

Chemical Analysis Report

WQAP-2021-01-14-01

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

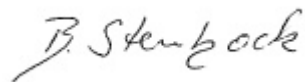
Event Description: **Algal Bloom Response - CEROC**
Request ID: **RQ-2020-12-21-35**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

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Date Certified: 04-FEB-2021 16:54



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 Mabel @ 25m from NW shore

Collection Date/Time: 01/13/2021 11:25

Field ID: HABCE00059_LakeMabel

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2218934	EPA 8321B	Anatoxin-a**	0.25	U	ug/L	P392324	
		Cylindrospermopsin**	0.25	U	ug/L	P392324	
		Desmethyl microcystin LR**	0.25	U	ug/L	P392324	
		Microcystin LA**	0.25	U	ug/L	P392324	
		Microcystin LF**	0.25	U	ug/L	P392324	
		Microcystin LR**	0.25	U	ug/L	P392324	
		Microcystin LW**	0.25	U	ug/L	P392324	
		Microcystin LY**	0.25	U	ug/L	P392324	
		Microcystin RR**	0.25	U	ug/L	P392324	
		Microcystin WR**	0.50	U	ug/L	P392324	
		Microcystin YR**	0.25	U	ug/L	P392324	
2218935	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P393174	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P392469	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.017		mg N/L	P392461	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P392594	
2218936	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P392426	

Ref. Method and Comment:

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries and relative percent difference are unavailable because of analytical difficulties.

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393174

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P392469

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392461

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P392594

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392426

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

Reference Method: EPA 8321B
Batch ID: P392324

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 350.1 Rev. 2.0
Batch ID: P393174

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P392469

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392461

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: P392594

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	103		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392426

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	101		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P392324

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	118		P	40 - 150
Cylindrospermopsin	90.6		P	40 - 150
Desmethyl microcystin LR	121		P	40 - 150
Microcystin LA	142		P	40 - 150
Microcystin LF	148		P	40 - 150
Microcystin LR	90.3		P	40 - 150
Microcystin LW	137		P	40 - 150
Microcystin LY	136		P	40 - 150
Microcystin RR	108		P	40 - 150
Microcystin WR	117		P	40 - 150
Microcystin YR	99.0		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393174

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219234	Ammonia-N	97.2	97.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392461

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2217710	NO2NO3-N	99.0	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P392594

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2218771	Total-P	105	109	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392426

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219063	O-Phosphate-P	99.4	98.0	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P392324

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2217473	Anatoxin-a	98.5	106	P/P	40 - 150
2217473	Cylindrospermopsin	82.4	94.5	P/P	40 - 150
2217473	Desmethyl microcystin LR	110	114	P/P	40 - 150
2217473	Microcystin LA	123	115	P/P	40 - 150
2217473	Microcystin LF	111	114	P/P	40 - 150
2217473	Microcystin LR	96.6	94.2	P/P	40 - 150
2217473	Microcystin LW	113	117	P/P	40 - 150
2217473	Microcystin LY	122	119	P/P	40 - 150
2217473	Microcystin RR	92.5	100	P/P	40 - 150
2217473	Microcystin WR	103	102	P/P	40 - 150
2217473	Microcystin YR	93.9	104	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P393174

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219234	Ammonia-N	0.272	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P392461

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2217710	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P392594

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2218771	Total-P	3.93	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P392426

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219063	O-Phosphate-P	1.31	Spike	P	0 - 20

Reference Method: EPA 8321B

Batch ID: P392324

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2217473	Anatoxin-a	7.59	Spike	P	0 - 30
2217473	Cylindrospermopsin	13.7	Spike	P	0 - 30
2217473	Desmethyl microcystin LR	3.26	Spike	P	0 - 30
2217473	Microcystin LA	6.11	Spike	P	0 - 30
2217473	Microcystin LF	2.96	Spike	P	0 - 30
2217473	Microcystin LR	2.34	Spike	P	0 - 30
2217473	Microcystin LW	3.73	Spike	P	0 - 30
2217473	Microcystin LY	2.46	Spike	P	0 - 30
2217473	Microcystin RR	7.84	Spike	P	0 - 30
2217473	Microcystin WR	0.335	Spike	P	0 - 30
2217473	Microcystin YR	10.1	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2218934

Field Sample ID: HABCE00059_LakeMabel

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	83.3	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	76.9	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A103058
Included Lab Sample IDs: 2218934

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	121	120	P/P	50 - 160
Cylindrospermopsin	92.7	101	P/P	60 - 160
Desmethyl microcystin LR	123	123	P/P	60 - 160
Microcystin LA	122	141	P/P	50 - 160
Microcystin LF	122	120	P/P	60 - 160
Microcystin LR	94.2	99.3	P/P	60 - 160
Microcystin LW	116	112	P/P	60 - 160
Microcystin LY	138	129	P/P	60 - 160
Microcystin RR	114	96.3	P/P	60 - 160
Microcystin WR	111	110	P/P	60 - 160
Microcystin YR	99.9	98.6	P/P	60 - 160

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A103069
Included Lab Sample IDs: 2218936

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.7	99.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A103089
Included Lab Sample IDs: 2218935

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A103144
Included Lab Sample IDs: 2218935

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.8	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A103199
Included Lab Sample IDs: 2218935

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	96.8	97.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A103329
Included Lab Sample IDs: 2218935

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	96.7	97.0	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		LCS	Precision SMP	MS
EPA 350.1 Rev. 2.0	Ammonia-N	99.4	97.2	97.6			0.272
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106					
EPA 353.2 Rev. 2.0	NO2NO3-N	100	99.0	99.0			0.0
EPA 365.1 Rev. 2.0	Total-P	103	105	109			3.93
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	99.4	98.0			1.31
EPA 8321B	Anatoxin-a	118	98.5	106			7.59
	Cylindrospermopsin	90.6	82.4	94.5			13.7
	Desmethyl microcystin LR	121	110	114			3.26
	Microcystin LA	142	123	115			6.11
	Microcystin LF	148	111	114			2.96
	Microcystin LR	90.3	96.6	94.2			2.34
	Microcystin LW	137	113	117			3.73
	Microcystin LY	136	122	119			2.46
	Microcystin RR	108	92.5	100			7.84
	Microcystin WR	117	103	102			0.335
	Microcystin YR	99.0	93.9	104			10.1

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2218935
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2218935
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2218935
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2218935
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2218936
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2218934

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	01/14/2021			01/31/2021 14:52	Ping Hua	2218935
EPA 351.2 Rev. 2.0	01/14/2021	01/15/2021 13:22	Yen Ta	01/20/2021 17:18	Julia Storbeck	2218935
EPA 353.2 Rev. 2.0	01/14/2021			01/15/2021 14:25	Lauren Lees	2218935
EPA 365.1 Rev. 2.0	01/14/2021	01/20/2021 18:21	Madeline Gruver	01/22/2021 16:16	Shengyu Wang	2218935
EPA 365.1 Rev. 2.0 dissolved	01/14/2021			01/14/2021 14:42	Blanca Fach	2218936
EPA 8321B	01/14/2021	01/14/2021 11:00	Pramila Ghimire	01/14/2021 12:04	Pramila Ghimire	2218934