

Chemical Analysis Report

SO-DIST-2023-08-03-01

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

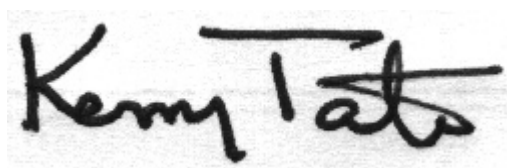
Event Description: **Algal Bloom Response -SOROC**
Request ID: **RQ-2023-07-03-59**
Customer: **SO-DIST**
Project ID: **BLOOM-RESP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: John Barrington

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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 17-AUG-2023 10:37

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line extending from the end of the 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: Caloosahatchee River-SE 32 Terrace

Collection Date/Time: 08/02/2023 13:00

Field ID: HAB-SD-080223-1300

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2428391	DEP SOP: NU-094-1	Color (true)	95		PCU	P433400	
2428394	EPA 350.1 Rev. 2.0	Ammonia-N	0.044		mg N/L	P433463	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P433432	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.063		mg N/L	P433452	
	EPA 365.1 Rev. 2.0	Total-P	0.17		mg P/L	P433469	
2428397	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.14		mg P/L	P433403	
2428400	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P433330	
		Cylindrospermopsin	0.10	U	ug/L	P433329	
		Desmethyl microcystin LR	0.25	U	ug/L	P433329	
		Microcystin HiLR	0.25	U	ug/L	P433329	
		Microcystin HtyR	0.25	U	ug/L	P433329	
		Microcystin LA	0.10	U	ug/L	P433329	
		Microcystin LF	0.10	U	ug/L	P433329	
		Microcystin LR	3.1		ug/L	P433329	
		Microcystin LW	0.25	U	ug/L	P433329	
		Microcystin LY	0.10	U	ug/L	P433329	
		Microcystin RR	0.10	U	ug/L	P433329	
		Microcystin WR	0.50	U	ug/L	P433329	
		Neosaxitoxin	0.50	U	ug/L	P433330	
		Microcystin YR	0.25	U	ug/L	P433329	
		Saxitoxin	0.50	U	ug/L	P433330	
		Nodularin-R	0.10	U	ug/L	P433329	

Sample Location: Caloosahatchee River-Coral Point Dr

Collection Date/Time: 08/02/2023 12:15

Field ID: HAB-SD-080223-1215

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2428392	DEP SOP: NU-094-1	Color (true)	89	A	PCU	P433401	
2428395	EPA 350.1 Rev. 2.0	Ammonia-N	0.072		mg N/L	P433463	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P433432	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.045		mg N/L	P433453	
	EPA 365.1 Rev. 2.0	Total-P	0.20		mg P/L	P433469	
2428398	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.15		mg P/L	P433403	
2428401	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P433330	
		Cylindrospermopsin	0.10	U	ug/L	P433329	
		Desmethyl microcystin LR	0.25	U	ug/L	P433329	
		Microcystin HiLR	0.25	U	ug/L	P433329	
		Microcystin HtyR	0.25	U	ug/L	P433329	
		Microcystin LA	0.10	U	ug/L	P433329	
		Microcystin LF	0.10	U	ug/L	P433329	
		Microcystin LR	6.9		ug/L	P433329	
		Microcystin LW	0.25	U	ug/L	P433329	
		Microcystin LY	0.10	U	ug/L	P433329	
		Microcystin RR	0.10	U	ug/L	P433329	
		Microcystin WR	0.50	U	ug/L	P433329	
		Neosaxitoxin	0.50	U	ug/L	P433330	
		Microcystin YR	0.25	U	ug/L	P433329	
		Saxitoxin	0.50	U	ug/L	P433330	
		Nodularin-R	0.10	U	ug/L	P433329	

Sample Location: Caloosahatchee River - Jaycee Park

Collection Date/Time: 08/02/2023 14:00

Field ID: HAB-SD-080223-1400

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2428393	DEP SOP: NU-094-1	Color (true)	100		PCU	P433401	
2428396	EPA 350.1 Rev. 2.0	Ammonia-N	0.079		mg N/L	P433444	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P433434	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.17		mg N/L	P433566	
	EPA 365.1 Rev. 2.0	Total-P	0.19		mg P/L	P433578	
2428399	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.14		mg P/L	P433404	
2428402	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P433330	
		Cylindrospermopsin	0.10	U	ug/L	P433329	
		Desmethyl microcystin LR	1.1		ug/L	P433329	
		Microcystin HilR	0.43	I	ug/L	P433329	
		Microcystin HtyR	0.25	U	ug/L	P433329	
		Microcystin LA	0.10	U	ug/L	P433329	
		Microcystin LF	0.10	U	ug/L	P433329	
		Microcystin LR	31		ug/L	P433329	
		Microcystin LW	0.25	U	ug/L	P433329	
		Microcystin LY	0.10	U	ug/L	P433329	
		Microcystin RR	0.10	U	ug/L	P433329	
		Microcystin WR	0.50	U	ug/L	P433329	
		Neosaxitoxin	0.50	U	ug/L	P433330	
		Microcystin YR	0.25	U	ug/L	P433329	
		Saxitoxin	0.50	U	ug/L	P433330	
		Nodularin-R	0.10	U	ug/L	P433329	

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P433400

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: DEP SOP: NU-094-1
Batch ID: P433401

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P433444

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P433463

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433432

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433434

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P433452

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P433453

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P433566

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P433469

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P433578

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P433403

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P433404

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

Reference Method: EPA 8321B
Batch ID: P433329

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: P433330

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: P433400

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	97.9		P	90 - 110

Reference Method: DEP SOP: NU-094-1
Batch ID: P433401

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	97.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P433444

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P433463

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	94.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433432

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433434

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P433452

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P433453

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P433566

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	106		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P433469

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P433578

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: P433403

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P433404

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

Reference Method: EPA 8321B
Batch ID: P433329

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	103		P	40 - 160
Desmethyl microcystin LR	107		P	40 - 160
Microcystin HILR	111		P	40 - 160
Microcystin HtyR	102		P	40 - 160
Microcystin LA	112		P	40 - 160
Microcystin LF	96.5		P	40 - 160
Microcystin LR	107		P	40 - 160
Microcystin LW	108		P	40 - 160
Microcystin LY	114		P	40 - 160
Microcystin RR	109		P	40 - 160
Microcystin WR	118		P	40 - 160
Microcystin YR	102		P	40 - 160
Nodularin-R	104		P	40 - 160

Reference Method: EPA 8321B
Batch ID: P433330

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	92.2		P	40 - 150
Neosaxitoxin	87.9		P	40 - 150
Saxitoxin	85.3		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P433444

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2427443	Ammonia-N	100	99.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P433463

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2427564	Ammonia-N	98.0	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433432

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2428354	Kjeldahl Nitrogen	94.7	97.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433434

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2427983	Kjeldahl Nitrogen	106	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P433452

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2428316	NO2NO3-N	106	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P433453

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2428395	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P433566

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2428396	NO2NO3-N	104	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P433469

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2428416	Total-P	105	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P433578

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2428231	Total-P	102	104	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P433403

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2428328	O-Phosphate-P	100	99.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P433404

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2428399	O-Phosphate-P	101	102	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P433329

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2428329	Cylindrospermopsin	103	107	P/P	40 - 160
2428329	Desmethyl microcystin LR	107	104	P/P	40 - 160
2428329	Microcystin H1R	113	114	P/P	40 - 160
2428329	Microcystin HtyR	103	105	P/P	40 - 160
2428329	Microcystin LA	110	111	P/P	40 - 160
2428329	Microcystin LF	107	110	P/P	40 - 160
2428329	Microcystin LR	105	108	P/P	40 - 160
2428329	Microcystin LW	109	113	P/P	40 - 160
2428329	Microcystin LY	108	108	P/P	40 - 160
2428329	Microcystin RR	103	108	P/P	40 - 160
2428329	Microcystin WR	116	115	P/P	40 - 160
2428329	Microcystin YR	99.1	96.8	P/P	40 - 160
2428329	Nodularin-R	106	104	P/P	40 - 160

Reference Method: EPA 8321B
Batch ID: P433330

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2428329	Anatoxin-a	85.6	86.5	P/P	40 - 150
2428329	Neosaxitoxin	95.9	103	P/P	40 - 150
2428329	Saxitoxin	93.4	103	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P433400

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2428326	Color (true)	0.493	Sample	P	0 - 20

Reference Method: DEP SOP: NU-094-1
Batch ID: P433401

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2428392	Color (true)	0.140	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P433444

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427443	Ammonia-N	0.248	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P433463

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427564	Ammonia-N	2.63	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433432

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2428354	Kjeldahl Nitrogen	2.15	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433434

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427983	Kjeldahl Nitrogen	1.93	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P433452

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2428316	NO2NO3-N	0.471	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P433453

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2428395	NO2NO3-N	0.396	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P433566

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2428396	NO2NO3-N	0.797	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P433469

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2428416	Total-P	0.183	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P433578

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2428231	Total-P	2.17	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P433403

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2428328	O-Phosphate-P	0.765	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P433404

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2428399	O-Phosphate-P	0.411	Spike	P	0 - 20

Reference Method: EPA 8321B

Batch ID: P433329

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2428329	Cylindrospermopsin	4.01	Spike	P	0 - 30
2428329	Desmethyl microcystin LR	2.81	Spike	P	0 - 30
2428329	Microcystin H1LR	1.07	Spike	P	0 - 30
2428329	Microcystin HtyR	2.46	Spike	P	0 - 30
2428329	Microcystin LA	0.945	Spike	P	0 - 30
2428329	Microcystin LF	2.94	Spike	P	0 - 30
2428329	Microcystin LR	2.79	Spike	P	0 - 30
2428329	Microcystin LW	3.35	Spike	P	0 - 30
2428329	Microcystin LY	0.0692	Spike	P	0 - 30
2428329	Microcystin RR	4.33	Spike	P	0 - 30
2428329	Microcystin WR	1.07	Spike	P	0 - 30
2428329	Microcystin YR	2.30	Spike	P	0 - 30
2428329	Nodularin-R	2.17	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P433330

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2428329	Anatoxin-a	0.971	Spike	P	0 - 30
2428329	Neosaxitoxin	7.11	Spike	P	0 - 30
2428329	Saxitoxin	9.63	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2428400
Field Sample ID: HAB-SD-080223-1300

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	69.6	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	101	P	30 - 160

Lab Sample ID: 2428401
Field Sample ID: HAB-SD-080223-1215

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	73.2	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	105	P	30 - 160

Lab Sample ID: 2428402
Field Sample ID: HAB-SD-080223-1400

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	65.5	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	103	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A120804

Included Lab Sample IDs: 2428400, 2428401, 2428402

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	102	101	P/P	60 - 160
Desmethyl microcystin LR	101	101	P/P	50 - 160
Microcystin HilR	106	101	P/P	60 - 160
Microcystin HtyR	96.9	92.1	P/P	60 - 160
Microcystin LA	111	108	P/P	50 - 160
Microcystin LF	87.6	80.6	P/P	60 - 160
Microcystin LR	102	94.3	P/P	60 - 160
Microcystin LW	98.7	92.8	P/P	60 - 160
Microcystin LY	107	101	P/P	60 - 160
Microcystin RR	104	99.1	P/P	60 - 160
Microcystin WR	106	102	P/P	60 - 160
Microcystin YR	89.9	83.4	P/P	60 - 160
Nodularin-R	104	96.9	P/P	60 - 160

Reference Method: DEP SOP: NU-094-1

Run ID: A120824

Included Lab Sample IDs: 2428391, 2428392, 2428393

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	96.9	99.3	P/P	90 - 110
Color (true)	99.3	96.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A120825

Included Lab Sample IDs: 2428397, 2428398, 2428399

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.6	99.4	P/P	90 - 110
O-Phosphate-P	99.1	98.6	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A120830

Included Lab Sample IDs: 2428400, 2428401, 2428402

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	88.0	86.4	P/P	50 - 160
Neosaxitoxin	91.3	86.6	P/P	50 - 160
Saxitoxin	83.1	83.5	P/P	50 - 160

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A120846

Included Lab Sample IDs: 2428394, 2428395, 2428396

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.1	97.3	P/P	90 - 110
Ammonia-N	98.2	97.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A120849

Included Lab Sample IDs: 2428394, 2428395

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	104	P/P	90 - 110
NO2NO3-N	105	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A120869

Included Lab Sample IDs: 2428394, 2428395

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A120876

Included Lab Sample IDs: 2428394, 2428395

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.4	94.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A120879

Included Lab Sample IDs: 2428396

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.0	92.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A120892

Included Lab Sample IDs: 2428396

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A120915

Included Lab Sample IDs: 2428396

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	101	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	
DEP SOP: NU-094-1	Color (true)	97.9				0.493	
	Color (true)	97.6				0.140	
EPA 350.1 Rev. 2.0	Ammonia-N	98.4	100	99.6			0.248
	Ammonia-N	94.8	98.0	101			2.63
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.1	94.7	97.5			2.15
	Kjeldahl Nitrogen	101	106	108			1.93
EPA 353.2 Rev. 2.0	NO2NO3-N	104	106	106			0.471
	NO2NO3-N	105	104	104			0.396
	NO2NO3-N	106	104	102			0.797
EPA 365.1 Rev. 2.0	Total-P	101	105	104			0.183
	Total-P	105	102	104			2.17
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	100	99.4			0.765
	O-Phosphate-P	101	101	102			0.411
EPA 8321B	Anatoxin-a	92.2	85.6	86.5			0.971
	Cylindrospermopsin	103	103	107			4.01
	Desmethyl microcystin LR	107	107	104			2.81
	Microcystin HilR	111	113	114			1.07
	Microcystin HtyR	102	103	105			2.46
	Microcystin LA	112	110	111			0.945
	Microcystin LF	96.5	107	110			2.94
	Microcystin LR	107	105	108			2.79
	Microcystin LW	108	109	113			3.35
	Microcystin LY	114	108	108			0.0692
	Microcystin RR	109	103	108			4.33
	Microcystin WR	118	116	115			1.07
	Microcystin YR	102	99.1	96.8			2.30
	Neosaxitoxin	87.9	95.9	103			7.11
	Nodularin-R	104	106	104			2.17
	Saxitoxin	85.3	93.4	103			9.63

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2428391, 2428392, 2428393
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2428394, 2428395, 2428396
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2428394, 2428395, 2428396
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2428394, 2428395, 2428396
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2428394, 2428395, 2428396
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2428397, 2428398, 2428399
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2428400, 2428401, 2428402
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2428400, 2428401, 2428402

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	08/03/2023			08/03/2023 14:03	Alexis Price	2428391
	08/03/2023			08/03/2023 14:08	Alexis Price	2428392, 2428393
	08/03/2023			08/04/2023 10:36	Ping Hua	2428396
EPA 350.1 Rev. 2.0	08/03/2023			08/04/2023 13:25	Ping Hua	2428394
	08/03/2023			08/04/2023 13:26	Ping Hua	2428395
	08/03/2023	08/04/2023 10:07	Dana G. Hughes	08/07/2023 12:10	Samantha L Bates	2428394
EPA 351.2 Rev. 2.0	08/03/2023	08/04/2023 10:07	Dana G. Hughes	08/07/2023 12:11	Samantha L Bates	2428395
	08/03/2023	08/04/2023 10:07	Dana G. Hughes	08/07/2023 15:35	Samantha L Bates	2428396
	08/03/2023			08/04/2023 10:34	Beverly Y. Sanders	2428395
EPA 353.2 Rev. 2.0	08/03/2023			08/04/2023 11:29	Beverly Y. Sanders	2428394
	08/03/2023			08/08/2023 11:53	Beverly Y. Sanders	2428396
	08/03/2023	08/04/2023 15:30	Alexis Price	08/07/2023 10:10	James L Waggeberby	2428394
EPA 365.1 Rev. 2.0	08/03/2023	08/04/2023 15:30	Alexis Price	08/07/2023 10:11	James L Waggeberby	2428395
	08/03/2023	08/08/2023 15:00	Adam P Silver	08/09/2023 11:52	Chandler E Cox	2428396
	08/03/2023			08/03/2023 14:54	Elise M. Gillis	2428397
EPA 365.1 Rev. 2.0 dissolved	08/03/2023			08/03/2023 14:55	Elise M. Gillis	2428398
	08/03/2023			08/03/2023 15:04	Elise M. Gillis	2428399
	08/03/2023	08/03/2023 12:00	Tae K Lee	08/03/2023 16:44	Hana Lee	2428400
EPA 8321B	08/03/2023	08/03/2023 12:00	Tae K Lee	08/03/2023 17:00	Hana Lee	2428401
	08/03/2023	08/03/2023 12:00	Tae K Lee	08/03/2023 17:17	Hana Lee	2428402
	08/03/2023	08/03/2023 12:00	Tae K Lee	08/03/2023 21:29	Hana Lee	2428400
	08/03/2023	08/03/2023 12:00	Tae K Lee	08/03/2023 21:43	Hana Lee	2428401
	08/03/2023	08/03/2023 12:00	Tae K Lee	08/03/2023 21:57	Hana Lee	2428402
	08/03/2023	08/03/2023 12:00	Tae K Lee			