

Chemical Analysis Report

SE-DIST-2024-04-10-01

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

Event Description: **Algal Bloom Response - SE ROC**
Request ID: **RQ-2024-03-04-71**
Customer: **SE-DIST**
Project ID: **BLOOM-RESP**

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

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Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant

Date Certified: 06-MAY-2024 15:12



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: St. Lucie Canal - Army Corp Campground

Collection Date/Time: 04/09/2024 12:30

Field ID: SEHAB0116				Matrix: W-SURF-FRH			
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2481180	DEP SOP: NU-094-1	Color (true)	80	A	PCU	P444079	
2481184	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P444259	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.89		mg N/L	P444210	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.28		mg N/L	P444524	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P444250	
2481188	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.068		mg P/L	P444146	
2481208	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P444041	
		Cylindrospermopsin	0.10	U	ug/L	P444035	
		Desmethyl microcystin LR	0.25	U	ug/L	P444035	
		Microcystin HiLR	0.25	U	ug/L	P444035	
		Microcystin HtyR	0.25	U	ug/L	P444035	
		Microcystin LA	0.10	U	ug/L	P444035	
		Microcystin LF	0.10	U	ug/L	P444035	
		Microcystin LR	0.25	U	ug/L	P444035	
		Microcystin LW	0.25	U	ug/L	P444035	
		Microcystin LY	0.10	U	ug/L	P444035	
		Microcystin RR	0.10	U	ug/L	P444035	
		Microcystin WR	0.50	U	ug/L	P444035	
		Neosaxitoxin	0.50	U	ug/L	P444041	
		Microcystin YR	0.25	U	ug/L	P444035	
		Saxitoxin	0.50	U	ug/L	P444041	
		Nodularin-R	0.10	U	ug/L	P444035	

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

Collection Date/Time: 04/09/2024 13:00

Field ID: SEHAB0111				Matrix: W-SURF-FRH			
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2481177	DEP SOP: NU-094-1	Color (true)	52		PCU	P444079	
2481181	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P444259	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.99		mg N/L	P444210	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.25		mg N/L	P444524	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P444250	
2481185	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.063		mg P/L	P444146	
2481206	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P444041	
		Cylindrospermopsin	0.10	U	ug/L	P444035	
		Desmethyl microcystin LR	0.25	U	ug/L	P444035	
		Microcystin HiLR	0.25	U	ug/L	P444035	
		Microcystin HtyR	0.25	U	ug/L	P444035	
		Microcystin LA	0.10	U	ug/L	P444035	
		Microcystin LF	0.10	U	ug/L	P444035	
		Microcystin LR	0.25	U	ug/L	P444035	
		Microcystin LW	0.25	U	ug/L	P444035	
		Microcystin LY	0.10	U	ug/L	P444035	
		Microcystin RR	0.10	U	ug/L	P444035	
		Microcystin WR	0.50	U	ug/L	P444035	
		Neosaxitoxin	0.50	U	ug/L	P444041	
		Microcystin YR	0.25	U	ug/L	P444035	
		Saxitoxin	0.50	U	ug/L	P444041	
		Nodularin-R	0.10	U	ug/L	P444035	

Sample Location: St. Lucie River at Palm City Bridge

Collection Date/Time: 04/09/2024 13:30

Field ID: SEHAB0113

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2481179	DEP SOP: NU-094-1	Color (true)	30		PCU	P444079	
2481183	EPA 350.1 Rev. 2.0	Ammonia-N	0.027		mg N/L	P445064	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.83		mg N/L	P444207	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P444298	
	EPA 365.1 Rev. 2.0	Total-P	0.094		mg P/L	P444252	
2481187	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.060		mg P/L	P444146	
2481207	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P444041	
		Cylindrospermopsin	0.10	U	ug/L	P444035	
		Desmethyl microcystin LR	0.25	U	ug/L	P444035	
		Microcystin HiLR	0.25	U	ug/L	P444035	
		Microcystin HtyR	0.25	U	ug/L	P444035	
		Microcystin LA	0.10	U	ug/L	P444035	
		Microcystin LF	0.10	U	ug/L	P444035	
		Microcystin LR	0.25	U	ug/L	P444035	
		Microcystin LW	0.25	U	ug/L	P444035	
		Microcystin LY	0.10	U	ug/L	P444035	
		Microcystin RR	0.10	U	ug/L	P444035	
		Microcystin WR	0.50	U	ug/L	P444035	
		Neosaxitoxin	0.50	U	ug/L	P444041	
		Microcystin YR	0.25	U	ug/L	P444035	
		Saxitoxin	0.50	U	ug/L	P444041	
		Nodularin-R	0.10	U	ug/L	P444035	

Sample Location: St. Lucie River at Palm City Bridge

Collection Date/Time: 04/09/2024 13:45

Field ID: FB_04092024

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2481178	DEP SOP: NU-094-1	Color (true)	2.5	U	PCU	P444079	
2481182	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P444259	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P444210	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P444524	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P444250	
2481186	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P444146	
2481280	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P444041	
		Cylindrospermopsin	0.10	U	ug/L	P444035	
		Desmethyl microcystin LR	0.25	U	ug/L	P444035	
		Microcystin HiLR	0.25	U	ug/L	P444035	
		Microcystin HtyR	0.25	U	ug/L	P444035	
		Microcystin LA	0.10	U	ug/L	P444035	
		Microcystin LF	0.10	U	ug/L	P444035	
		Microcystin LR	0.25	U	ug/L	P444035	
		Microcystin LW	0.25	U	ug/L	P444035	
		Microcystin LY	0.10	U	ug/L	P444035	
		Microcystin RR	0.10	U	ug/L	P444035	
		Microcystin WR	0.50	U	ug/L	P444035	
		Neosaxitoxin	0.50	U	ug/L	P444041	
		Microcystin YR	0.25	U	ug/L	P444035	
		Saxitoxin	0.50	U	ug/L	P444041	
		Nodularin-R	0.10	U	ug/L	P444035	

Sample Location: St. Lucie River - At Four Rivers

Collection Date/Time: 04/09/2024 14:00

Field ID: SEHAB0112

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2481310	DEP SOP: NU-094-1	Color (true)	39		PCU	P444080	
2481311	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P444359	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P444207	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P444607	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P444309	
2481312	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.052		mg P/L	P444149	
2481313	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P444041	
		Cylindrospermopsin	0.10	U	ug/L	P444035	
		Desmethyl microcystin LR	0.25	U	ug/L	P444035	
		Microcystin HiLR	0.25	U	ug/L	P444035	
		Microcystin HtyR	0.25	U	ug/L	P444035	
		Microcystin LA	0.10	U	ug/L	P444035	
		Microcystin LF	0.10	U	ug/L	P444035	
		Microcystin LR	0.25	U	ug/L	P444035	
		Microcystin LW	0.25	U	ug/L	P444035	
		Microcystin LY	0.10	U	ug/L	P444035	
		Microcystin RR	0.10	U	ug/L	P444035	
		Microcystin WR	0.50	U	ug/L	P444035	
		Neosaxitoxin	0.50	U	ug/L	P444041	
		Microcystin YR	0.25	U	ug/L	P444035	
		Saxitoxin	0.50	U	ug/L	P444041	
		Nodularin-R	0.10	U	ug/L	P444035	

Quality Assurance Report
Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P444079

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: DEP SOP: NU-094-1
Batch ID: P444080

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P444259

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P444359

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P445064

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P444207

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P444210

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444298

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444524

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444607

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P444250

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P444252

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P444309

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P444146

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P444149

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

Reference Method: EPA 8321B
Batch ID: P444035

Component	Result	Code	Units
Cylindrospermopsin	0.10	U	ug/L
Desmethyl microcystin LR	0.25	U	ug/L
Microcystin H1LR	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
Method Blank Results

Reference Method: EPA 8321B
Batch ID: P444041

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: DEP SOP: NU-094-1
Batch ID: P444079

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	96.0		P	90 - 110

Reference Method: DEP SOP: NU-094-1
Batch ID: P444080

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	96.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P444259

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P444359

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P445064

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P444207

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P444210

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.6		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444298

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: P444524

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444607

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P444250

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	93.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P444252

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.3		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P444309

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: P444146

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P444149

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

Reference Method: EPA 8321B
Batch ID: P444035

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	88.6		P	40 - 150
Desmethyl microcystin LR	108		P	40 - 150
Microcystin H11R	113		P	40 - 150
Microcystin HtyR	104		P	40 - 150
Microcystin LA	99.6		P	40 - 150
Microcystin LF	104		P	40 - 150
Microcystin LR	114		P	40 - 150
Microcystin LW	114		P	40 - 150
Microcystin LY	108		P	40 - 150
Microcystin RR	92.8		P	40 - 150
Microcystin WR	114		P	40 - 150
Microcystin YR	112		P	40 - 150
Nodularin-R	95.6		P	40 - 150

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P444041

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	90.4		P	40 - 150
Neosaxitoxin	71.4		P	40 - 150
Saxitoxin	88.1		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P444259

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2481103	Ammonia-N	96.0	99.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P444359

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2481311	Ammonia-N	97.0	99.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P445064

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2484790	Ammonia-N	95.8	97.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P444207

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2480970	Kjeldahl Nitrogen	98.1	95.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P444210

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2481157	Kjeldahl Nitrogen	104	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444298

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2480780	NO2NO3-N	91.1	90.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444524

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2481103	NO2NO3-N	98.1	98.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444607

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2483365	NO2NO3-N	98.8	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P444250

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2481299	Total-P	104	101	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P444252

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2481235	Total-P	92.6	95.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P444309

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2481319	Total-P	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P444146

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2481104	O-Phosphate-P	99.1	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P444149

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2481228	O-Phosphate-P	98.4	98.9	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P444035

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2481107	Cylindrospermopsin	94.5	91.9	P/P	40 - 150
2481107	Desmethyl microcystin LR	110	107	P/P	40 - 150
2481107	Microcystin HilR	119	109	P/P	40 - 150
2481107	Microcystin HtyR	110	104	P/P	40 - 150
2481107	Microcystin LA	96.2	101	P/P	40 - 150
2481107	Microcystin LF	100	104	P/P	40 - 150
2481107	Microcystin LR	105	109	P/P	40 - 150
2481107	Microcystin LW	112	108	P/P	40 - 150
2481107	Microcystin LY	105	103	P/P	40 - 150
2481107	Microcystin RR	93.5	93.2	P/P	40 - 150
2481107	Microcystin WR	102	101	P/P	40 - 150
2481107	Microcystin YR	110	104	P/P	40 - 150
2481107	Nodularin-R	97.5	98.8	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P444041

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2481107	Anatoxin-a	77.2	76.8	P/P	40 - 150
2481107	Neosaxitoxin	41.3	41.3	P/P	40 - 150
2481107	Saxitoxin	56.4	55.6	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P444079

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481180	Color (true)	10.4	Sample	P	0 - 20

Reference Method: DEP SOP: NU-094-1
Batch ID: P444080

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481241	Color (true)	6.45	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P444259

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481103	Ammonia-N	2.72	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P444359

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481311	Ammonia-N	1.71	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P445064

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2484790	Ammonia-N	1.22	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P444207

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2480970	Kjeldahl Nitrogen	2.33	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P444210

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481157	Kjeldahl Nitrogen	2.64	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444298

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2480780	NO2NO3-N	0.550	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444524

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481103	NO2NO3-N	0.491	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444607

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2483365	NO2NO3-N	1.10	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P444250

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481299	Total-P	2.29	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P444252

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481235	Total-P	3.11	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P444309

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481319	Total-P	0.525	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P444146

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481104	O-Phosphate-P	0.403	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P444149

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481228	O-Phosphate-P	0.452	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P444035

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481107	Cylindrospermopsin	2.87	Spike	P	0 - 30
2481107	Desmethyl microcystin LR	2.55	Spike	P	0 - 30

Quality Assurance Report

Precision

Reference Method: EPA 8321B
Batch ID: P444035

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481107	Microcystin HII R	8.86	Spike	P	0 - 30
2481107	Microcystin Hty R	5.29	Spike	P	0 - 30
2481107	Microcystin LA	4.63	Spike	P	0 - 30
2481107	Microcystin LF	3.51	Spike	P	0 - 30
2481107	Microcystin LR	3.54	Spike	P	0 - 30
2481107	Microcystin LW	4.28	Spike	P	0 - 30
2481107	Microcystin LY	1.40	Spike	P	0 - 30
2481107	Microcystin RR	0.337	Spike	P	0 - 30
2481107	Microcystin WR	0.790	Spike	P	0 - 30
2481107	Microcystin YR	5.72	Spike	P	0 - 30
2481107	Nodularin-R	1.33	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P444041

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481107	Anatoxin-a	0.510	Spike	P	0 - 30
2481107	Neosaxitoxin	0.0240	Spike	P	0 - 30
2481107	Saxitoxin	1.35	Spike	P	0 - 30

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

Quality Assurance Report

Surrogates

Lab Sample ID: 2481206

Field Sample ID: SEHAB0111

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	98.2	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	98.2	P	30 - 160

Lab Sample ID: 2481207

Field Sample ID: SEHAB0113

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	83.1	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	100	P	30 - 160

Lab Sample ID: 2481208

Field Sample ID: SEHAB0116

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	102	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	100	P	30 - 160

Lab Sample ID: 2481280

Field Sample ID: FB_04092024

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	80.2	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	88.7	P	30 - 160

Lab Sample ID: 2481313

Field Sample ID: SEHAB0112

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	87.5	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	85.3	P	30 - 160

Quality Assurance Report

Calibration Verification

Reference Method: EPA 8321B

Run ID: A125265

Included Lab Sample IDs: 2481206, 2481207, 2481208, 2481280, 2481313

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	91.8	95.3	P/P	50 - 160
Cylindrospermopsin	95.3	90.3	P/P	50 - 160
Desmethyl microcystin LR	105	112	P/P	50 - 160
Desmethyl microcystin LR	112	111	P/P	50 - 160
Microcystin HIIIR	119	121	P/P	50 - 160
Microcystin HIIIR	121	123	P/P	50 - 160
Microcystin HtyR	108	117	P/P	50 - 160
Microcystin HtyR	117	117	P/P	50 - 160
Microcystin LA	104	105	P/P	50 - 160
Microcystin LA	105	108	P/P	50 - 160
Microcystin LF	108	110	P/P	50 - 160
Microcystin LF	110	111	P/P	50 - 160
Microcystin LR	115	128	P/P	50 - 160
Microcystin LR	128	125	P/P	50 - 160
Microcystin LW	113	119	P/P	50 - 160
Microcystin LW	119	118	P/P	50 - 160
Microcystin LY	108	110	P/P	50 - 160
Microcystin LY	110	113	P/P	50 - 160
Microcystin RR	91.1	94.4	P/P	50 - 160
Microcystin RR	94.4	93.3	P/P	50 - 160
Microcystin WR	115	119	P/P	50 - 160
Microcystin WR	119	120	P/P	50 - 160
Microcystin YR	112	117	P/P	50 - 160
Microcystin YR	117	112	P/P	50 - 160
Nodularin-R	102	103	P/P	50 - 160
Nodularin-R	103	102	P/P	50 - 160

Reference Method: DEP SOP: NU-094-1

Run ID: A125267

Included Lab Sample IDs: 2481177, 2481178, 2481179, 2481180, 2481310

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	96.9	99.0	P/P	90 - 110
Color (true)	99.5	96.9	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A125271

Included Lab Sample IDs: 2481206, 2481207, 2481208, 2481280, 2481313

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	87.7	91.0	P/P	50 - 160
Anatoxin-a	92.0	87.7	P/P	50 - 160
Neosaxitoxin	77.6	92.8	P/P	50 - 160
Neosaxitoxin	84.1	77.6	P/P	50 - 160
Saxitoxin	104	98.1	P/P	50 - 160
Saxitoxin	98.1	113	P/P	50 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A125293
Included Lab Sample IDs: 2481185, 2481186, 2481187, 2481188, 2481312

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.9	98.7	P/P	90 - 110
O-Phosphate-P	99.2	99.1	P/P	90 - 110
O-Phosphate-P	99.2	99.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A125326
Included Lab Sample IDs: 2481181, 2481182, 2481184

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.4	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A125334
Included Lab Sample IDs: 2481181, 2481184

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A125335
Included Lab Sample IDs: 2481183

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A125336
Included Lab Sample IDs: 2481182, 2481183

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.5	P/P	90 - 110
Total-P	99.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A125350
Included Lab Sample IDs: 2481311

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A125358
Included Lab Sample IDs: 2481311

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A125375
Included Lab Sample IDs: 2481181, 2481182, 2481183, 2481184, 2481311

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	104	P/P	90 - 110
Kjeldahl Nitrogen	95.2	103	P/P	90 - 110
Kjeldahl Nitrogen	97.4	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A125414
Included Lab Sample IDs: 2481181, 2481182, 2481184

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: A125445
Included Lab Sample IDs: 2481311

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A125620
Included Lab Sample IDs: 2481183

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	99.7	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	MS
DEP SOP: NU-094-1	Color (true)	96.0			10.4	
	Color (true)	96.2			6.45	
EPA 350.1 Rev. 2.0	Ammonia-N	96.6	96.0	99.6		2.72
	Ammonia-N	97.0	99.2	97.0		1.71
	Ammonia-N	95.2	95.8	97.2		1.22
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.8	98.1	95.3		2.33
	Kjeldahl Nitrogen	97.6	104	107		2.64
EPA 353.2 Rev. 2.0	NO2NO3-N	100	91.1	90.6		0.550
	NO2NO3-N	104	98.1	98.6		0.491
	NO2NO3-N	100	98.8	100		1.10
EPA 365.1 Rev. 2.0	Total-P	93.6	104	101		2.29
	Total-P	96.3	92.6	95.6		3.11
	Total-P	104	101	102		0.525
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.5	99.1	99.5		0.403
	O-Phosphate-P	102	98.4	98.9		0.452
EPA 8321B	Anatoxin-a	90.4	77.2	76.8		0.510
	Cylindrospermopsin	88.6	94.5	91.9		2.87
	Desmethyl microcystin LR	108	110	107		2.55
	Microcystin HilR	113	119	109		8.86
	Microcystin HtyR	104	110	104		5.29
	Microcystin LA	99.6	96.2	101		4.63
	Microcystin LF	104	100	104		3.51
	Microcystin LR	114	105	109		3.54
	Microcystin LW	114	112	108		4.28
	Microcystin LY	108	105	103		1.40
	Microcystin RR	92.8	93.5	93.2		0.337
	Microcystin WR	114	102	101		0.790
	Microcystin YR	112	110	104		5.72
	Neosaxitoxin	71.4	41.3	41.3		0.0240
	Nodularin-R	95.6	97.5	98.8		1.33
	Saxitoxin	88.1	56.4	55.6		1.35

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2481177, 2481178, 2481179, 2481180, 2481310
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2481181, 2481182, 2481183, 2481184, 2481311
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2481181, 2481182, 2481183, 2481184, 2481311
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2481181, 2481182, 2481183, 2481184, 2481311
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2481181, 2481182, 2481183, 2481184, 2481311
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2481185, 2481186, 2481187, 2481188, 2481312
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2481206, 2481207, 2481208, 2481280, 2481313
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2481206, 2481207, 2481208, 2481280, 2481313

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	04/10/2024			04/10/2024 15:05	Jessica K Wilks	2481177, 2481178
	04/10/2024			04/10/2024 15:06	Jessica K Wilks	2481179
	04/10/2024			04/10/2024 15:07	Jessica K Wilks	2481180
	04/10/2024			04/10/2024 15:17	Jessica K Wilks	2481310
EPA 350.1 Rev. 2.0	04/10/2024			04/15/2024 12:03	Khloe J Berg	2481181
	04/10/2024			04/15/2024 12:04	Khloe J Berg	2481182
	04/10/2024			04/15/2024 12:07	Khloe J Berg	2481184
	04/10/2024			04/17/2024 11:38	Kenneth H Lee	2481311
EPA 351.2 Rev. 2.0	04/10/2024			05/01/2024 12:07	Khloe J Berg	2481183
	04/10/2024	04/15/2024 12:33	Simonne.V. Calhoun	04/17/2024 15:55	Ping Hua	2481183
	04/10/2024	04/15/2024 12:33	Simonne.V. Calhoun	04/17/2024 16:06	Ping Hua	2481311
	04/10/2024	04/15/2024 12:33	Simonne.V. Calhoun	04/17/2024 16:53	Ping Hua	2481181
EPA 353.2 Rev. 2.0	04/10/2024	04/15/2024 12:33	Simonne.V. Calhoun	04/17/2024 16:55	Ping Hua	2481182
	04/10/2024	04/15/2024 12:33	Simonne.V. Calhoun	04/17/2024 16:56	Ping Hua	2481184
	04/10/2024			04/15/2024 14:31	Fadila Guebre	2481183
	04/10/2024			04/18/2024 12:54	Fadila Guebre	2481181
EPA 365.1 Rev. 2.0	04/10/2024			04/18/2024 12:55	Fadila Guebre	2481182
	04/10/2024			04/18/2024 12:57	Fadila Guebre	2481184
	04/10/2024			04/19/2024 16:31	Fadila Guebre	2481311
	04/10/2024	04/15/2024 12:54	Adam P Silver	04/16/2024 11:20	Chandler E Cox	2481181
EPA 365.1 Rev. 2.0 dissolved	04/10/2024	04/15/2024 12:54	Adam P Silver	04/16/2024 11:21	Chandler E Cox	2481184
	04/10/2024	04/15/2024 12:54	Adam P Silver	04/16/2024 12:19	Chandler E Cox	2481182
	04/10/2024	04/15/2024 12:54	Adam P Silver	04/16/2024 12:46	Chandler E Cox	2481183
	04/10/2024	04/16/2024 14:10	Adam P Silver	04/17/2024 09:39	Elise M. Gillis	2481311
EPA 8321B	04/10/2024			04/10/2024 14:26	Adam P Silver	2481185
	04/10/2024			04/10/2024 14:31	Adam P Silver	2481186
	04/10/2024			04/10/2024 14:32	Adam P Silver	2481187, 2481188
	04/10/2024			04/10/2024 15:24	Adam P Silver	2481312
EPA 8321B	04/10/2024	04/10/2024 13:00	Tae K Lee	04/10/2024 18:17	Tae K Lee	2481206
	04/10/2024	04/10/2024 13:00	Tae K Lee	04/10/2024 18:34	Tae K Lee	2481207
	04/10/2024	04/10/2024 13:00	Tae K Lee	04/10/2024 19:08	Tae K Lee	2481208
	04/10/2024	04/10/2024 13:00	Tae K Lee	04/10/2024 19:41	Tae K Lee	2481280
	04/10/2024	04/10/2024 13:00	Tae K Lee	04/10/2024 19:58	Tae K Lee	2481313
	04/10/2024	04/10/2024 14:00	Tae K Lee	04/11/2024 10:50	Tae K Lee	2481206
	04/10/2024	04/10/2024 14:00	Tae K Lee	04/11/2024 11:04	Tae K Lee	2481207
	04/10/2024	04/10/2024 14:00	Tae K Lee	04/11/2024 11:32	Tae K Lee	2481208
	04/10/2024	04/10/2024 14:00	Tae K Lee	04/11/2024 12:00	Tae K Lee	2481280
	04/10/2024	04/10/2024 14:00	Tae K Lee	04/11/2024 12:14	Tae K Lee	2481313