Chemical Analysis Report

WQAP-2022-05-25-03

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

Event Description: **Algal Bloom Response -SOROC**
Request ID: **RQ-2022-03-14-09**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
FL Dept. of Environmental Protection
2295 Victoria AVE
Suite 364
Fort Myers, FL 33901
Attn: Kirby Wolfe

For additional information please contact
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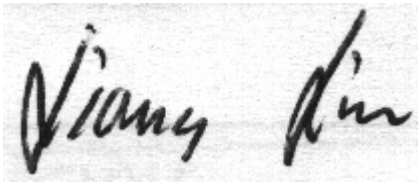
Certified by: Liang Lin, Environmental Administrator

Date Certified: 20-JUN-2022 09:39



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: Alligator Creek at Gulf Breeze Blvd **Collection Date/Time: 05/23/2022 08:58**

Field ID: HAB-SD-052322-0858 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2329851	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P414339	
		Cylindrospermopsin	0.10	U	ug/L	P414339	
		Desmethyl microcystin LR	0.25	U	ug/L	P414339	
		Microcystin HilR**	0.25	U	ug/L	P414339	
		Microcystin HtyR**	0.25	U	ug/L	P414339	
		Microcystin LA	0.10	U	ug/L	P414339	
		Microcystin LF	0.10	U	ug/L	P414339	
		Microcystin LR	0.25	U	ug/L	P414339	
		Microcystin LW	0.25	U	ug/L	P414339	
		Microcystin LY	0.10	U	ug/L	P414339	
		Microcystin RR	0.10	U	ug/L	P414339	
		Microcystin WR	0.50	U	ug/L	P414339	
		Microcystin YR	0.25	U	ug/L	P414339	
		Nodularin-R**	0.10	U	ug/L	P414339	
2329852	EPA 350.1 Rev. 2.0	Ammonia-N	0.048		mg N/L	P415076	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	5.7		mg N/L	P414617	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P414712	
	EPA 365.1 Rev. 2.0	Total-P	1.6		mg P/L	P414551	
2329975	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.73	Q	mg P/L	P414426	

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: 9394

Event(s)	Job(s)	Sample(s)	Test(s)
WQAP-2022-05-25-03			

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.
Customer contacted, email correspondence attached to sample submittal forms.
Biology and Chemistry supervisors were notified by email.
The algae were not degraded and were able to be analyzed. The result will not be qualified.-AGR

Authorized by/Date: Kerry Tate, Ph.D. 5/31/2022

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 350.1 Rev. 2.0
Batch ID: P415076

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414617

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P414712

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414551

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P414426

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

Reference Method: EPA 8321B
Batch ID: P414339

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 350.1 Rev. 2.0
Batch ID: P415076

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414617

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P414712

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	100		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414551

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: P414426

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.8		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P414339

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	74.7		P	40 - 150
Cylindrospermopsin	77.3		P	40 - 150
Desmethyl microcystin LR	85.7		P	40 - 150
Microcystin HilR	69.4		P	40 - 150
Microcystin HtyR	71.7		P	40 - 150
Microcystin LA	56.3		P	40 - 150
Microcystin LF	68.9		P	40 - 150
Microcystin LR	76.2		P	40 - 150
Microcystin LW	51.2		P	40 - 150
Microcystin LY	52.7		P	40 - 150
Microcystin RR	78.4		P	40 - 150
Microcystin WR	78.3		P	40 - 150
Microcystin YR	75.6		P	40 - 150
Nodularin-R	71.5		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P415076

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2329993	Ammonia-N	97.8	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414617

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2327402	Kjeldahl Nitrogen	95.1	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P414712

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2328964	NO2NO3-N	98.3	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414551

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2329807	Total-P	95.0	95.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P414426

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2329738	O-Phosphate-P	97.6	98.0	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P414339

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2329415	Anatoxin-a	83.7	96.1	P/P	40 - 150
2329415	Cylindrospermopsin	78.7	85.7	P/P	40 - 150
2329415	Desmethyl microcystin LR	86.0	92.4	P/P	40 - 150
2329415	Microcystin HilR	69.7	81.1	P/P	40 - 150
2329415	Microcystin HtyR	72.7	77.9	P/P	40 - 150
2329415	Microcystin LA	63.1	51.8	P/P	40 - 150
2329415	Microcystin LF	63.6	55.8	P/P	40 - 150
2329415	Microcystin LR	73.2	77.6	P/P	40 - 150
2329415	Microcystin LW	47.9	64.1	P/P	40 - 150
2329415	Microcystin LY	57.7	51.6	P/P	40 - 150
2329415	Microcystin RR	78.0	86.5	P/P	40 - 150
2329415	Microcystin WR	69.4	81.4	P/P	40 - 150
2329415	Microcystin YR	78.3	85.5	P/P	40 - 150
2329415	Nodularin-R	71.6	79.0	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P415076

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2329993	Ammonia-N	0.152	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414617

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2327402	Kjeldahl Nitrogen	9.56	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P414712

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2328964	NO2NO3-N	0.361	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414551

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2329807	Total-P	0.0790	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P414426

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2329738	O-Phosphate-P	0.365	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P414339

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2329415	Anatoxin-a	13.8	Spike	P	0 - 30
2329415	Cylindrospermopsin	8.51	Spike	P	0 - 30
2329415	Desmethyl microcystin LR	7.11	Spike	P	0 - 30
2329415	Microcystin HilR	15.1	Spike	P	0 - 30
2329415	Microcystin HtyR	6.95	Spike	P	0 - 30
2329415	Microcystin LA	16.7	Spike	P	0 - 30
2329415	Microcystin LF	13.2	Spike	P	0 - 30
2329415	Microcystin LR	3.85	Spike	P	0 - 30
2329415	Microcystin LW	29.0	Spike	P	0 - 30
2329415	Microcystin LY	11.1	Spike	P	0 - 30
2329415	Microcystin RR	6.28	Spike	P	0 - 30
2329415	Microcystin WR	15.9	Spike	P	0 - 30
2329415	Microcystin YR	8.79	Spike	P	0 - 30
2329415	Nodularin-R	9.78	Spike	P	0 - 30

Quality Assurance Report
Precision

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2329851
Field Sample ID: HAB-SD-052322-0858

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	88.8	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 8321B
Run ID: A112405
Included Lab Sample IDs: 2329851

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	85.1	84.3	P/P	50 - 160
Cylindrospermopsin	91.3	89.5	P/P	50 - 160
Desmethyl microcystin LR	92.9	86.9	P/P	50 - 160
Microcystin HilR	80.8	78.1	P/P	50 - 160
Microcystin HtyR	79.0	81.7	P/P	50 - 160
Microcystin LA	64.6	76.8	P/P	50 - 160
Microcystin LF	64.2	69.9	P/P	50 - 160
Microcystin LR	91.0	80.4	P/P	50 - 160
Microcystin LW	70.8	78.9	P/P	50 - 160
Microcystin LY	61.1	65.2	P/P	50 - 160
Microcystin RR	92.5	96.2	P/P	50 - 160
Microcystin WR	85.7	83.0	P/P	50 - 160
Microcystin YR	85.9	76.9	P/P	50 - 160
Nodularin-R	76.8	74.5	P/P	50 - 160

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A112422
Included Lab Sample IDs: 2329975

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.2	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A112569
Included Lab Sample IDs: 2329852

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.7	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A112598
Included Lab Sample IDs: 2329852

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A112636
Included Lab Sample IDs: 2329852

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	97.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A112754
Included Lab Sample IDs: 2329852

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.8	97.6	P/P	90 - 110

Quality Assurance Report
Calibration Verification

* 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	98.8	97.8	98.0			0.152
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	95.1	106			9.56
EPA 353.2 Rev. 2.0	NO2NO3-N	100	98.3	98.8			0.361
EPA 365.1 Rev. 2.0	Total-P	104	95.0	95.0			0.0790
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.8	97.6	98.0			0.365
EPA 8321B	Anatoxin-a	74.7	83.7	96.1			13.8
	Cylindrospermopsin	77.3	78.7	85.7			8.51
	Desmethyl microcystin LR	85.7	86.0	92.4			7.11
	Microcystin HilR	69.4	69.7	81.1			15.1
	Microcystin HtyR	71.7	72.7	77.9			6.95
	Microcystin LA	56.3	63.1	51.8			16.7
	Microcystin LF	68.9	63.6	55.8			13.2
	Microcystin LR	76.2	73.2	77.6			3.85
	Microcystin LW	51.2	47.9	64.1			29.0
	Microcystin LY	52.7	57.7	51.6			11.1
	Microcystin RR	78.4	78.0	86.5			6.28
	Microcystin WR	78.3	69.4	81.4			15.9
	Microcystin YR	75.6	78.3	85.5			8.79
	Nodularin-R	71.5	71.6	79.0			9.78

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2329852
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2329852
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2329852
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2329852
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2329975
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2329851

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	05/25/2022			06/10/2022 14:19	Ping Hua	2329852
EPA 351.2 Rev. 2.0	05/25/2022	06/03/2022 11:24	Samantha L Bates	06/07/2022 10:24	Alexandra J Mattheus	2329852
EPA 353.2 Rev. 2.0	05/25/2022			06/02/2022 15:18	Nathaniel J Jones	2329852
EPA 365.1 Rev. 2.0	05/25/2022	06/01/2022 16:00	Adam P Silver	06/02/2022 11:00	James L Waggerby	2329852
EPA 365.1 Rev. 2.0 dissolved	05/25/2022			05/25/2022 18:41	Nathaniel J Jones	2329975
EPA 8321B	05/25/2022	05/26/2022 09:00	Manjita Shrestha	05/26/2022 13:37	Manjita Shrestha	2329851