Chemical Analysis Report

WQAP-2022-06-06-01

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

Event Description: **Algal Bloom Response- Alachua Co. for NEROC**
Request ID: **RQ-2022-05-30-23**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Jacksonville, FL 32256
Attn: Jeremy Parrish

For additional information please contact
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Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant Date Certified: 10-JUN-2022 11:27

NON-CONFORMANCE REPORT INCLUDED

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: Lake Wauberg N **Collection Date/Time: 06/02/2022 16:15**

Field ID: LWAUBERGN Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2332266	EPA 8321B	Anatoxin-a	0.25	UY	ug/L	P414745	
		Cylindrospermopsin	0.10	UY	ug/L	P414745	
		Desmethyl microcystin LR	0.25	UY	ug/L	P414745	
		Microcystin HilR**	0.25	UY	ug/L	P414745	
		Microcystin HtyR**	0.25	UY	ug/L	P414745	
		Microcystin LA	0.10	UY	ug/L	P414745	
		Microcystin LF	0.10	UY	ug/L	P414745	RPD
		Microcystin LR	0.73	IY	ug/L	P414745	
		Microcystin LW	0.25	UY	ug/L	P414745	
		Microcystin LY	0.10	UY	ug/L	P414745	
		Microcystin RR	0.10	UY	ug/L	P414745	
		Microcystin WR	0.50	UY	ug/L	P414745	
		Microcystin YR	0.25	UY	ug/L	P414745	
		Nodularin-R**	0.10	UY	ug/L	P414745	

Ref. Method and Comment:
EPA 8321B: Y - Sample was received with inadequate sample preservation; see NCR report.

Sample Location: BIV441 Bivens Arm @ 441 Outlet **Collection Date/Time: 06/02/2022 17:00**

Field ID: BIV441 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2332267	EPA 8321B	Anatoxin-a	0.25	UY	ug/L	P414745	
		Cylindrospermopsin	0.10	UY	ug/L	P414745	
		Desmethyl microcystin LR	0.25	UY	ug/L	P414745	
		Microcystin HilR**	0.25	UY	ug/L	P414745	
		Microcystin HtyR**	0.25	UY	ug/L	P414745	
		Microcystin LA	7.7	Y	ug/L	P414745	
		Microcystin LF	0.10	UY	ug/L	P414745	RPD
		Microcystin LR	2.2	Y	ug/L	P414745	
		Microcystin LW	0.25	UY	ug/L	P414745	
		Microcystin LY	0.10	UY	ug/L	P414745	
		Microcystin RR	0.10	UY	ug/L	P414745	
		Microcystin WR	0.50	UY	ug/L	P414745	
		Microcystin YR	0.25	UY	ug/L	P414745	
		Nodularin-R**	0.10	UY	ug/L	P414745	

Ref. Method and Comment:
EPA 8321B: Y - Sample was received with inadequate sample preservation; see NCR report.

Non-Conformance Report

NCR ID: 9413

Event(s)	Job(s)	Sample(s)	Test(s)
WQAP-2022-06-06-01			

NCR Type: SHIPPING/RECEIVING **NCR Category: Samples arrived late**

Observation: Samples arrived late, samples received outside the acceptable temperature range.

Resolution:

Samples will be qualified as appropriate.

Authorized by/Date: Kyle Klug 6/7/2022

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report
Method Blank Results

Reference Method: EPA 8321B
Batch ID: P414745

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: P414745

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	98.1		P	40 - 150
Cylindrospermopsin	85.9		P	40 - 150
Desmethyl microcystin LR	96.7		P	40 - 150
Microcystin HilR	85.6		P	40 - 150
Microcystin HtyR	97.1		P	40 - 150
Microcystin LA	96.6		P	40 - 150
Microcystin LF	116		P	40 - 150
Microcystin LR	95.2		P	40 - 150
Microcystin LW	81.5		P	40 - 150
Microcystin LY	107		P	40 - 150
Microcystin RR	87.9		P	40 - 150
Microcystin WR	82.9		P	40 - 150
Microcystin YR	90.3		P	40 - 150
Nodularin-R	95.0		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P414745

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330792	Anatoxin-a	113	117	P/P	40 - 150
2330792	Cylindrospermopsin	96.5	96.5	P/P	40 - 150
2330792	Desmethyl microcystin LR	125	130	P/P	40 - 150
2330792	Microcystin HilR	106	104	P/P	40 - 150
2330792	Microcystin HtyR	105	109	P/P	40 - 150
2330792	Microcystin LA	84.0	84.6	P/P	40 - 150
2330792	Microcystin LF	80.9	118	P/P	40 - 150
2330792	Microcystin LR	115	123	P/P	40 - 150
2330792	Microcystin LW	106	84.3	P/P	40 - 150
2330792	Microcystin LY	108	103	P/P	40 - 150
2330792	Microcystin RR	93.0	95.3	P/P	40 - 150
2330792	Microcystin WR	85.5	101	P/P	40 - 150
2330792	Microcystin YR	119	119	P/P	40 - 150
2330792	Nodularin-R	102	106	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P414745

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330792	Anatoxin-a	3.51	Spike	P	0 - 30
2330792	Cylindrospermopsin	0.0339	Spike	P	0 - 30
2330792	Desmethyl microcystin LR	4.13	Spike	P	0 - 30
2330792	Microcystin HilR	1.11	Spike	P	0 - 30
2330792	Microcystin HtyR	4.00	Spike	P	0 - 30
2330792	Microcystin LA	0.712	Spike	P	0 - 30
2330792	Microcystin LF	36.7	Spike	F	0 - 30
2330792	Microcystin LR	5.68	Spike	P	0 - 30
2330792	Microcystin LW	23.2	Spike	P	0 - 30
2330792	Microcystin LY	4.28	Spike	P	0 - 30
2330792	Microcystin RR	2.37	Spike	P	0 - 30
2330792	Microcystin WR	17.0	Spike	P	0 - 30
2330792	Microcystin YR	0.00696	Spike	P	0 - 30
2330792	Nodularin-R	3.24	Spike	P	0 - 30

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2332266
Field Sample ID: LWAUBERGN

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	82.8	P	30 - 160

Lab Sample ID: 2332267
Field Sample ID: BIV441

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	93.5	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 8321B
Run ID: A112684
Included Lab Sample IDs: 2332266, 2332267

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	112	114	P/P	50 - 160
Cylindrospermopsin	92.6	94.3	P/P	50 - 160
Desmethyl microcystin LR	99.9	109	P/P	50 - 160
Microcystin HilR	87.6	91.8	P/P	50 - 160
Microcystin HtyR	104	104	P/P	50 - 160
Microcystin LA	91.7	91.8	P/P	50 - 160
Microcystin LF	138	115	P/P	50 - 160
Microcystin LR	97.5	98.4	P/P	50 - 160
Microcystin LW	111	92.1	P/P	50 - 160
Microcystin LY	87.7	102	P/P	50 - 160
Microcystin RR	99.9	101	P/P	50 - 160
Microcystin WR	90.8	90.4	P/P	50 - 160
Microcystin YR	99.0	94.0	P/P	50 - 160
Nodularin-R	101	98.5	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	98.1	113	117			3.51
	Cylindrospermopsin	85.9	96.5	96.5			0.0339
	Desmethyl microcystin LR	96.7	125	130			4.13
	Microcystin HilR	85.6	106	104			1.11
	Microcystin HtyR	97.1	105	109			4.00
	Microcystin LA	96.6	84.0	84.6			0.712
	Microcystin LF	116	80.9	118			36.7
	Microcystin LR	95.2	115	123			5.68
	Microcystin LW	81.5	106	84.3			23.2
	Microcystin LY	107	108	103			4.28
	Microcystin RR	87.9	93.0	95.3			2.37
	Microcystin WR	82.9	85.5	101			17.0
	Microcystin YR	90.3	119	119			0.0069
	Nodularin-R	95.0	102	106			3.24

Reference Method Descriptions

Method	Description	Associated Samples
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2332266, 2332267

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	06/06/2022	06/06/2022 14:30	Manjita Shrestha	06/08/2022 19:41	Manjita Shrestha	2332266
	06/06/2022	06/06/2022 14:30	Manjita Shrestha	06/08/2022 19:58	Manjita Shrestha	2332267