

Chemical Analysis Report

SFWMD-2022-03-01-01

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 (WPB)**

Request ID: **RQ-2022-01-03-44**

Customer: **SFWMD**

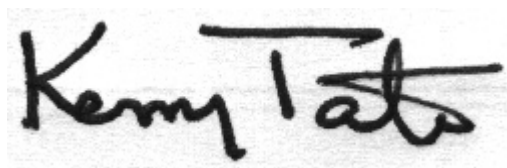
Project ID: **BLOOM-RESP**

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

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

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

Date Certified: 04-MAR-2022 11:17

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" in "Tate".

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: C43 Canal - S77 (upstream)

Collection Date/Time: 02/28/2022 09:05

Field ID: C43 Canal - S77 (upstream)

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2308704	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P410427	
		Cylindrospermopsin	0.10	U	ug/L	P410427	
		Desmethyl microcystin LR	0.25	U	ug/L	P410427	
		Microcystin HilR**	0.25	U	ug/L	P410427	
		Microcystin HtyR**	0.25	U	ug/L	P410427	
		Microcystin LA	0.10	U	ug/L	P410427	
		Microcystin LF	0.10	U	ug/L	P410427	
		Microcystin LR	0.25	U	ug/L	P410427	
		Microcystin LW	0.25	U	ug/L	P410427	
		Microcystin LY	0.10	U	ug/L	P410427	
		Microcystin RR	0.10	U	ug/L	P410427	
		Microcystin WR	0.50	U	ug/L	P410427	
		Microcystin YR	0.25	U	ug/L	P410427	MS
		Nodularin-R**	0.10	U	ug/L	P410427	

Ref. Method and Comment:

EPA 8321B: MS accuracy for some analytes could not be assessed due to high concentration of parameter in the spiked sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B
Batch ID: P410427

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: P410427

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	106		P	40 - 150
Cylindrospermopsin	102		P	40 - 150
Desmethyl microcystin LR	110		P	40 - 150
Microcystin HilR	114		P	40 - 150
Microcystin HtyR	118		P	40 - 150
Microcystin LA	116		P	40 - 150
Microcystin LF	116		P	40 - 150
Microcystin LR	123		P	40 - 150
Microcystin LW	108		P	40 - 150
Microcystin LY	118		P	40 - 150
Microcystin RR	105		P	40 - 150
Microcystin WR	113		P	40 - 150
Microcystin YR	125		P	40 - 150
Nodularin-R	109		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B

Batch ID: P410427

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2308265	Anatoxin-a	121	118	P/P	40 - 150
2308265	Cylindrospermopsin	112	105	P/P	40 - 150
2308265	Desmethyl microcystin LR	132	124	P/P	40 - 150
2308265	Microcystin HilR	126	123	P/P	40 - 150
2308265	Microcystin HtyR	125	126	P/P	40 - 150
2308265	Microcystin LF	126	119	P/P	40 - 150
2308265	Microcystin LW	128	114	P/P	40 - 150
2308265	Microcystin LY	121	117	P/P	40 - 150
2308265	Microcystin RR	108	102	P/P	40 - 150
2308265	Microcystin WR	132	129	P/P	40 - 150
2308265	Microcystin YR	155	145	F/P	40 - 150
2308265	Nodularin-R	121	116	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P410427

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2308265	Anatoxin-a	2.01	Spike	P	0 - 30
2308265	Cylindrospermopsin	5.75	Spike	P	0 - 30
2308265	Desmethyl microcystin LR	6.00	Spike	P	0 - 30
2308265	Microcystin HiLR	3.04	Spike	P	0 - 30
2308265	Microcystin HtyR	0.538	Spike	P	0 - 30
2308265	Microcystin LA	1.62	Spike	P	0 - 30
2308265	Microcystin LF	5.23	Spike	P	0 - 30
2308265	Microcystin LR	2.30	Spike	P	0 - 30
2308265	Microcystin LW	11.1	Spike	P	0 - 30
2308265	Microcystin LY	2.53	Spike	P	0 - 30
2308265	Microcystin RR	5.54	Spike	P	0 - 30
2308265	Microcystin WR	1.97	Spike	P	0 - 30
2308265	Microcystin YR	6.38	Spike	P	0 - 30
2308265	Nodularin-R	3.89	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2308704

Field Sample ID: C43 Canal - S77 (upstream)

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	102	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A110742
Included Lab Sample IDs: 2308704

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	103	116	P/P	50 - 160
Cylindrospermopsin	98.7	103	P/P	60 - 160
Desmethyl microcystin LR	101	105	P/P	60 - 160
Microcystin HtIR	102	112	P/P	60 - 160
Microcystin HtyR	109	120	P/P	60 - 160
Microcystin LA	114	117	P/P	50 - 160
Microcystin LF	120	117	P/P	60 - 160
Microcystin LR	112	112	P/P	60 - 160
Microcystin LW	114	112	P/P	60 - 160
Microcystin LY	116	117	P/P	60 - 160
Microcystin RR	106	109	P/P	60 - 160
Microcystin WR	117	118	P/P	60 - 160
Microcystin YR	120	125	P/P	60 - 160
Nodularin-R	107	108	P/P	60 - 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	MS		
EPA 8321B	Anatoxin-a	106	121	118		2.01
	Cylindrospermopsin	102	112	105		5.75
	Desmethyl microcystin LR	110	132	124		6.00
	Microcystin H1LR	114	126	123		3.04
	Microcystin HtyR	118	125	126		0.538
	Microcystin LA	116				1.62
	Microcystin LF	116	126	119		5.23
	Microcystin LR	123				2.30
	Microcystin LW	108	128	114		11.1
	Microcystin LY	118	121	117		2.53
	Microcystin RR	105	108	102		5.54
	Microcystin WR	113	132	129		1.97
	Microcystin YR	125	155	145		6.38
	Nodularin-R	109	121	116		3.89

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2308704

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	03/01/2022	03/03/2022 08:00	Manjita Shrestha	03/03/2022 11:44	Manjita Shrestha	2308704