Chemical Analysis Report

SFWMD-2021-06-22-01

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-2021-05-31-59**
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 Tompkins

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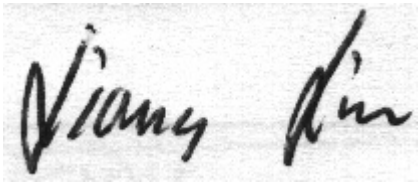
Certified by: Liang Lin, Environmental Administrator

Date Certified: 24-JUN-2021 12:16



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: S-77 **Collection Date/Time: 06/21/2021 08:20**

Field ID: S-77 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2256183	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P399837	
		Cylindrospermopsin	0.10	U	ug/L	P399837	
		Desmethyl microcystin LR	0.25	U	ug/L	P399837	
		Microcystin HilR**	0.25	U	ug/L	P399837	
		Microcystin HtyR**	0.25	U	ug/L	P399837	
		Microcystin LA	0.10	U	ug/L	P399837	
		Microcystin LF	0.10	U	ug/L	P399837	
		Microcystin LR	0.25	U	ug/L	P399837	
		Microcystin LW	0.25	U	ug/L	P399837	
		Microcystin LY	0.10	U	ug/L	P399837	
		Microcystin RR	0.10	U	ug/L	P399837	
		Microcystin WR	0.50	U	ug/L	P399837	
		Microcystin YR	0.25	U	ug/L	P399837	
		Nodularin-R**	0.10	U	ug/L	P399837	

Sample Location: S-79 **Collection Date/Time: 06/21/2021 10:57**

Field ID: S-79 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2256184	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P399837	
		Cylindrospermopsin	0.10	U	ug/L	P399837	
		Desmethyl microcystin LR	0.25	U	ug/L	P399837	
		Microcystin HilR**	0.25	U	ug/L	P399837	
		Microcystin HtyR**	0.25	U	ug/L	P399837	
		Microcystin LA	0.10	U	ug/L	P399837	
		Microcystin LF	0.10	U	ug/L	P399837	
		Microcystin LR	2.2		ug/L	P399837	
		Microcystin LW	0.25	U	ug/L	P399837	
		Microcystin LY	0.10	U	ug/L	P399837	
		Microcystin RR	0.10	U	ug/L	P399837	
		Microcystin WR	0.50	U	ug/L	P399837	
		Microcystin YR	0.25	U	ug/L	P399837	
		Nodularin-R**	0.10	U	ug/L	P399837	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 8321B
Batch ID: P399837

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: P399837

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	120		P	40 - 150
Cylindrospermopsin	120		P	40 - 150
Desmethyl microcystin LR	77.9		P	40 - 150
Microcystin HilR	78.1		P	40 - 150
Microcystin HtyR	83.6		P	40 - 150
Microcystin LA	105		P	40 - 150
Microcystin LF	112		P	40 - 150
Microcystin LR	77.9		P	40 - 150
Microcystin LW	83.7		P	40 - 150
Microcystin LY	108		P	40 - 150
Microcystin RR	122		P	40 - 150
Microcystin WR	74.0		P	40 - 150
Microcystin YR	101		P	40 - 150
Nodularin-R	115		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P399837

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2255840	Anatoxin-a	123	121	P/P	40 - 150
2255840	Cylindrospermopsin	120	118	P/P	40 - 150
2255840	Desmethyl microcystin LR	71.2	67.1	P/P	40 - 150
2255840	Microcystin HilR	77.1	82.3	P/P	40 - 150
2255840	Microcystin HtyR	83.2	83.8	P/P	40 - 150
2255840	Microcystin LA	99.1	103	P/P	40 - 150
2255840	Microcystin LF	94.2	102	P/P	40 - 150
2255840	Microcystin LR	71.4	77.0	P/P	40 - 150
2255840	Microcystin LW	79.7	84.0	P/P	40 - 150
2255840	Microcystin LY	107	106	P/P	40 - 150
2255840	Microcystin RR	118	119	P/P	40 - 150
2255840	Microcystin WR	81.1	72.1	P/P	40 - 150
2255840	Microcystin YR	93.9	103	P/P	40 - 150
2255840	Nodularin-R	107	112	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P399837

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255840	Anatoxin-a	1.04	Spike	P	0 - 30
2255840	Cylindrospermopsin	2.16	Spike	P	0 - 30
2255840	Desmethyl microcystin LR	5.89	Spike	P	0 - 30
2255840	Microcystin HilR	6.59	Spike	P	0 - 30
2255840	Microcystin HtyR	0.707	Spike	P	0 - 30
2255840	Microcystin LA	3.56	Spike	P	0 - 30
2255840	Microcystin LF	7.60	Spike	P	0 - 30
2255840	Microcystin LR	6.82	Spike	P	0 - 30
2255840	Microcystin LW	5.23	Spike	P	0 - 30
2255840	Microcystin LY	0.785	Spike	P	0 - 30
2255840	Microcystin RR	1.01	Spike	P	0 - 30
2255840	Microcystin WR	11.8	Spike	P	0 - 30
2255840	Microcystin YR	8.90	Spike	P	0 - 30
2255840	Nodularin-R	4.63	Spike	P	0 - 30

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2256183
Field Sample ID: S-77

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	95.2	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	98.4	P	30 - 160

Lab Sample ID: 2256184
Field Sample ID: S-79

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	108	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	95.9	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 8321B
Run ID: A106226
Included Lab Sample IDs: 2256183, 2256184

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	115	111	P/P	50 - 160
Cylindrospermopsin	118	121	P/P	50 - 160
Desmethyl microcystin LR	70.1	75.9	P/P	50 - 160
Microcystin HilR	78.2	76.0	P/P	50 - 160
Microcystin HtyR	83.2	87.3	P/P	50 - 160
Microcystin LA	104	108	P/P	50 - 160
Microcystin LF	101	110	P/P	50 - 160
Microcystin LR	85.4	87.5	P/P	50 - 160
Microcystin LW	81.9	85.2	P/P	50 - 160
Microcystin LY	114	113	P/P	50 - 160
Microcystin RR	120	119	P/P	50 - 160
Microcystin WR	69.2	75.7	P/P	50 - 160
Microcystin YR	95.9	95.7	P/P	50 - 160
Nodularin-R	108	108	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		
					LCS	SMP	MS
EPA 8321B	Anatoxin-a	120	123	121			1.04
	Cylindrospermopsin	120	120	118			2.16
	Desmethyl microcystin LR	77.9	71.2	67.1			5.89
	Microcystin HilR	78.1	77.1	82.3			6.59
	Microcystin HtyR	83.6	83.2	83.8			0.707
	Microcystin LA	105	99.1	103			3.56
	Microcystin LF	112	94.2	102			7.60
	Microcystin LR	77.9	71.4	77.0			6.82
	Microcystin LW	83.7	79.7	84.0			5.23
	Microcystin LY	108	107	106			0.785
	Microcystin RR	122	118	119			1.01
	Microcystin WR	74.0	81.1	72.1			11.8
	Microcystin YR	101	93.9	103			8.90
	Nodularin-R	115	107	112			4.63

Reference Method Descriptions

Method	Description	Associated Samples
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2256183, 2256184

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	06/22/2021	06/22/2021 11:00	Pramila Ghimire	06/22/2021 15:45	Pramila Ghimire	2256183
	06/22/2021	06/22/2021 11:00	Pramila Ghimire	06/22/2021 16:02	Pramila Ghimire	2256184