug/L	P445639	
		Microcystin HtyR	0.25	U	ug/L	P445639	
		Microcystin LA	0.10	U	ug/L	P445639	
		Microcystin LF	0.10	U	ug/L	P445639	
		Microcystin LR	0.25	U	ug/L	P445639	
		Microcystin LW	0.25	U	ug/L	P445639	
		Microcystin LY	0.10	U	ug/L	P445639	
		Microcystin RR	0.10	U	ug/L	P445639	
		Microcystin WR	0.50	U	ug/L	P445639	
		Neosaxitoxin	0.50	U	ug/L	P445640	
		Microcystin YR	0.25	U	ug/L	P445639	
		Saxitoxin	0.50	U	ug/L	P445640	
		Nodularin-R	0.10	U	ug/L	P445639	
2488871	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P445831	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.57		mg N/L	P445759	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P445793	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P445680	

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P445780

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P445831

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P445759

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P445760

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P445793

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P445879

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P445679

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P445680

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P445770

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B
Batch ID: P445639

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: P445640

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: P445780

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P445831

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	94.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P445759

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P445760

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P445793

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: P445879

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P445679

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P445680

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P445770

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B

Batch ID: P445639

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	93.8		P	40 - 160
Desmethyl microcystin LR	90.2		P	40 - 160
Microcystin HilR	90.2		P	40 - 160
Microcystin HtyR	91.7		P	40 - 160
Microcystin LA	96.6		P	40 - 160
Microcystin LF	94.4		P	40 - 160
Microcystin LR	88.9		P	40 - 160
Microcystin LW	95.5		P	40 - 160
Microcystin LY	93.6		P	40 - 160
Microcystin RR	92.1		P	40 - 160
Microcystin WR	96.2		P	40 - 160
Microcystin YR	89.1		P	40 - 160
Nodularin-R	92.8		P	40 - 160

Reference Method: EPA 8321B

Batch ID: P445640

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	104		P	40 - 150
Neosaxitoxin	76.1		P	40 - 150
Saxitoxin	85.2		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P445780

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2487385	Ammonia-N	95.6	97.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P445831

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2488870	Ammonia-N	95.6	96.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P445759

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2488268	Kjeldahl Nitrogen	98.0	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P445760

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2488348	Kjeldahl Nitrogen	96.7	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P445793

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2488267	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P445879

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2488347	NO2NO3-N	95.5	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P445679

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2488114	Total-P	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P445680

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2488267	Total-P	94.0	94.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P445770

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2488959	Total-P	99.3	101	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P445639

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2488857	Cylindrospermopsin	90.9	92.8	P/P	40 - 160
2488857	Desmethyl microcystin LR	88.1	88.2	P/P	40 - 160
2488857	Microcystin HilR	88.4	89.8	P/P	40 - 160
2488857	Microcystin HtyR	87.6	89.4	P/P	40 - 160
2488857	Microcystin LA	99.3	91.5	P/P	40 - 160
2488857	Microcystin LF	97.0	96.9	P/P	40 - 160
2488857	Microcystin LR	88.5	85.8	P/P	40 - 160
2488857	Microcystin LW	92.6	93.2	P/P	40 - 160
2488857	Microcystin LY	92.2	90.7	P/P	40 - 160
2488857	Microcystin RR	89.5	88.0	P/P	40 - 160
2488857	Microcystin WR	93.2	93.5	P/P	40 - 160
2488857	Microcystin YR	91.3	88.0	P/P	40 - 160
2488857	Nodularin-R	94.9	92.0	P/P	40 - 160

Reference Method: EPA 8321B
Batch ID: P445640

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2488857	Anatoxin-a	97.0	93.5	P/P	40 - 150
2488857	Neosaxitoxin	50.3	50.1	P/P	40 - 150
2488857	Saxitoxin	59.0	57.0	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P445780

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2487385	Ammonia-N	1.75	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P445831

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2488870	Ammonia-N	0.935	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P445759

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2488268	Kjeldahl Nitrogen	2.11	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P445760

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2488348	Kjeldahl Nitrogen	0.972	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P445793

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2488267	NO2NO3-N	0.499	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P445879

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2488347	NO2NO3-N	0.522	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P445679

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2488114	Total-P	1.24	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P445680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2488267	Total-P	0.924	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P445770

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2488959	Total-P	1.53	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P445639

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2488857	Cylindrospermopsin	2.05	Spike	P	0 - 30
2488857	Desmethyl microcystin LR	0.112	Spike	P	0 - 30
2488857	Microcystin HiLR	1.66	Spike	P	0 - 30
2488857	Microcystin HtyR	2.00	Spike	P	0 - 30
2488857	Microcystin LA	8.09	Spike	P	0 - 30
2488857	Microcystin LF	0.193	Spike	P	0 - 30
2488857	Microcystin LR	2.88	Spike	P	0 - 30
2488857	Microcystin LW	0.626	Spike	P	0 - 30
2488857	Microcystin LY	1.60	Spike	P	0 - 30
2488857	Microcystin RR	1.71	Spike	P	0 - 30
2488857	Microcystin WR	0.341	Spike	P	0 - 30
2488857	Microcystin YR	3.67	Spike	P	0 - 30
2488857	Nodularin-R	3.08	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P445640

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2488857	Anatoxin-a	3.69	Spike	P	0 - 30
2488857	Neosaxitoxin	0.412	Spike	P	0 - 30
2488857	Saxitoxin	3.38	Spike	P	0 - 30

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

Quality Assurance Report

Surrogates

Lab Sample ID: 2488857

Field Sample ID: SEHAB0062

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	108	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	86.6	P	30 - 160

Lab Sample ID: 2488858

Field Sample ID: SEHAB0063

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	106	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	95.5	P	30 - 160

Lab Sample ID: 2488859

Field Sample ID: SEHAB0111

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	100	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	83.0	P	30 - 160

Lab Sample ID: 2488860

Field Sample ID: SEHAB0112

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	86.4	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	88.0	P	30 - 160

Lab Sample ID: 2488861

Field Sample ID: SEHAB0113

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	86.8	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	83.8	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A125847

Included Lab Sample IDs: 2488857, 2488858, 2488859, 2488860, 2488861

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	106	106	P/P	50 - 160
Neosaxitoxin	88.8	84.5	P/P	50 - 160
Saxitoxin	96.3	95.9	P/P	50 - 160

Reference Method: EPA 8321B

Run ID: A125858

Included Lab Sample IDs: 2488857, 2488858, 2488859, 2488860, 2488861

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	100	100	P/P	60 - 160
Desmethyl microcystin LR	93.3	91.2	P/P	60 - 160
Microcystin H1R	96.8	92.9	P/P	60 - 160
Microcystin HtyR	95.7	94.5	P/P	60 - 160
Microcystin LA	100	109	P/P	50 - 160
Microcystin LF	100	97.8	P/P	50 - 160
Microcystin LR	92.4	91.3	P/P	60 - 160
Microcystin LW	98.7	96.0	P/P	60 - 160
Microcystin LY	103	97.1	P/P	60 - 160
Microcystin RR	98.4	93.4	P/P	60 - 160
Microcystin WR	98.0	96.6	P/P	60 - 160
Microcystin YR	96.3	90.7	P/P	60 - 160
Nodularin-R	96.1	95.0	P/P	60 - 160

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A125886

Included Lab Sample IDs: 2488867, 2488870, 2488871

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A125899

Included Lab Sample IDs: 2488867, 2488868, 2488869

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.2	98.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A125903

Included Lab Sample IDs: 2488870, 2488871

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A125912

Included Lab Sample IDs: 2488868, 2488869

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A125917
Included Lab Sample IDs: 2488870, 2488871

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.2	98.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A125918
Included Lab Sample IDs: 2488870, 2488871

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A125932
Included Lab Sample IDs: 2488867, 2488868, 2488869

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A125936
Included Lab Sample IDs: 2488867, 2488868, 2488869

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.0	100	P/P	90 - 110
Kjeldahl Nitrogen	99.8	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	95.8	95.6	97.8			1.75
	Ammonia-N	94.2	95.6	96.6			0.935
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	98.0	101			2.11
	Kjeldahl Nitrogen	96.8	96.7	98.2			0.972
EPA 353.2 Rev. 2.0	NO2NO3-N	102	100	100			0.499
	NO2NO3-N	102	95.5	96.0			0.522
EPA 365.1 Rev. 2.0	Total-P	98.4	102	103			1.24
	Total-P	99.6	94.0	94.9			0.924
	Total-P	99.5	99.3	101			1.53
EPA 8321B	Anatoxin-a	104	97.0	93.5			3.69
	Cylindrospermopsin	93.8	90.9	92.8			2.05
	Desmethyl microcystin LR	90.2	88.1	88.2			0.112
	Microcystin HiLR	90.2	88.4	89.8			1.66
	Microcystin HtyR	91.7	87.6	89.4			2.00
	Microcystin LA	96.6	99.3	91.5			8.09
	Microcystin LF	94.4	97.0	96.9			0.193
	Microcystin LR	88.9	88.5	85.8			2.88
	Microcystin LW	95.5	92.6	93.2			0.626
	Microcystin LY	93.6	92.2	90.7			1.60
	Microcystin RR	92.1	89.5	88.0			1.71
	Microcystin WR	96.2	93.2	93.5			0.341
	Microcystin YR	89.1	91.3	88.0			3.67
	Neosaxitoxin	76.1	50.3	50.1			0.412
	Nodularin-R	92.8	94.9	92.0			3.08
	Saxitoxin	85.2	59.0	57.0			3.38

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2488867, 2488868, 2488869, 2488870, 2488871
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2488867, 2488868, 2488869, 2488870, 2488871
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2488867, 2488868, 2488869, 2488870, 2488871
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2488867, 2488868, 2488869, 2488870, 2488871
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2488857, 2488858, 2488859, 2488860, 2488861
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2488857, 2488858, 2488859, 2488860, 2488861

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	05/23/2024			05/29/2024 12:02	Khloe J Berg	2488867
	05/23/2024			05/29/2024 12:03	Khloe J Berg	2488868
	05/23/2024			05/29/2024 12:05	Khloe J Berg	2488869
	05/23/2024			05/30/2024 12:26	Khloe J Berg	2488870
	05/23/2024			05/30/2024 12:30	Khloe J Berg	2488871
EPA 351.2 Rev. 2.0	05/23/2024	05/29/2024 12:12	Robyn Blevins	05/30/2024 14:05	Robyn Blevins	2488870
	05/23/2024	05/29/2024 12:12	Robyn Blevins	05/30/2024 14:07	Robyn Blevins	2488871
	05/23/2024	05/29/2024 12:13	Robyn Blevins	05/31/2024 10:36	Robyn Blevins	2488867
	05/23/2024	05/29/2024 12:13	Robyn Blevins	05/31/2024 10:38	Robyn Blevins	2488868
	05/23/2024	05/29/2024 12:13	Robyn Blevins	05/31/2024 10:42	Robyn Blevins	2488869
EPA 353.2 Rev. 2.0	05/23/2024			05/29/2024 15:18	Fadila Guebre	2488870
	05/23/2024			05/29/2024 15:19	Fadila Guebre	2488871
	05/23/2024			05/30/2024 15:49	Fadila Guebre	2488867
	05/23/2024			05/30/2024 15:51	Fadila Guebre	2488868
	05/23/2024			05/30/2024 15:53	Fadila Guebre	2488869
EPA 365.1 Rev. 2.0	05/23/2024	05/24/2024 13:22	Adam P Silver	05/28/2024 12:03	Elise M. Gillis	2488867
	05/23/2024	05/24/2024 13:22	Adam P Silver	05/28/2024 12:16	Elise M. Gillis	2488870
	05/23/2024	05/24/2024 13:22	Adam P Silver	05/28/2024 12:17	Elise M. Gillis	2488871
	05/23/2024	05/29/2024 12:15	Josephine W Gitau	05/30/2024 11:12	Simonne.V. Calhoun	2488868
	05/23/2024	05/29/2024 12:15	Josephine W Gitau	05/30/2024 11:13	Simonne.V. Calhoun	2488869
EPA 8321B	05/23/2024	05/23/2024 12:00	Hana Lee	05/23/2024 15:34	Hana Lee	2488857
	05/23/2024	05/23/2024 12:00	Hana Lee	05/23/2024 15:50	Hana Lee	2488858
	05/23/2024	05/23/2024 12:00	Hana Lee	05/23/2024 16:07	Hana Lee	2488859
	05/23/2024	05/23/2024 12:00	Hana Lee	05/23/2024 16:24	Hana Lee	2488860
	05/23/2024	05/23/2024 12:00	Hana Lee	05/23/2024 16:41	Hana Lee	2488861
	05/23/2024	05/23/2024 12:30	Hana Lee	05/23/2024 15:09	Hana Lee	2488857
	05/23/2024	05/23/2024 12:30	Hana Lee	05/23/2024 15:23	Hana Lee	2488858
	05/23/2024	05/23/2024 12:30	Hana Lee	05/23/2024 15:37	Hana Lee	2488859
	05/23/2024	05/23/2024 12:30	Hana Lee	05/23/2024 15:51	Hana Lee	2488860
	05/23/2024	05/23/2024 12:30	Hana Lee	05/23/2024 16:05	Hana Lee	2488861