Chemical Analysis Report

NW-DIST-2024-05-29-01

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Algal Bloom Response - NW ROC**
Request ID: **RQ-2024-05-27-31**
Customer: **NW-DIST**
Project ID: **BLOOM-RESP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 308
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Certified by: Colin Wright, Program Administrator

Date Certified: 31-MAY-2024 09:07

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 Cassidy **Collection Date/Time: 05/28/2024 11:30**

Field ID: NWHAB0019 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2489242	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P445753	
		Cylindrospermopsin	0.10	U	ug/L	P445751	
		Desmethyl microcystin LR	0.25	U	ug/L	P445751	
		Microcystin HilR	0.25	U	ug/L	P445751	
		Microcystin HtyR	0.25	U	ug/L	P445751	
		Microcystin LA	0.10	U	ug/L	P445751	
		Microcystin LF	0.10	U	ug/L	P445751	
		Microcystin LR	0.25	U	ug/L	P445751	
		Microcystin LW	0.25	U	ug/L	P445751	
		Microcystin LY	0.10	U	ug/L	P445751	
		Microcystin RR	0.10	U	ug/L	P445751	
		Microcystin WR	0.50	U	ug/L	P445751	
		Neosaxitoxin	0.50	U	ug/L	P445753	
		Microcystin YR	0.25	U	ug/L	P445751	
		Saxitoxin	0.50	U	ug/L	P445753	
		Nodularin-R	0.10	U	ug/L	P445751	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 8321B
Batch ID: P445751

Component	Result	Code	Units
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

Reference Method: EPA 8321B
Batch ID: P445753

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
Neosaxitoxin	0.50	U	ug/L
Saxitoxin	0.50	U	ug/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P445751

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	84.3		P	40 - 160
Desmethyl microcystin LR	82.0		P	40 - 160
Microcystin HilR	79.2		P	40 - 160
Microcystin HtyR	82.7		P	40 - 160
Microcystin LA	88.7		P	40 - 160
Microcystin LF	77.5		P	40 - 160
Microcystin LR	74.4		P	40 - 160
Microcystin LW	75.5		P	40 - 160
Microcystin LY	81.7		P	40 - 160
Microcystin RR	72.2		P	40 - 160
Microcystin WR	86.5		P	40 - 160
Microcystin YR	75.1		P	40 - 160
Nodularin-R	75.7		P	40 - 160

Reference Method: EPA 8321B
Batch ID: P445753

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	111		P	40 - 150
Neosaxitoxin	80.1		P	40 - 150
Saxitoxin	86.4		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P445751

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2489226	Cylindrospermopsin	84.7	86.6	P/P	40 - 160
2489226	Desmethyl microcystin LR	87.1	81.4	P/P	40 - 160
2489226	Microcystin HilR	78.4	81.7	P/P	40 - 160
2489226	Microcystin HtyR	78.6	81.7	P/P	40 - 160
2489226	Microcystin LA	92.2	90.4	P/P	40 - 160
2489226	Microcystin LF	92.5	88.4	P/P	40 - 160
2489226	Microcystin LR	74.3	76.3	P/P	40 - 160
2489226	Microcystin LW	84.2	85.2	P/P	40 - 160
2489226	Microcystin LY	82.8	86.3	P/P	40 - 160
2489226	Microcystin RR	76.3	77.1	P/P	40 - 160
2489226	Microcystin WR	87.7	90.4	P/P	40 - 160
2489226	Microcystin YR	75.2	76.7	P/P	40 - 160
2489226	Nodularin-R	78.6	80.5	P/P	40 - 160

Reference Method: EPA 8321B
Batch ID: P445753

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2489226	Anatoxin-a	91.6	95.2	P/P	40 - 150
2489226	Neosaxitoxin	47.5	47.5	P/P	40 - 150
2489226	Saxitoxin	56.7	58.4	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P445751

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2489226	Cylindrospermopsin	2.23	Spike	P	0 - 30
2489226	Desmethyl microcystin LR	6.79	Spike	P	0 - 30
2489226	Microcystin HilR	4.04	Spike	P	0 - 30
2489226	Microcystin HtyR	3.96	Spike	P	0 - 30
2489226	Microcystin LA	1.95	Spike	P	0 - 30
2489226	Microcystin LF	4.52	Spike	P	0 - 30
2489226	Microcystin LR	2.69	Spike	P	0 - 30
2489226	Microcystin LW	1.20	Spike	P	0 - 30
2489226	Microcystin LY	4.12	Spike	P	0 - 30
2489226	Microcystin RR	0.984	Spike	P	0 - 30
2489226	Microcystin WR	3.08	Spike	P	0 - 30
2489226	Microcystin YR	1.96	Spike	P	0 - 30
2489226	Nodularin-R	2.38	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P445753

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2489226	Anatoxin-a	3.80	Spike	P	0 - 30
2489226	Neosaxitoxin	0.0109	Spike	P	0 - 30
2489226	Saxitoxin	2.94	Spike	P	0 - 30

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2489242
Field Sample ID: NWHAB0019

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	108	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	51.8	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 8321B
Run ID: A125904
Included Lab Sample IDs: 2489242

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	94.2	94.8	P/P	60 - 160
Desmethyl microcystin LR	92.5	93.1	P/P	60 - 160
Microcystin HilR	89.0	86.4	P/P	60 - 160
Microcystin HtyR	92.7	93.7	P/P	60 - 160
Microcystin LA	98.7	107	P/P	50 - 160
Microcystin LF	97.0	98.5	P/P	50 - 160
Microcystin LR	83.9	83.9	P/P	60 - 160
Microcystin LW	87.6	90.3	P/P	60 - 160
Microcystin LY	85.3	95.3	P/P	60 - 160
Microcystin RR	85.5	80.7	P/P	60 - 160
Microcystin WR	93.7	96.6	P/P	60 - 160
Microcystin YR	80.8	84.2	P/P	60 - 160
Nodularin-R	85.5	86.1	P/P	60 - 160

Reference Method: EPA 8321B
Run ID: A125905
Included Lab Sample IDs: 2489242

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	107	105	P/P	50 - 160
Neosaxitoxin	86.2	86.5	P/P	50 - 160
Saxitoxin	96.8	97.7	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	111	91.6	95.2			3.80
	Cylindrospermopsin	84.3	84.7	86.6			2.23
	Desmethyl microcystin LR	82.0	87.1	81.4			6.79
	Microcystin HilR	79.2	78.4	81.7			4.04
	Microcystin HtyR	82.7	78.6	81.7			3.96
	Microcystin LA	88.7	92.2	90.4			1.95
	Microcystin LF	77.5	92.5	88.4			4.52
	Microcystin LR	74.4	74.3	76.3			2.69
	Microcystin LW	75.5	84.2	85.2			1.20
	Microcystin LY	81.7	82.8	86.3			4.12
	Microcystin RR	72.2	76.3	77.1			0.984
	Microcystin WR	86.5	87.7	90.4			3.08
	Microcystin YR	75.1	75.2	76.7			1.96
	Neosaxitoxin	80.1	47.5	47.5			0.0109
	Nodularin-R	75.7	78.6	80.5			2.38
	Saxitoxin	86.4	56.7	58.4			2.94

Reference Method Descriptions

Method	Description	Associated Samples
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2489242
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2489242

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	05/29/2024	05/29/2024 15:40	Tae K Lee	05/30/2024 02:01	Tae K Lee	2489242
	05/29/2024	05/29/2024 15:40	Tae K Lee	05/30/2024 04:25	Tae K Lee	2489242