

Chemical Analysis Report

SO-DIST-2023-07-07-01

Florida DEP Laboratory
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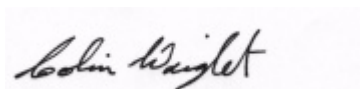
Event Description: **Algal Bloom Response -SOROC**
Request ID: **RQ-2023-06-26-54**
Customer: **SO-DIST**
Project ID: **BLOOM-RESP**

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

Date Certified: 20-JUL-2023 08:21



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 Apthorpe - Boat Ramp

Collection Date/Time: 07/06/2023 10:25

Field ID: HAB-SD-070623-1025

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2421823	DEP SOP: NU-094-1	Color (true)	17		PCU	P432193	
2421826	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P432246	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.70		mg N/L	P432265	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P432268	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P432233	
2421829	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P432198	
2421832	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P432149	
		Cylindrospermopsin	0.10	U	ug/L	P432148	
		Desmethyl microcystin LR	0.25	U	ug/L	P432148	
		Microcystin HiLR	0.25	U	ug/L	P432148	
		Microcystin HtyR	0.25	U	ug/L	P432148	
		Microcystin LA	0.10	U	ug/L	P432148	
		Microcystin LF	0.10	U	ug/L	P432148	
		Microcystin LR	0.25	U	ug/L	P432148	
		Microcystin LW	0.25	U	ug/L	P432148	
		Microcystin LY	0.10	U	ug/L	P432148	
		Microcystin RR	0.10	U	ug/L	P432148	
		Microcystin WR	0.50	U	ug/L	P432148	
		Neosaxitoxin	0.50	U	ug/L	P432149	
		Microcystin YR	0.25	U	ug/L	P432148	
		Saxitoxin	0.50	U	ug/L	P432149	
		Nodularin-R	0.10	U	ug/L	P432148	

Sample Location: Blue lake - Western Shore

Collection Date/Time: 07/06/2023 09:50

Field ID: HAB-SD-070623-0950

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2421824	DEP SOP: NU-094-1	Color (true)	10		PCU	P432193	
2421827	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P432246	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.60		mg N/L	P432263	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P432268	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P432233	
2421830	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P432198	
2421833	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P432149	
		Cylindrospermopsin	0.10	U	ug/L	P432148	
		Desmethyl microcystin LR	0.25	U	ug/L	P432148	
		Microcystin HiLR	0.25	U	ug/L	P432148	
		Microcystin HtyR	0.25	U	ug/L	P432148	
		Microcystin LA	0.10	U	ug/L	P432148	
		Microcystin LF	0.10	U	ug/L	P432148	
		Microcystin LR	0.25	U	ug/L	P432148	
		Microcystin LW	0.25	U	ug/L	P432148	
		Microcystin LY	0.10	U	ug/L	P432148	
		Microcystin RR	0.10	U	ug/L	P432148	
		Microcystin WR	0.50	U	ug/L	P432148	
		Neosaxitoxin	0.50	U	ug/L	P432149	
		Microcystin YR	0.25	U	ug/L	P432148	
		Saxitoxin	0.50	U	ug/L	P432149	
		Nodularin-R	0.10	U	ug/L	P432148	

Ref. Method and Comment:

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Peace River - Crews Park Boat Ramp

Collection Date/Time: 07/06/2023 11:30

Field ID: HAB-SD-070623-1130

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2421825	DEP SOP: NU-094-1	Color (true)	100		PCU	P432193	
2421828	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P432246	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	3.0		mg N/L	P432265	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.22		mg N/L	P432268	
	EPA 365.1 Rev. 2.0	Total-P	1.1		mg P/L	P432233	
2421831	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.64		mg P/L	P432198	
2421834	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P432149	
		Cylindrospermopsin	0.10	U	ug/L	P432148	
		Desmethyl microcystin LR	0.25	U	ug/L	P432148	
		Microcystin HiLR	0.25	U	ug/L	P432148	
		Microcystin HtyR	0.25	U	ug/L	P432148	
		Microcystin LA	0.10	U	ug/L	P432148	
		Microcystin LF	0.10	U	ug/L	P432148	
		Microcystin LR	0.25	U	ug/L	P432148	
		Microcystin LW	0.25	U	ug/L	P432148	
		Microcystin LY	0.10	U	ug/L	P432148	
		Microcystin RR	0.10	U	ug/L	P432148	
		Microcystin WR	0.50	U	ug/L	P432148	
		Neosaxitoxin	0.50	U	ug/L	P432149	
		Microcystin YR	0.25	U	ug/L	P432148	
		Saxitoxin	0.50	U	ug/L	P432149	
		Nodularin-R	0.10	U	ug/L	P432148	

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P432193

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P432246

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P432263

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P432265

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P432268

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P432233

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P432198

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

Reference Method: EPA 8321B
Batch ID: P432148

Component	Result	Code	Units
Cylindrospermopsin	0.10	U	ug/L
Desmethyl microcystin LR	0.25	U	ug/L
Microcystin HIR	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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B
Batch ID: P432148

Component	Result	Code	Units
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: P432149

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: P432193

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P432246

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P432263

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P432265

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: P432268

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: P432233

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P432198

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

Reference Method: EPA 8321B
Batch ID: P432148

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	95.4		P	40 - 160
Desmethyl microcystin LR	94.9		P	40 - 160
Microcystin H1R	93.7		P	40 - 160
Microcystin HtyR	89.6		P	40 - 160
Microcystin LA	101		P	40 - 160
Microcystin LF	83.1		P	40 - 160
Microcystin LR	97.7		P	40 - 160
Microcystin LW	79.6		P	40 - 160
Microcystin LY	89.5		P	40 - 160
Microcystin RR	95.1		P	40 - 160

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P432148

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Microcystin WR	94.9		P	40 - 160
Microcystin YR	81.1		P	40 - 160
Nodularin-R	88.9		P	40 - 160

Reference Method: EPA 8321B
Batch ID: P432149

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	101		P	40 - 150
Neosaxitoxin	84.7		P	40 - 150
Saxitoxin	88.7		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P432246

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2421795	Ammonia-N	95.4	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P432265

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2422043	Kjeldahl Nitrogen	109	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P432268

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2421649	NO2NO3-N	97.2	97.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P432233

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2421827	Total-P	100	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P432198

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2421788	O-Phosphate-P	100	101	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P432148

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2421746	Cylindrospermopsin	91.6	88.5	P/P	40 - 160
2421746	Desmethyl microcystin LR	95.9	98.0	P/P	40 - 160
2421746	Microcystin HiLR	94.9	93.9	P/P	40 - 160
2421746	Microcystin HtyR	90.6	86.3	P/P	40 - 160
2421746	Microcystin LA	98.2	95.1	P/P	40 - 160
2421746	Microcystin LF	101	94.5	P/P	40 - 160
2421746	Microcystin LR	96.7	94.8	P/P	40 - 160
2421746	Microcystin LW	86.2	81.9	P/P	40 - 160
2421746	Microcystin LY	90.6	86.8	P/P	40 - 160
2421746	Microcystin RR	96.1	91.5	P/P	40 - 160
2421746	Microcystin WR	96.8	89.6	P/P	40 - 160
2421746	Microcystin YR	82.9	79.7	P/P	40 - 160
2421746	Nodularin-R	91.2	88.3	P/P	40 - 160

Reference Method: EPA 8321B
Batch ID: P432149

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2421746	Anatoxin-a	91.1	109	P/P	40 - 150
2421746	Neosaxitoxin	57.8	70.8	P/P	40 - 150
2421746	Saxitoxin	69.6	85.2	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P432193

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2421805	Color (true)	2.73	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P432246

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2421795	Ammonia-N	3.08	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P432263

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2421920	Kjeldahl Nitrogen	2.72	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P432265

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2422043	Kjeldahl Nitrogen	5.89	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P432268

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2421649	NO2NO3-N	0.471	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P432233

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2421827	Total-P	3.94	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P432198

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2421788	O-Phosphate-P	0.397	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P432148

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2421746	Cylindrospermopsin	3.49	Spike	P	0 - 30
2421746	Desmethyl microcystin LR	2.11	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P432148

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2421746	Microcystin HII R	1.05	Spike	P	0 - 30
2421746	Microcystin Hty R	4.88	Spike	P	0 - 30
2421746	Microcystin LA	3.21	Spike	P	0 - 30
2421746	Microcystin LF	6.85	Spike	P	0 - 30
2421746	Microcystin LR	1.87	Spike	P	0 - 30
2421746	Microcystin LW	5.17	Spike	P	0 - 30
2421746	Microcystin LY	4.28	Spike	P	0 - 30
2421746	Microcystin RR	4.95	Spike	P	0 - 30
2421746	Microcystin WR	7.73	Spike	P	0 - 30
2421746	Microcystin YR	3.92	Spike	P	0 - 30
2421746	Nodularin-R	3.23	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P432149

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2421746	Anatoxin-a	17.9	Spike	P	0 - 30
2421746	Neosaxitoxin	20.2	Spike	P	0 - 30
2421746	Saxitoxin	20.1	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2421832
Field Sample ID: HAB-SD-070623-1025

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	91.4	P	30 - 160
EPA 8321B	Saxitoxin-15N7	92.2	P	30 - 160

Lab Sample ID: 2421833
Field Sample ID: HAB-SD-070623-0950

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	91.8	P	30 - 160
EPA 8321B	Saxitoxin-15N7	101	P	30 - 160

Lab Sample ID: 2421834
Field Sample ID: HAB-SD-070623-1130

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	95.1	P	30 - 160
EPA 8321B	Saxitoxin-15N7	69.9	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: DEP SOP: NU-094-1

Run ID: A120233

Included Lab Sample IDs: 2421823, 2421824, 2421825

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A120234

Included Lab Sample IDs: 2421829, 2421830, 2421831

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.2	99.6	P/P	90 - 110
O-Phosphate-P	99.6	99.2	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A120236

Included Lab Sample IDs: 2421832, 2421833, 2421834

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	107	104	P/P	50 - 160
Neosaxitoxin	93.1	91.2	P/P	50 - 160
Saxitoxin	95.3	93.0	P/P	50 - 160

Reference Method: EPA 8321B

Run ID: A120237

Included Lab Sample IDs: 2421832, 2421833, 2421834

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	92.8	94.5	P/P	60 - 160
Desmethyl microcystin LR	90.9	92.9	P/P	50 - 160
Microcystin HILR	88.2	89.5	P/P	60 - 160
Microcystin HtyR	84.0	85.0	P/P	60 - 160
Microcystin LA	94.7	92.9	P/P	50 - 160
Microcystin LF	81.6	81.9	P/P	60 - 160
Microcystin LR	87.2	88.7	P/P	60 - 160
Microcystin LW	78.3	81.0	P/P	60 - 160
Microcystin LY	86.4	81.8	P/P	60 - 160
Microcystin RR	88.2	90.7	P/P	60 - 160
Microcystin WR	89.4	89.3	P/P	60 - 160
Microcystin YR	79.4	78.2	P/P	60 - 160
Nodularin-R	82.5	84.5	P/P	60 - 160

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A120263

Included Lab Sample IDs: 2421826, 2421827, 2421828

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.2	99.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A120276

Included Lab Sample IDs: 2421826, 2421827, 2421828

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	97.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A120293

Included Lab Sample IDs: 2421828

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A120298

Included Lab Sample IDs: 2421826

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A120313

Included Lab Sample IDs: 2421827

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.8	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A120324

Included Lab Sample IDs: 2421826, 2421828

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.8	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A120348

Included Lab Sample IDs: 2421827

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	103	104	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)	99.8				2.73	
EPA 350.1 Rev. 2.0	Ammonia-N	95.4	95.4	99.0			3.08
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101					2.72
	Kjeldahl Nitrogen	101	109	101			5.89
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	97.2	97.6			0.471
EPA 365.1 Rev. 2.0	Total-P	96.8	100	104			3.94
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	100	101			0.397
EPA 8321B	Anatoxin-a	101	91.1	109			17.9
	Cylindrospermopsin	95.4	91.6	88.5			3.49
	Desmethyl microcystin LR	94.9	95.9	98.0			2.11
	Microcystin HilR	93.7	94.9	93.9			1.05
	Microcystin HtyR	89.6	90.6	86.3			4.88
	Microcystin LA	101	98.2	95.1			3.21
	Microcystin LF	83.1	101	94.5			6.85
	Microcystin LR	97.7	96.7	94.8			1.87
	Microcystin LW	79.6	86.2	81.9			5.17
	Microcystin LY	89.5	90.6	86.8			4.28
	Microcystin RR	95.1	96.1	91.5			4.95
	Microcystin WR	94.9	96.8	89.6			7.73
	Microcystin YR	81.1	82.9	79.7			3.92
	Neosaxitoxin	84.7	57.8	70.8			20.2
	Nodularin-R	88.9	91.2	88.3			3.23
	Saxitoxin	88.7	69.6	85.2			20.1

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2421823, 2421824, 2421825
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2421826, 2421827, 2421828
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2421826, 2421827, 2421828
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2421826, 2421827, 2421828
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2421826, 2421827, 2421828
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2421829, 2421830, 2421831
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2421832, 2421833, 2421834
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2421832, 2421833, 2421834

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	07/07/2023			07/07/2023 15:29	Chandler E Cox	2421823, 2421824
	07/07/2023			07/07/2023 15:30	Chandler E Cox	2421825
	07/07/2023			07/10/2023 12:43	Khloe J Berg	2421826
EPA 350.1 Rev. 2.0	07/07/2023			07/10/2023 12:44	Khloe J Berg	2421827
	07/07/2023			07/10/2023 12:45	Khloe J Berg	2421828
	07/07/2023	07/11/2023 09:49	Samantha L Bates	07/12/2023 10:33	Samantha L Bates	2421827
EPA 351.2 Rev. 2.0	07/07/2023	07/11/2023 09:49	Samantha L Bates	07/12/2023 13:54	Samantha L Bates	2421826
	07/07/2023	07/11/2023 09:49	Samantha L Bates	07/12/2023 13:56	Samantha L Bates	2421828
	07/07/2023			07/10/2023 15:15	Judith K. Clark	2421826
EPA 353.2 Rev. 2.0	07/07/2023			07/10/2023 15:16	Judith K. Clark	2421827
	07/07/2023			07/10/2023 15:17	Judith K. Clark	2421828
	07/07/2023	07/10/2023 17:27	Adam P Silver	07/11/2023 14:11	Simonne.V. Calhoun	2421828
EPA 365.1 Rev. 2.0	07/07/2023	07/10/2023 17:27	Adam P Silver	07/11/2023 17:10	Simonne.V. Calhoun	2421826
	07/07/2023	07/10/2023 17:27	Adam P Silver	07/13/2023 13:50	Chandler E Cox	2421827
	07/07/2023			07/07/2023 15:45	Elise M. Gillis	2421829
EPA 365.1 Rev. 2.0 dissolved	07/07/2023			07/07/2023 15:46	Elise M. Gillis	2421830
	07/07/2023			07/07/2023 15:57	Elise M. Gillis	2421831
	07/07/2023	07/07/2023 12:00	Tae K Lee	07/07/2023 18:47	Hana Lee	2421832
EPA 8321B	07/07/2023	07/07/2023 12:00	Tae K Lee	07/07/2023 19:01	Hana Lee	2421833
	07/07/2023	07/07/2023 12:00	Tae K Lee	07/07/2023 19:15	Hana Lee	2421834
	07/07/2023	07/07/2023 12:00	Tae K Lee	07/08/2023 01:47	Juyoung Kim	2421832
	07/07/2023	07/07/2023 12:00	Tae K Lee	07/08/2023 02:04	Juyoung Kim	2421833
	07/07/2023	07/07/2023 12:00	Tae K Lee	07/08/2023 02:21	Juyoung Kim	2421834
	07/07/2023	07/07/2023 12:00	Tae K Lee			