

Chemical Analysis Report

WQAP-2020-10-08-01

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

Event Description: **Algal Bloom Response - NW ROC**
Request ID: **RQ-2020-10-05-68**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

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

Date Certified: 12-OCT-2020 12:38

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 first name.

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: Direct Runoff Upstream of Laurel Drive

Collection Date/Time: 10/06/2020 10:28

Field ID: HAB_10062020_LaurelDrive

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2200463	EPA 8321B	Anatoxin-a**	0.25	U	ug/L	P388369	
		Cylindrospermopsin**	0.25	U	ug/L	P388369	
		Desmethyl microcystin LR**	0.25	U	ug/L	P388369	
		Microcystin LA**	0.25	U	ug/L	P388369	
		Microcystin LF**	0.25	U	ug/L	P388369	
		Microcystin LR**	0.88	I	ug/L	P388369	
		Microcystin LW**	0.25	U	ug/L	P388369	
		Microcystin LY**	0.25	U	ug/L	P388369	
		Microcystin RR**	0.98	I	ug/L	P388369	
		Microcystin WR**	0.50	U	ug/L	P388369	
		Microcystin YR**	0.25	U	ug/L	P388369	

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B
Batch ID: P388369

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
Cylindrospermopsin	0.25	U	ug/L
Desmethyl microcystin LR	0.25	U	ug/L
Microcystin LA	0.25	U	ug/L
Microcystin LF	0.25	U	ug/L
Microcystin LR	0.25	U	ug/L
Microcystin LW	0.25	U	ug/L
Microcystin LY	0.25	U	ug/L
Microcystin RR	0.25	U	ug/L
Microcystin WR	0.50	U	ug/L
Microcystin YR	0.25	U	ug/L

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P388369

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	99.4		P	40 - 140
Cylindrospermopsin	102		P	40 - 140
Desmethyl microcystin LR	110		P	40 - 140
Microcystin LA	117		P	40 - 140
Microcystin LF	89.5		P	40 - 140
Microcystin LR	112		P	40 - 140
Microcystin LW	82.8		P	40 - 140
Microcystin LY	94.2		P	40 - 140
Microcystin RR	136		P	40 - 140
Microcystin WR	109		P	40 - 140
Microcystin YR	86.5		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P388369

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2200547	Anatoxin-a	86.0	86.8	P/P	40 - 140
2200547	Cylindrospermopsin	80.9	75.1	P/P	40 - 140
2200547	Desmethyl microcystin LR	92.8	91.7	P/P	40 - 140
2200547	Microcystin LA	91.1	83.0	P/P	40 - 140
2200547	Microcystin LF	73.4	84.0	P/P	40 - 140
2200547	Microcystin LR	97.0	92.4	P/P	40 - 140
2200547	Microcystin LW	75.5	87.4	P/P	40 - 140
2200547	Microcystin LY	70.0	74.6	P/P	40 - 140
2200547	Microcystin RR	132	131	P/P	40 - 140
2200547	Microcystin WR	105	99.4	P/P	40 - 140
2200547	Microcystin YR	77.5	80.8	P/P	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P388369

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2200547	Anatoxin-a	0.932	Spike	P	0 - 30
2200547	Cylindrospermopsin	7.45	Spike	P	0 - 30
2200547	Desmethyl microcystin LR	1.23	Spike	P	0 - 30
2200547	Microcystin LA	9.41	Spike	P	0 - 30
2200547	Microcystin LF	13.5	Spike	P	0 - 30
2200547	Microcystin LR	4.87	Spike	P	0 - 30
2200547	Microcystin LW	14.6	Spike	P	0 - 30
2200547	Microcystin LY	6.36	Spike	P	0 - 30
2200547	Microcystin RR	1.05	Spike	P	0 - 30
2200547	Microcystin WR	5.25	Spike	P	0 - 30
2200547	Microcystin YR	4.14	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2200463

Field Sample ID: HAB_10062020_LaurelDrive

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	103	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	49.4	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A101437

Included Lab Sample IDs: 2200463

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	93.4	93.0	P/P	50 - 160
Cylindrospermopsin	98.7	106	P/P	60 - 160
Desmethyl microcystin LR	102	115	P/P	60 - 160
Microcystin LA	111	127	P/P	50 - 160
Microcystin LF	82.7	98.7	P/P	60 - 160
Microcystin LR	112	111	P/P	60 - 160
Microcystin LW	72.7	91.9	P/P	60 - 160
Microcystin LY	92.8	103	P/P	60 - 160
Microcystin RR	138	144	P/P	60 - 160
Microcystin WR	101	118	P/P	60 - 160
Microcystin YR	82.6	88.8	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			
EPA 8321B	Anatoxin-a	99.4	86.0	86.8		0.932
	Cylindrospermopsin	102	80.9	75.1		7.45
	Desmethyl microcystin LR	110	92.8	91.7		1.23
	Microcystin LA	117	91.1	83.0		9.41
	Microcystin LF	89.5	73.4	84.0		13.5
	Microcystin LR	112	97.0	92.4		4.87
	Microcystin LW	82.8	75.5	87.4		14.6
	Microcystin LY	94.2	70.0	74.6		6.36
	Microcystin RR	136	132	131		1.05
	Microcystin WR	109	105	99.4		5.25
	Microcystin YR	86.5	77.5	80.8		4.14

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2200463

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	10/08/2020	10/08/2020 12:30	Pramila Ghimire	10/08/2020 23:20	Pramila Ghimire	2200463