

Chemical Analysis Report

WQAP-2020-08-28-03

Florida Department of Environmental Protection
Central Laboratory
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DOH Accreditation E31780

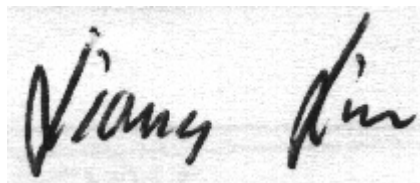
Event Description: **Algal Bloom Response - CEROC**
Request ID: **RQ-2020-03-09-29**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 17-SEP-2020 15:16

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored background.

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: Marina Park @ Dock

Collection Date/Time: 08/27/2020 12:00

Field ID: HABCE0039_Marina Park1

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2192985	EPA 8321B	Anatoxin-a**	0.25	U	ug/L	P386845	
		Cylindrospermopsin**	0.25	U	ug/L	P386845	
		Desmethyl microcystin LR**	0.25	U	ug/L	P386845	
		Microcystin LA**	0.25	U	ug/L	P386845	
		Microcystin LF**	0.25	U	ug/L	P386845	
		Microcystin LR**	0.25	U	ug/L	P386845	
		Microcystin LW**	0.25	U	ug/L	P386845	
		Microcystin LY**	0.25	U	ug/L	P386845	
		Microcystin RR**	0.25	U	ug/L	P386845	
		Microcystin WR**	0.50	U	ug/L	P386845	
		Microcystin YR**	0.25	U	ug/L	P386845	
2192990	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P386834	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.6		mg N/L	P386807	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P386747	
	EPA 365.1 Rev. 2.0	Total-P	0.16		mg P/L	P386754	
2192991	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P386708	

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P386834

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386807

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P386747

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P386754

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P386708

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

Reference Method: EPA 8321B
Batch ID: P386845

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: P386834

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386807

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.1		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P386747

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P386754

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	107		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P386708

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

Reference Method: EPA 8321B
Batch ID: P386845

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	109		P	40 - 140
Cylindrospermopsin	112		P	40 - 140
Desmethyl microcystin LR	106		P	40 - 140
Microcystin LA	115		P	40 - 140
Microcystin LF	94.6		P	40 - 140
Microcystin LR	105		P	40 - 140
Microcystin LW	109		P	40 - 140
Microcystin LY	109		P	40 - 140
Microcystin RR	115		P	40 - 140
Microcystin WR	106		P	40 - 140
Microcystin YR	105		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P386834

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2192749	Ammonia-N	104	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P386807

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2193097	Kjeldahl Nitrogen	94.7	96.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P386747

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2192743	NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P386754

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2192828	Total-P	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P386708

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2192991	O-Phosphate-P	102	104	P/P	90 - 110

Reference Method: EPA 8321B
 Batch ID: P386845

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2192967	Anatoxin-a	114	115	P/P	40 - 140
2192967	Cylindrospermopsin	111	108	P/P	40 - 140
2192967	Desmethyl microcystin LR	123	119	P/P	40 - 140
2192967	Microcystin LA	117	113	P/P	40 - 140
2192967	Microcystin LF	90.4	110	P/P	40 - 140
2192967	Microcystin LR	126	121	P/P	40 - 140
2192967	Microcystin LW	127	116	P/P	40 - 140
2192967	Microcystin LY	112	106	P/P	40 - 140
2192967	Microcystin RR	123	122	P/P	40 - 140
2192967	Microcystin WR	119	120	P/P	40 - 140
2192967	Microcystin YR	118	120	P/P	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P386834

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192749	Ammonia-N	1.99	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P386807

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2193097	Kjeldahl Nitrogen	1.81	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P386747

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192743	NO2NO3-N	0.482	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P386754

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192828	Total-P	0.341	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P386708

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192991	O-Phosphate-P	2.42	Spike	P	0 - 20

Reference Method: EPA 8321B
 Batch ID: P386845

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2192967	Anatoxin-a	0.721	Spike	P	0 - 30
2192967	Cylindrospermopsin	2.53	Spike	P	0 - 30
2192967	Desmethyl microcystin LR	3.06	Spike	P	0 - 30
2192967	Microcystin LA	2.72	Spike	P	0 - 30
2192967	Microcystin LF	19.5	Spike	P	0 - 30
2192967	Microcystin LR	4.41	Spike	P	0 - 30
2192967	Microcystin LW	8.61	Spike	P	0 - 30
2192967	Microcystin LY	5.42	Spike	P	0 - 30
2192967	Microcystin RR	0.694	Spike	P	0 - 30
2192967	Microcystin WR	0.832	Spike	P	0 - 30
2192967	Microcystin YR	1.51	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2192985

Field Sample ID: HABCE0039_Marina Park1

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	109	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	86.4	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A100712

Included Lab Sample IDs: 2192991

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.7	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A100725

Included Lab Sample IDs: 2192990

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A100757

Included Lab Sample IDs: 2192990

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	103	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A100761

Included Lab Sample IDs: 2192990

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A100780

Included Lab Sample IDs: 2192990

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.1	96.1	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A100788

Included Lab Sample IDs: 2192985

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	98.3	90.0	P/P	50 - 160
Cylindrospermopsin	111	107	P/P	60 - 160
Desmethyl microcystin LR	97.3	88.6	P/P	60 - 160
Microcystin LA	98.8	91.4	P/P	50 - 160
Microcystin LF	69.9	50.5	P/P	50 - 160
Microcystin LR	102	94.6	P/P	60 - 160
Microcystin LW	96.2	80.5	P/P	60 - 160
Microcystin LY	94.8	83.7	P/P	60 - 160
Microcystin RR	97.5	97.2	P/P	60 - 160
Microcystin WR	103	92.2	P/P	60 - 160
Microcystin YR	89.7	83.1	P/P	60 - 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		LCS	Precision	MS
						SMP	
EPA 350.1 Rev. 2.0	Ammonia-N	99.6	104	101			1.99
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.1	94.7	96.7			1.81
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	101	101	102			0.482
EPA 365.1 Rev. 2.0	Total-P	107	104	104			0.341
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	102	104			2.42
EPA 8321B	Anatoxin-a	109	114	115			0.721
	Cylindrospermopsin	112	111	108			2.53
	Desmethyl microcystin LR	106	123	119			3.06
	Microcystin LA	115	117	113			2.72
	Microcystin LF	94.6	90.4	110			19.5
	Microcystin LR	105	126	121			4.41
	Microcystin LW	109	127	116			8.61
	Microcystin LY	109	112	106			5.42
	Microcystin RR	115	123	122			0.694
	Microcystin WR	106	119	120			0.832
	Microcystin YR	105	118	120			1.51

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2192990
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2192990
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2192990
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2192990
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2192991
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2192985

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	08/28/2020			09/01/2020 19:25	Ping Hua	2192990
EPA 351.2 Rev. 2.0	08/28/2020	09/01/2020 11:35	Sima Feizi	09/02/2020 11:31	Virginia P. Brown	2192990
EPA 353.2 Rev. 2.0	08/28/2020			08/31/2020 10:30	Beverly Y. Sanders	2192990
EPA 365.1 Rev. 2.0	08/28/2020	08/31/2020 15:00	Yen Ta	09/01/2020 12:59	Benjamin T. Nordmann	2192990
EPA 365.1 Rev. 2.0 dissolved	08/28/2020			08/28/2020 15:44	Samantha Davila	2192991
EPA 8321B	08/28/2020	09/02/2020 14:00	Mohammad Ghaffari	09/02/2020 17:57	Pramila Ghimire	2192985