

Chemical Analysis Report

SFWMD-2021-06-03-01

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **SFWMD Bloom Response-As Needed**
Request ID: **RQ-2021-05-31-58**
Customer: **SFWMD**
Project ID: **BLOOM-RESP**

Send Reports to:
South Florida Water Management District
SFWMD
8894 Belvedere Rd. B374
West Palm Beach, FL 33411
Attn: Michael Thompkins

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

Date Certified: 04-JUN-2021 11:16

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the "T" and a long horizontal stroke at the end.

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 group are included in this report: 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: S155A

Collection Date/Time: 06/02/2021 07:17

Field ID: S155A

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2251733	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P399131	
		Cylindrospermopsin	0.25	I	ug/L	P399131	
		Desmethyl microcystin LR	0.25	U	ug/L	P399131	
		Microcystin H1LR**	0.25	U	ug/L	P399131	
		Microcystin HtyR**	0.25	U	ug/L	P399131	
		Microcystin LA	0.10	U	ug/L	P399131	
		Microcystin LF	0.10	U	ug/L	P399131	
		Microcystin LR	0.25	U	ug/L	P399131	
		Microcystin LW	0.25	U	ug/L	P399131	
		Microcystin LY	0.10	U	ug/L	P399131	
		Microcystin RR	0.10	U	ug/L	P399131	
		Microcystin WR	0.50	U	ug/L	P399131	
		Microcystin YR	0.25	U	ug/L	P399131	
		Nodularin-R**	0.10	U	ug/L	P399131	

Sample Location: C51BR1

Collection Date/Time: 06/02/2021 07:48

Field ID: C51BR1

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2251734	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P399131	
		Cylindrospermopsin	0.18	I	ug/L	P399131	
		Desmethyl microcystin LR	0.25	U	ug/L	P399131	
		Microcystin H1R**	0.25	U	ug/L	P399131	
		Microcystin HtyR**	0.25	U	ug/L	P399131	
		Microcystin LA	0.10	U	ug/L	P399131	
		Microcystin LF	0.10	U	ug/L	P399131	
		Microcystin LR	2.0		ug/L	P399131	
		Microcystin LW	0.25	U	ug/L	P399131	
		Microcystin LY	0.10	U	ug/L	P399131	
		Microcystin RR	0.10	U	ug/L	P399131	
		Microcystin WR	0.50	U	ug/L	P399131	
		Microcystin YR	0.25	U	ug/L	P399131	
		Nodularin-R**	0.10	U	ug/L	P399131	

Sample Location: C51B2

Collection Date/Time: 06/02/2021 08:20

Field ID: C51B2

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2251735	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P399131	
		Cylindrospermopsin	0.10	U	ug/L	P399131	
		Desmethyl microcystin LR	0.25	U	ug/L	P399131	
		Microcystin HIR**	0.25	U	ug/L	P399131	
		Microcystin HtyR**	0.25	U	ug/L	P399131	
		Microcystin LA	0.10	U	ug/L	P399131	
		Microcystin LF	0.10	U	ug/L	P399131	
		Microcystin LR	0.36	I	ug/L	P399131	
		Microcystin LW	0.25	U	ug/L	P399131	
		Microcystin LY	0.10	U	ug/L	P399131	
		Microcystin RR	0.10	U	ug/L	P399131	
		Microcystin WR	0.50	U	ug/L	P399131	
		Microcystin YR	0.25	U	ug/L	P399131	
		Nodularin-R**	0.10	U	ug/L	P399131	

Sample Location: S155

Collection Date/Time: 06/02/2021 08:42

Field ID: S155

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2251736	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P399131	
		Cylindrospermopsin	0.16	I	ug/L	P399131	
		Desmethyl microcystin LR	0.39	I	ug/L	P399131	
		Microcystin H1LR**	0.25	U	ug/L	P399131	
		Microcystin HtyR**	0.25	U	ug/L	P399131	
		Microcystin LA	0.10	U	ug/L	P399131	
		Microcystin LF	0.10	U	ug/L	P399131	
		Microcystin LR	16		ug/L	P399131	
		Microcystin LW	0.25	U	ug/L	P399131	
		Microcystin LY	0.10	U	ug/L	P399131	
		Microcystin RR	0.10	U	ug/L	P399131	
		Microcystin WR	0.50	U	ug/L	P399131	
		Microcystin YR	0.25	U	ug/L	P399131	
		Nodularin-R**	0.10	U	ug/L	P399131	

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B

Batch ID: P399131

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B

Batch ID: P399131

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	115		P	40 - 150
Cylindrospermopsin	115		P	40 - 150
Desmethyl microcystin LR	101		P	40 - 150
Microcystin HilR	114		P	40 - 150
Microcystin HtyR	104		P	40 - 150
Microcystin LA	116		P	40 - 150
Microcystin LF	110		P	40 - 150
Microcystin LR	89.0		P	40 - 150
Microcystin LW	104		P	40 - 150
Microcystin LY	124		P	40 - 150
Microcystin RR	113		P	40 - 150
Microcystin WR	105		P	40 - 150
Microcystin YR	110		P	40 - 150
Nodularin-R	120		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B

Batch ID: P399131

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2251733	Anatoxin-a	109	107	P/P	40 - 150
2251733	Cylindrospermopsin	111	108	P/P	40 - 150
2251733	Desmethyl microcystin LR	98.8	98.9	P/P	40 - 150
2251733	Microcystin HilR	104	107	P/P	40 - 150
2251733	Microcystin HtyR	112	100	P/P	40 - 150
2251733	Microcystin LA	103	114	P/P	40 - 150
2251733	Microcystin LF	99.0	101	P/P	40 - 150
2251733	Microcystin LR	101	98.2	P/P	40 - 150
2251733	Microcystin LW	104	103	P/P	40 - 150
2251733	Microcystin LY	114	116	P/P	40 - 150
2251733	Microcystin RR	106	115	P/P	40 - 150
2251733	Microcystin WR	105	109	P/P	40 - 150
2251733	Microcystin YR	114	108	P/P	40 - 150
2251733	Nodularin-R	111	115	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B

Batch ID: P399131

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2251733	Anatoxin-a	2.34	Spike	P	0 - 30
2251733	Cylindrospermopsin	2.32	Spike	P	0 - 30
2251733	Desmethyl microcystin LR	0.0604	Spike	P	0 - 30
2251733	Microcystin H1R	3.13	Spike	P	0 - 30
2251733	Microcystin HtyR	10.7	Spike	P	0 - 30
2251733	Microcystin LA	9.71	Spike	P	0 - 30
2251733	Microcystin LF	1.58	Spike	P	0 - 30
2251733	Microcystin LR	2.69	Spike	P	0 - 30
2251733	Microcystin LW	0.883	Spike	P	0 - 30
2251733	Microcystin LY	2.21	Spike	P	0 - 30
2251733	Microcystin RR	7.99	Spike	P	0 - 30
2251733	Microcystin WR	4.20	Spike	P	0 - 30
2251733	Microcystin YR	6.00	Spike	P	0 - 30
2251733	Nodularin-R	3.99	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2251733
Field Sample ID: S155A

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	97.9	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	86.8	P	30 - 160

Lab Sample ID: 2251734
Field Sample ID: C51BR1

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	98.2	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	96.6	P	30 - 160

Lab Sample ID: 2251735
Field Sample ID: C51B2

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	88.7	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	90.0	P	30 - 160

Lab Sample ID: 2251736
Field Sample ID: S155

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	101	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	104	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A105851

Included Lab Sample IDs: 2251733, 2251734, 2251735, 2251736

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	92.7	88.7	P/P	50 - 160
Cylindrospermopsin	91.8	91.1	P/P	50 - 160
Desmethyl microcystin LR	81.6	85.8	P/P	50 - 160
Microcystin H1R	88.3	88.6	P/P	50 - 160
Microcystin HtyR	86.3	94.4	P/P	50 - 160
Microcystin LA	91.5	98.8	P/P	50 - 160
Microcystin LF	85.0	87.1	P/P	50 - 160
Microcystin LR	83.1	87.6	P/P	50 - 160
Microcystin LW	79.9	84.6	P/P	50 - 160
Microcystin LY	101	104	P/P	50 - 160
Microcystin RR	91.3	90.2	P/P	50 - 160
Microcystin WR	78.0	89.6	P/P	50 - 160
Microcystin YR	90.0	94.1	P/P	50 - 160
Nodularin-R	97.3	94.3	P/P	50 - 160

* 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 SMP	MS
			LCS			
EPA 8321B	Anatoxin-a	115	109	107		2.34
	Cylindrospermopsin	115	111	108		2.32
	Desmethyl microcystin LR	101	98.8	98.9		0.0604
	Microcystin H1LR	114	104	107		3.13
	Microcystin HtyR	104	112	100		10.7
	Microcystin LA	116	103	114		9.71
	Microcystin LF	110	99.0	101		1.58
	Microcystin LR	89.0	101	98.2		2.69
	Microcystin LW	104	104	103		0.883
	Microcystin LY	124	114	116		2.21
	Microcystin RR	113	106	115		7.99
	Microcystin WR	105	105	109		4.20
	Microcystin YR	110	114	108		6.00
	Nodularin-R	120	111	115		3.99

Reference Method Descriptions

Method	Description	Associated Samples
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2251733, 2251734, 2251735, 2251736

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	06/03/2021	06/03/2021 10:35	Pramila Ghimire	06/03/2021 12:24	Pramila Ghimire	2251733
	06/03/2021	06/03/2021 10:35	Pramila Ghimire	06/03/2021 12:40	Pramila Ghimire	2251734
	06/03/2021	06/03/2021 10:35	Pramila Ghimire	06/03/2021 12:57	Pramila Ghimire	2251735
	06/03/2021	06/03/2021 10:35	Pramila Ghimire	06/03/2021 13:14	Pramila Ghimire	2251736