Chemical Analysis Report

WQAP-2023-01-17-01

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

Event Description: **Algal Bloom Response - CEROC**
Request ID: **RQ-2023-01-16-15**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
FL Dept. of Environmental Protection
3319 Maguire Blvd. Suite 232
Orlando, FL 32803
Attn: Jessie Atchison

For additional information please contact
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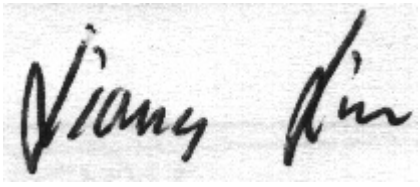
Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 02-FEB-2023 10:32



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 groups are included in this report: Nutrients and 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 Ola-NE Shore **Collection Date/Time: 01/12/2023 12:40**

Field ID: HABCE0164_LakeOla Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2380946	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P424589	
		Cylindrospermopsin	0.10	U	ug/L	P424588	
		Desmethyl microcystin LR	0.25	U	ug/L	P424588	
		Microcystin HilR	0.25	U	ug/L	P424588	
		Microcystin HtyR	0.25	U	ug/L	P424588	
		Microcystin LA	0.24	I	ug/L	P424588	
		Microcystin LF	0.10	U	ug/L	P424588	
		Microcystin LR	0.25	U	ug/L	P424588	
		Microcystin LW	0.25	U	ug/L	P424588	
		Microcystin LY	0.10	U	ug/L	P424588	
		Microcystin RR	0.10	U	ug/L	P424588	
		Microcystin WR	0.50	U	ug/L	P424588	
		Neosaxitoxin	0.50	U	ug/L	P424589	
		Microcystin YR	0.25	U	ug/L	P424588	
		Saxitoxin	0.50	U	ug/L	P424589	
		Nodularin-R	0.10	U	ug/L	P424588	
2380947	EPA 350.1 Rev. 2.0	Ammonia-N	0.043		mg N/L	P425160	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.70		mg N/L	P424680	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.074		mg N/L	P424804	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P424787	
2380948	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	UQ	mg P/L	P424691	

Ref. Method and Comment:
EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample expired prior to receipt.

Non-Conformance Report

NCR ID: 9699

Event(s)	Job(s)	Sample(s)	Test(s)
WQAP-2023-01-17-01			

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

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

Resolution: Samples will be qualified as appropriate.

Authorized by/Date: Kerry Tate, Ph.D. 1/19/2023

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 350.1 Rev. 2.0
Batch ID: P425160

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424680

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P424804

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424787

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P424691

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: EPA 8321B
Batch ID: P424588

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: P424589

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 350.1 Rev. 2.0
Batch ID: P425160

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424680

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.6		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P424804

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	102		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424787

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P424691

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.2		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P424588

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	95.2		P	40 - 150
Desmethyl microcystin LR	90.8		P	40 - 150
Microcystin HilR	86.7		P	40 - 150
Microcystin HtyR	92.7		P	40 - 150
Microcystin LA	102		P	40 - 150
Microcystin LF	78.5		P	40 - 150
Microcystin LR	95.1		P	40 - 150
Microcystin LW	93.6		P	40 - 150
Microcystin LY	80.8		P	40 - 150
Microcystin RR	91.5		P	40 - 150
Microcystin WR	85.3		P	40 - 150
Microcystin YR	89.2		P	40 - 150
Nodularin-R	87.7		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P424589

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	117		P	40 - 150
Neosaxitoxin	131		P	40 - 150
Saxitoxin	104		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425160

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380859	Ammonia-N	96.6	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424680

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380947	Kjeldahl Nitrogen	95.1	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P424804

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380947	NO2NO3-N	103	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424787

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380902	Total-P	108	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P424691

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2381232	O-Phosphate-P	97.2	99.0	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P424588

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380812	Cylindrospermopsin	94.2	94.0	P/P	40 - 150
2380812	Desmethyl microcystin LR	103	104	P/P	40 - 150
2380812	Microcystin HilR	101	97.1	P/P	40 - 150
2380812	Microcystin HtyR	97.3	95.8	P/P	40 - 150
2380812	Microcystin LA	97.5	89.8	P/P	40 - 150
2380812	Microcystin LF	93.2	99.4	P/P	40 - 150
2380812	Microcystin LR	109	109	P/P	40 - 150
2380812	Microcystin LW	120	91.9	P/P	40 - 150
2380812	Microcystin LY	87.0	111	P/P	40 - 150
2380812	Microcystin RR	93.4	95.1	P/P	40 - 150
2380812	Microcystin WR	97.3	91.1	P/P	40 - 150
2380812	Microcystin YR	91.5	93.1	P/P	40 - 150
2380812	Nodularin-R	95.2	98.5	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P424589

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380812	Anatoxin-a	124	124	P/P	40 - 150
2380812	Neosaxitoxin	96.9	93.3	P/P	40 - 150
2380812	Saxitoxin	80.8	78.3	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425160

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380859	Ammonia-N	1.02	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380947	Kjeldahl Nitrogen	4.91	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P424804

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380947	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424787

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380902	Total-P	1.10	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P424691

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2381232	O-Phosphate-P	1.57	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P424588

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380812	Cylindrospermopsin	0.208	Spike	P	0 - 30
2380812	Desmethyl microcystin LR	1.17	Spike	P	0 - 30
2380812	Microcystin HilR	3.72	Spike	P	0 - 30
2380812	Microcystin HtyR	1.60	Spike	P	0 - 30
2380812	Microcystin LA	8.25	Spike	P	0 - 30
2380812	Microcystin LF	6.46	Spike	P	0 - 30
2380812	Microcystin LR	0.0834	Spike	P	0 - 30
2380812	Microcystin LW	26.3	Spike	P	0 - 30
2380812	Microcystin LY	23.9	Spike	P	0 - 30
2380812	Microcystin RR	1.78	Spike	P	0 - 30
2380812	Microcystin WR	6.56	Spike	P	0 - 30
2380812	Microcystin YR	1.65	Spike	P	0 - 30
2380812	Nodularin-R	3.43	Spike	P	0 - 30

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P424589

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380812	Anatoxin-a	0.0583	Spike	P	0 - 30
2380812	Neosaxitoxin	3.72	Spike	P	0 - 30
2380812	Saxitoxin	3.05	Spike	P	0 - 30

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2380946
Field Sample ID: HABCE0164_LakeOla

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	91.8	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	118	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A116957
Included Lab Sample IDs: 2380948

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.9	98.9	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A116960
Included Lab Sample IDs: 2380946

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	99.7	114	P/P	50 - 160
Desmethyl microcystin LR	98.6	106	P/P	50 - 160
Microcystin HilR	101	122	P/P	50 - 160
Microcystin HtyR	99.6	121	P/P	50 - 160
Microcystin LA	123	137	P/P	50 - 160
Microcystin LF	95.3	118	P/P	50 - 160
Microcystin LR	106	123	P/P	50 - 160
Microcystin LW	100	114	P/P	50 - 160
Microcystin LY	123	159	P/P	50 - 160
Microcystin RR	98.6	117	P/P	50 - 160
Microcystin WR	96.5	112	P/P	50 - 160
Microcystin YR	88.4	120	P/P	50 - 160
Nodularin-R	98.7	117	P/P	50 - 160

Reference Method: EPA 8321B
Run ID: A116963
Included Lab Sample IDs: 2380946

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	123	116	P/P	50 - 160
Neosaxitoxin	128	119	P/P	50 - 160
Saxitoxin	100	98.3	P/P	50 - 160

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A117007
Included Lab Sample IDs: 2380947

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A117017
Included Lab Sample IDs: 2380947

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.3	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A117063
Included Lab Sample IDs: 2380947

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	95.2	96.0	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A117164
Included Lab Sample IDs: 2380947

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.0	97.7	P/P	90 - 110

* 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 350.1 Rev. 2.0	Ammonia-N	99.8	96.6	98.2			1.02
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.6	95.1	102			4.91
EPA 353.2 Rev. 2.0	NO2NO3-N	102	103	103			0.0
EPA 365.1 Rev. 2.0	Total-P	104	108	106			1.10
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.2	97.2	99.0			1.57
EPA 8321B	Anatoxin-a	117	124	124			0.0583
	Cylindrospermopsin	95.2	94.2	94.0			0.208
	Desmethyl microcystin LR	90.8	103	104			1.17
	Microcystin HilR	86.7	101	97.1			3.72
	Microcystin HtyR	92.7	97.3	95.8			1.60
	Microcystin LA	102	97.5	89.8			8.25
	Microcystin LF	78.5	93.2	99.4			6.46
	Microcystin LR	95.1	109	109			0.0834
	Microcystin LW	93.6	120	91.9			26.3
	Microcystin LY	80.8	87.0	111			23.9
	Microcystin RR	91.5	93.4	95.1			1.78
	Microcystin WR	85.3	97.3	91.1			6.56
	Microcystin YR	89.2	91.5	93.1			1.65
	Neosaxitoxin	131	96.9	93.3			3.72
	Nodularin-R	87.7	95.2	98.5			3.43
	Saxitoxin	104	80.8	78.3			3.05

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2380947
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2380947
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2380947
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2380947
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2380948
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2380946
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2380946

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 350.1 Rev. 2.0	01/17/2023			01/30/2023 15:50	Ping Hua	2380947
EPA 351.2 Rev. 2.0	01/17/2023	01/19/2023 14:22	Judith K. Clark	01/20/2023 13:21	Judith K. Clark	2380947
EPA 353.2 Rev. 2.0	01/17/2023			01/20/2023 10:03	Beverly Y. Sanders	2380947
EPA 365.1 Rev. 2.0	01/17/2023	01/20/2023 17:10	Adam P Silver	01/24/2023 10:53	James L Waggerby	2380947
EPA 365.1 Rev. 2.0 dissolved	01/17/2023			01/18/2023 14:07	Elise M. Gillis	2380948
EPA 8321B	01/17/2023	01/18/2023 12:00	Manjita Shrestha	01/18/2023 17:01	Manjita Shrestha	2380946
	01/17/2023	01/18/2023 14:00	Manjita Shrestha	01/19/2023 01:56	Manjita Shrestha	2380946