

Chemical Analysis Report

CEN-DIST-2023-07-18-01

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

Event Description: **Algal Bloom Response - CEROC**
Request ID: **RQ-2023-07-03-20**
Customer: **CEN-DIST**
Project ID: **BLOOM-RESP**

Send Reports to:
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Date Certified: 26-JUL-2023 09:45



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 Weston - Kingswood Manor Park Dock

Collection Date/Time: 07/17/2023 09:56

Field ID: HABCE0205_LakeWeston

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2424414	DEP SOP: NU-094-1	Color (true)	22	A	PCU	P432649	
2424415	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P432861	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.55		mg N/L	P432701	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P432688	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P432679	
2424416	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P432633	
2424419	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P432619	
		Cylindrospermopsin	0.10	U	ug/L	P432618	
		Desmethyl microcystin LR	0.25	U	ug/L	P432618	
		Microcystin HiLR	0.25	U	ug/L	P432618	
		Microcystin HtyR	0.25	U	ug/L	P432618	
		Microcystin LA	0.10	U	ug/L	P432618	
		Microcystin LF	0.10	U	ug/L	P432618	
		Microcystin LR	0.25	U	ug/L	P432618	
		Microcystin LW	0.25	U	ug/L	P432618	
		Microcystin LY	0.10	U	ug/L	P432618	
		Microcystin RR	0.10	U	ug/L	P432618	
		Microcystin WR	0.50	U	ug/L	P432618	
		Neosaxitoxin	0.50	U	ug/L	P432619	
		Microcystin YR	0.25	U	ug/L	P432618	
		Saxitoxin	0.50	U	ug/L	P432619	
		Nodularin-R	0.10	U	ug/L	P432618	

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P432649

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P432861

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P432701

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P432688

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P432679

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P432633

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

Reference Method: EPA 8321B
Batch ID: P432618

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: P432619

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: P432649

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P432861

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	94.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P432701

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: P432688

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: P432679

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P432633

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

Reference Method: EPA 8321B
Batch ID: P432618

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	103		P	40 - 160
Desmethyl microcystin LR	112		P	40 - 160
Microcystin H1LR	116		P	40 - 160
Microcystin HtyR	106		P	40 - 160
Microcystin LA	113		P	40 - 160
Microcystin LF	98.8		P	40 - 160
Microcystin LR	121		P	40 - 160
Microcystin LW	103		P	40 - 160
Microcystin LY	122		P	40 - 160
Microcystin RR	105		P	40 - 160
Microcystin WR	103		P	40 - 160
Microcystin YR	127		P	40 - 160
Nodularin-R	108		P	40 - 160

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P432619

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	127		P	40 - 150
Neosaxitoxin	110		P	40 - 150
Saxitoxin	85.5		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P432861

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2424319	Ammonia-N	94.8	96.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P432701

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2424318	Kjeldahl Nitrogen	103	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P432688

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2424415	NO2NO3-N	99.0	95.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P432679

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2424318	Total-P	98.8	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P432633

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2424358	O-Phosphate-P	98.5	98.8	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P432618

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2424326	Cylindrospermopsin	96.1	84.8	P/P	40 - 160
2424326	Desmethyl microcystin LR	111	102	P/P	40 - 160
2424326	Microcystin HiLR	112	105	P/P	40 - 160
2424326	Microcystin HtyR	104	91.3	P/P	40 - 160
2424326	Microcystin LA	110	99.6	P/P	40 - 160
2424326	Microcystin LF	106	97.5	P/P	40 - 160
2424326	Microcystin LR	118	111	P/P	40 - 160
2424326	Microcystin LW	102	93.2	P/P	40 - 160
2424326	Microcystin LY	112	110	P/P	40 - 160
2424326	Microcystin RR	103	92.9	P/P	40 - 160
2424326	Microcystin WR	101	91.9	P/P	40 - 160
2424326	Microcystin YR	118	109	P/P	40 - 160
2424326	Nodularin-R	105	93.2	P/P	40 - 160

Reference Method: EPA 8321B
Batch ID: P432619

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2424326	Anatoxin-a	119	116	P/P	40 - 150
2424326	Neosaxitoxin	88.4	87.1	P/P	40 - 150
2424326	Saxitoxin	78.7	74.0	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P432649

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2424414	Color (true)	3.24	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P432861

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2424319	Ammonia-N	1.27	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P432701

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2424318	Kjeldahl Nitrogen	4.62	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P432688

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2424415	NO2NO3-N	3.60	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P432679

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2424318	Total-P	3.20	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P432633

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2424358	O-Phosphate-P	0.202	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P432618

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2424326	Cylindrospermopsin	12.5	Spike	P	0 - 30
2424326	Desmethyl microcystin LR	8.09	Spike	P	0 - 30
2424326	Microcystin HtIR	6.17	Spike	P	0 - 30
2424326	Microcystin HtyR	12.8	Spike	P	0 - 30
2424326	Microcystin LA	9.71	Spike	P	0 - 30
2424326	Microcystin LF	8.77	Spike	P	0 - 30
2424326	Microcystin LR	6.34	Spike	P	0 - 30
2424326	Microcystin LW	8.76	Spike	P	0 - 30
2424326	Microcystin LY	1.70	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P432618

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2424326	Microcystin RR	9.96	Spike	P	0 - 30
2424326	Microcystin WR	9.34	Spike	P	0 - 30
2424326	Microcystin YR	7.85	Spike	P	0 - 30
2424326	Nodularin-R	11.6	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P432619

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2424326	Anatoxin-a	2.68	Spike	P	0 - 30
2424326	Neosaxitoxin	1.39	Spike	P	0 - 30
2424326	Saxitoxin	6.20	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2424419

Field Sample ID: HABCE0205_LakeWeston

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	93.1	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	75.4	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A120457

Included Lab Sample IDs: 2424416

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.0	99.8	P/P	90 - 110

Reference Method: DEP SOP: NU-094-1

Run ID: A120464

Included Lab Sample IDs: 2424414

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A120484

Included Lab Sample IDs: 2424415

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

Reference Method: EPA 8321B

Run ID: A120514

Included Lab Sample IDs: 2424419

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	134	123	P/P	50 - 160
Neosaxitoxin	111	116	P/P	50 - 160
Saxitoxin	94.2	95.7	P/P	50 - 160

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A120523

Included Lab Sample IDs: 2424415

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	99.0	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A120526

Included Lab Sample IDs: 2424419

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	110	112	P/P	60 - 160
Desmethyl microcystin LR	116	120	P/P	50 - 160
Microcystin H1IR	121	126	P/P	60 - 160
Microcystin HtyR	112	111	P/P	60 - 160
Microcystin LA	123	124	P/P	50 - 160
Microcystin LF	116	120	P/P	60 - 160
Microcystin LR	129	134	P/P	60 - 160
Microcystin LW	105	111	P/P	60 - 160
Microcystin LY	147	141	P/P	60 - 160
Microcystin RR	109	109	P/P	60 - 160
Microcystin WR	113	108	P/P	60 - 160
Microcystin YR	128	138	P/P	60 - 160
Nodularin-R	118	117	P/P	60 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A120559

Included Lab Sample IDs: 2424415

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.6	98.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A120578

Included Lab Sample IDs: 2424415

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	102	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)	102				3.24	
EPA 350.1 Rev. 2.0	Ammonia-N	94.4	94.8	96.6			1.27
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	103	108			4.62
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	99.0	95.5			3.60
EPA 365.1 Rev. 2.0	Total-P	98.6	98.8	102			3.20
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.6	98.5	98.8			0.202
EPA 8321B	Anatoxin-a	127	119	116			2.68
	Cylindrospermopsin	103	84.8	96.1			12.5
	Desmethyl microcystin LR	112	102	111			8.09
	Microcystin H ₁ R	116	105	112			6.17
	Microcystin H ₂ R	106	91.3	104			12.8
	Microcystin LA	113	99.6	110			9.71
	Microcystin LF	98.8	106	97.5			8.77
	Microcystin LR	121	111	118			6.34
	Microcystin LW	103	102	93.2			8.76
	Microcystin LY	122	110	112			1.70
	Microcystin RR	105	92.9	103			9.96
	Microcystin WR	103	91.9	101			9.34
	Microcystin YR	127	109	118			7.85
	Neosaxitoxin	110	88.4	87.1			1.39
	Nodularin-R	108	93.2	105			11.6
	Saxitoxin	85.5	78.7	74.0			6.20

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2424414
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2424415
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2424415
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2424415
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2424415
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2424416
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2424419
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2424419

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	07/18/2023			07/18/2023 14:33	Chandler E Cox	2424414
EPA 350.1 Rev. 2.0	07/18/2023			07/21/2023 12:08	Khloe J Berg	2424415
EPA 351.2 Rev. 2.0	07/18/2023	07/19/2023 21:01	Dana G. Hughes	07/24/2023 10:10	Samantha L Bates	2424415
EPA 353.2 Rev. 2.0	07/18/2023			07/19/2023 09:52	Beverly Y. Sanders	2424415
EPA 365.1 Rev. 2.0	07/18/2023	07/19/2023 15:38	Adam P Silver	07/20/2023 14:25	Simonne.V. Calhoun	2424415
EPA 365.1 Rev. 2.0 dissolved	07/18/2023			07/18/2023 14:02	Adam P Silver	2424416
EPA 8321B	07/18/2023	07/19/2023 13:00	Tae K Lee	07/20/2023 01:05	Hana Lee	2424419
	07/18/2023	07/19/2023 13:00	Tae K Lee	07/20/2023 01:59	Juyoung Kim	2424419