Chemical Analysis Report

SFWMD-2021-07-15-01

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-2021-06-07-61**
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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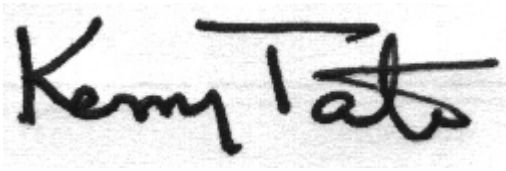
Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 19-JUL-2021 11:28



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: CULV10A Canal Pt **Collection Date/Time: 07/14/2021 08:07**

Field ID: CULV10A Canal Pt Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2262273	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P400982	
		Cylindrospermopsin	0.10	U	ug/L	P400982	
		Desmethyl microcystin LR	0.25	U	ug/L	P400982	
		Microcystin HilR**	0.25	U	ug/L	P400982	
		Microcystin HtyR**	0.25	U	ug/L	P400982	
		Microcystin LA	0.10	U	ug/L	P400982	
		Microcystin LF	0.10	U	ug/L	P400982	
		Microcystin LR	4.4		ug/L	P400982	
		Microcystin LW	0.25	U	ug/L	P400982	
		Microcystin LY	0.10	U	ug/L	P400982	
		Microcystin RR	0.10	U	ug/L	P400982	
		Microcystin WR	0.50	U	ug/L	P400982	
		Microcystin YR	0.25	U	ug/L	P400982	
		Nodularin-R**	0.10	U	ug/L	P400982	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 8321B
Batch ID: P400982

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: P400982

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	131		P	40 - 150
Cylindrospermopsin	104		P	40 - 150
Desmethyl microcystin LR	101		P	40 - 150
Microcystin HilR	101		P	40 - 150
Microcystin HtyR	107		P	40 - 150
Microcystin LA	111		P	40 - 150
Microcystin LF	107		P	40 - 150
Microcystin LR	90.2		P	40 - 150
Microcystin LW	102		P	40 - 150
Microcystin LY	111		P	40 - 150
Microcystin RR	105		P	40 - 150
Microcystin WR	102		P	40 - 150
Microcystin YR	110		P	40 - 150
Nodularin-R	106		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P400982

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2262273	Anatoxin-a	128	134	P/P	40 - 150
2262273	Cylindrospermopsin	102	106	P/P	40 - 150
2262273	Desmethyl microcystin LR	99.4	101	P/P	40 - 150
2262273	Microcystin HilR	102	98.5	P/P	40 - 150
2262273	Microcystin HtyR	102	110	P/P	40 - 150
2262273	Microcystin LA	102	110	P/P	40 - 150
2262273	Microcystin LF	93.0	91.9	P/P	40 - 150
2262273	Microcystin LR	90.1	87.7	P/P	40 - 150
2262273	Microcystin LW	89.0	96.8	P/P	40 - 150
2262273	Microcystin LY	98.6	107	P/P	40 - 150
2262273	Microcystin RR	97.2	102	P/P	40 - 150
2262273	Microcystin WR	89.2	104	P/P	40 - 150
2262273	Microcystin YR	103	109	P/P	40 - 150
2262273	Nodularin-R	99.4	108	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P400982

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2262273	Anatoxin-a	4.27	Spike	P	0 - 30
2262273	Cylindrospermopsin	4.10	Spike	P	0 - 30
2262273	Desmethyl microcystin LR	1.27	Spike	P	0 - 30
2262273	Microcystin HilR	3.27	Spike	P	0 - 30
2262273	Microcystin HtyR	8.14	Spike	P	0 - 30
2262273	Microcystin LA	8.35	Spike	P	0 - 30
2262273	Microcystin LF	1.18	Spike	P	0 - 30
2262273	Microcystin LR	1.80	Spike	P	0 - 30
2262273	Microcystin LW	8.38	Spike	P	0 - 30
2262273	Microcystin LY	8.23	Spike	P	0 - 30
2262273	Microcystin RR	4.44	Spike	P	0 - 30
2262273	Microcystin WR	15.7	Spike	P	0 - 30
2262273	Microcystin YR	5.22	Spike	P	0 - 30
2262273	Nodularin-R	8.01	Spike	P	0 - 30

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2262273
Field Sample ID: CULV10A Canal Pt

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	97.0	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	71.5	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 8321B
Run ID: A106648
Included Lab Sample IDs: 2262273

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	115	117	P/P	50 - 160
Desmethyl microcystin LR	96.7	92.8	P/P	50 - 160
Microcystin HilR	101	99.1	P/P	50 - 160
Microcystin HtyR	101	112	P/P	50 - 160
Microcystin LA	108	103	P/P	50 - 160
Microcystin LF	98.7	104	P/P	50 - 160
Microcystin LR	82.0	93.8	P/P	50 - 160
Microcystin LW	100	103	P/P	50 - 160
Microcystin LY	100	108	P/P	50 - 160
Microcystin RR	97.8	96.1	P/P	50 - 160
Microcystin WR	97.8	109	P/P	50 - 160
Microcystin YR	106	104	P/P	50 - 160
Nodularin-R	97.9	111	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	131	128	134			4.27
	Cylindrospermopsin	104	102	106			4.10
	Desmethyl microcystin LR	101	99.4	101			1.27
	Microcystin HilR	101	102	98.5			3.27
	Microcystin HtyR	107	102	110			8.14
	Microcystin LA	111	102	110			8.35
	Microcystin LF	107	93.0	91.9			1.18
	Microcystin LR	90.2	90.1	87.7			1.80
	Microcystin LW	102	89.0	96.8			8.38
	Microcystin LY	111	98.6	107			8.23
	Microcystin RR	105	97.2	102			4.44
	Microcystin WR	102	89.2	104			15.7
	Microcystin YR	110	103	109			5.22
	Nodularin-R	106	99.4	108			8.01

Reference Method Descriptions

Method	Description	Associated Samples
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2262273

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	07/15/2021	07/15/2021 12:00	Pramila Ghimire	07/15/2021 17:28	Pramila Ghimire	2262273