

Chemical Analysis Report

WQAP-2020-07-09-01

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

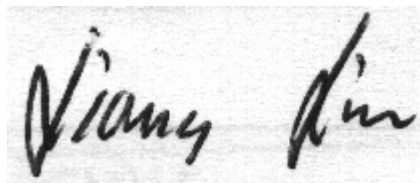
Event Description: **Algal Bloom Response - As needed**
Request ID: **RQ-2019-07-29-34**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

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

Date Certified: 24-JUL-2020 14:46

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 at Edison Ford

Collection Date/Time: 07/08/2020 11:35

Field ID: SD070820-001

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2181779	EPA 8321B	Anatoxin-a**	0.25	U	ug/L	P384274	
		Cylindrospermopsin**	0.25	U	ug/L	P384274	
		Desmethyl microcystin LR**	0.25	U	ug/L	P384274	RPD
		Microcystin LA**	0.25	U	ug/L	P384274	
		Microcystin LF**	0.25	U	ug/L	P384274	
		Microcystin LR**	0.25	U	ug/L	P384274	
		Microcystin LW**	0.25	U	ug/L	P384274	
		Microcystin LY**	0.25	U	ug/L	P384274	
		Microcystin RR**	0.25	U	ug/L	P384274	
		Microcystin WR**	0.50	U	ug/L	P384274	
		Microcystin YR**	0.25	U	ug/L	P384274	

Sample Location: Marina at Edison Ford

Collection Date/Time: 07/08/2020 11:35

Field ID: SD070820-001

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2181780	EPA 350.1 Rev. 2.0	Ammonia-N	0.043		mg N/L	P384446	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.90		mg N/L	P384348	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P384343	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P384401	
2181781	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.12		mg P/L	P384405	

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P384446

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P384348

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P384343

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P384401

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P384405

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

Reference Method: EPA 8321B
Batch ID: P384274

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: P384446

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.5		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P384348

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P384343

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: P384401

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: P384405

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	95.3		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P384274

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	79.4		P	40 - 140
Cylindrospermopsin	91.7		P	40 - 140
Desmethyl microcystin LR	94.2		P	40 - 140
Microcystin LA	98.6		P	40 - 140
Microcystin LF	96.8		P	40 - 140
Microcystin LR	98.9		P	40 - 140
Microcystin LW	90.9		P	40 - 140
Microcystin LY	109		P	40 - 140
Microcystin RR	104		P	40 - 140
Microcystin WR	89.2		P	40 - 140
Microcystin YR	86.8		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P384446

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2181851	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P384348

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2181853	Kjeldahl Nitrogen	99.9	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P384343

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2181686	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P384401

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2180393	Total-P	104	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P384405

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2182143	O-Phosphate-P	96.8	96.6	P/P	90 - 110

Reference Method: EPA 8321B
 Batch ID: P384274

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2181775	Anatoxin-a	75.3	75.8	P/P	40 - 140
2181775	Cylindrospermopsin	80.9	81.4	P/P	40 - 140
2181775	Desmethyl microcystin LR	66.2	97.0	P/P	40 - 140
2181775	Microcystin LA	86.0	92.6	P/P	40 - 140
2181775	Microcystin LF	86.4	88.0	P/P	40 - 140
2181775	Microcystin LR	70.0	93.6	P/P	40 - 140
2181775	Microcystin LW	80.8	78.9	P/P	40 - 140
2181775	Microcystin LY	96.5	96.3	P/P	40 - 140
2181775	Microcystin RR	107	100	P/P	40 - 140
2181775	Microcystin WR	90.7	89.4	P/P	40 - 140
2181775	Microcystin YR	79.2	101	P/P	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P384446

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2181851	Ammonia-N	1.55	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P384348

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2181853	Kjeldahl Nitrogen	2.02	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P384343

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2181686	NO2NO3-N	0.499	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P384401

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2180393	Total-P	0.798	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P384405

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2182143	O-Phosphate-P	0.207	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P384274

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2181775	Anatoxin-a	0.598	Spike	P	0 - 30
2181775	Cylindrospermopsin	0.583	Spike	P	0 - 30
2181775	Desmethyl microcystin LR	37.9	Spike	F	0 - 30
2181775	Microcystin LA	7.38	Spike	P	0 - 30
2181775	Microcystin LF	1.75	Spike	P	0 - 30
2181775	Microcystin LR	28.8	Spike	P	0 - 30
2181775	Microcystin LW	2.45	Spike	P	0 - 30
2181775	Microcystin LY	0.130	Spike	P	0 - 30
2181775	Microcystin RR	6.22	Spike	P	0 - 30
2181775	Microcystin WR	1.45	Spike	P	0 - 30
2181775	Microcystin YR	23.7	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2181779
Field Sample ID: SD070820-001

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	83.2	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A99777
Included Lab Sample IDs: 2181779

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	80.3	79.0	P/P	50 - 160
Cylindrospermopsin	94.5	92.9	P/P	60 - 160
Desmethyl microcystin LR	90.6	85.2	P/P	60 - 160
Microcystin LA	81.6	96.6	P/P	50 - 160
Microcystin LF	93.0	90.8	P/P	60 - 160
Microcystin LR	90.1	89.1	P/P	60 - 160
Microcystin LW	89.9	90.5	P/P	60 - 160
Microcystin LY	107	100	P/P	60 - 160
Microcystin RR	108	107	P/P	60 - 160
Microcystin WR	73.3	93.6	P/P	60 - 160
Microcystin YR	99.3	91.0	P/P	60 - 160

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A99786
Included Lab Sample IDs: 2181780

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A99799
Included Lab Sample IDs: 2181781

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	95.6	97.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A99810
Included Lab Sample IDs: 2181780

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A99824
Included Lab Sample IDs: 2181780

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	99.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A99850
Included Lab Sample IDs: 2181780

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.9	91.0	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		Precision LCS	SMP	MS
EPA 350.1 Rev. 2.0	Ammonia-N	99.5	102	103			1.55
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.2	99.9	102			2.02
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	100	100			0.499
EPA 365.1 Rev. 2.0	Total-P	107	104	103			0.798
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	95.3	96.8	96.6			0.207
EPA 8321B	Anatoxin-a	79.4	75.3	75.8			0.598
	Cylindrospermopsin	91.7	80.9	81.4			0.583
	Desmethyl microcystin LR	94.2	66.2	97.0			37.9
	Microcystin LA	98.6	86.0	92.6			7.38
	Microcystin LF	96.8	86.4	88.0			1.75
	Microcystin LR	98.9	70.0	93.6			28.8
	Microcystin LW	90.9	80.8	78.9			2.45
	Microcystin LY	109	96.5	96.3			0.130
	Microcystin RR	104	107	100			6.22
	Microcystin WR	89.2	90.7	89.4			1.45
	Microcystin YR	86.8	79.2	101			23.7

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2181780
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2181780
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2181780
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2181780
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2181781
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2181779

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	07/09/2020			07/12/2020 12:23	Ping Hua	2181780
EPA 351.2 Rev. 2.0	07/09/2020	07/10/2020 10:20	Sima Feizi	07/13/2020 20:29	Jhamieka S. Greenwood	2181780
EPA 353.2 Rev. 2.0	07/09/2020			07/10/2020 10:09	Beverly Y. Sanders	2181780
EPA 365.1 Rev. 2.0	07/09/2020	07/10/2020 13:26	Yen Ta	07/13/2020 09:01	Benjamin T. Nordmann	2181780
EPA 365.1 Rev. 2.0 dissolved	07/09/2020			07/09/2020 16:43	Carlos Miranda	2181781
EPA 8321B	07/09/2020	07/09/2020 14:00	Juyoung Kim	07/09/2020 20:58	Juyoung Kim	2181779