

Chemical Analysis Report

WQAP-2019-11-26-01

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-2019-11-04-63**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

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Date Certified: 11-DEC-2019 13:29



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 Town@ Hancock Bridge

Collection Date/Time: 11/25/2019 08:30

Field ID: HAB-SD-025

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2139217	EPA 8321B	Anatoxin-a**	0.25	U	ug/L	P374796	
		Cylindrospermopsin**	0.25	U	ug/L	P374796	
		Microcystin LA**	0.25	U	ug/L	P374796	
		Microcystin LF**	0.25	U	ug/L	P374796	
		Microcystin LR**	0.25	U	ug/L	P374796	
		Microcystin LY**	0.25	U	ug/L	P374796	
		Microcystin RR**	0.25	U	ug/L	P374796	
		Microcystin YR**	0.25	U	ug/L	P374796	
2139227	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P375092	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P375114	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P375100	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P375243	
2139228	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.075		mg P/L	P374908	

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P375092

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P375114

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P375100

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P375243

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374908

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

Reference Method: EPA 8321B
Batch ID: P374796

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
Cylindrospermopsin	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 LY	0.25	U	ug/L
Microcystin RR	0.25	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: P375092

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P375114

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.7		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P375100

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: P375243

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: P374908

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

Reference Method: EPA 8321B
Batch ID: P374796

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	124		P	40 - 140
Cylindrospermopsin	101		P	40 - 140
Microcystin LA	97.9		P	40 - 140
Microcystin LF	76.4		P	40 - 140
Microcystin LR	94.8		P	40 - 140
Microcystin LY	83.8		P	40 - 140
Microcystin RR	124		P	40 - 140
Microcystin YR	88.0		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P375092

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2139227	Ammonia-N	102	99.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P375114

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2139283	Kjeldahl Nitrogen	95.5	99.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P375100

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2139283	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P375243

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2138938	Total-P	93.9	93.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374908

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2139382	O-Phosphate-P	96.7	97.4	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P374796

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2138784	Anatoxin-a	106	107	P/P	40 - 140
2138784	Cylindrospermopsin	73.2	72.9	P/P	40 - 140
2138784	Microcystin LA	85.9	78.3	P/P	40 - 140
2138784	Microcystin LF	69.8	72.2	P/P	40 - 140
2138784	Microcystin LR	76.6	79.8	P/P	40 - 140
2138784	Microcystin LY	75.8	76.3	P/P	40 - 140
2138784	Microcystin RR	111	111	P/P	40 - 140
2138784	Microcystin YR	77.5	77.7	P/P	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P375092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2139227	Ammonia-N	1.62	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P375114

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2139283	Kjeldahl Nitrogen	3.35	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P375100

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2139283	NO2NO3-N	0.499	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P375243

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2138938	Total-P	0.649	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374908

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2139382	O-Phosphate-P	0.600	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P374796

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2138784	Anatoxin-a	0.199	Spike	P	0 - 30
2138784	Cylindrospermopsin	0.455	Spike	P	0 - 30
2138784	Microcystin LA	9.33	Spike	P	0 - 30
2138784	Microcystin LF	3.37	Spike	P	0 - 30
2138784	Microcystin LR	4.20	Spike	P	0 - 30
2138784	Microcystin LY	0.671	Spike	P	0 - 30
2138784	Microcystin RR	0.430	Spike	P	0 - 30
2138784	Microcystin YR	0.282	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2139217
Field Sample ID: HAB-SD-025

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Carbamazepine-d10	72.0	P	30 - 165

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
 Run ID: A95962
 Included Lab Sample IDs: 2139217

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	115	109	P/P	50 - 160
Cylindrospermopsin	89.5	87.7	P/P	60 - 160
Microcystin LA	89.2	84.0	P/P	50 - 160
Microcystin LF	77.1	71.7	P/P	60 - 160
Microcystin LR	84.2	80.2	P/P	60 - 160
Microcystin LY	81.3	76.7	P/P	60 - 160
Microcystin RR	112	109	P/P	60 - 160
Microcystin YR	83.3	77.6	P/P	60 - 160

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Run ID: A95979
 Included Lab Sample IDs: 2139228

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	91.6	92.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Run ID: A96062
 Included Lab Sample IDs: 2139227

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.9	99.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Run ID: A96069
 Included Lab Sample IDs: 2139227

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

Reference Method: EPA 351.2 Rev. 2.0
 Run ID: A96111
 Included Lab Sample IDs: 2139227

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Run ID: A96165
 Included Lab Sample IDs: 2139227

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.6	98.6	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	MS
						SMP	
EPA 350.1 Rev. 2.0	Ammonia-N	97.9	102	99.7			1.62
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.7	95.5	99.1			3.35
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	100	100			0.499
EPA 365.1 Rev. 2.0	Total-P	104	93.9	93.3			0.649
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.7	96.7	97.4			0.600
EPA 8321B	Anatoxin-a	124	106	107			0.199
	Cylindrospermopsin	101	73.2	72.9			0.455
	Microcystin LA	97.9	85.9	78.3			9.33
	Microcystin LF	76.4	69.8	72.2			3.37
	Microcystin LR	94.8	76.6	79.8			4.20
	Microcystin LY	83.8	75.8	76.3			0.671
	Microcystin RR	124	111	111			0.430
	Microcystin YR	88.0	77.5	77.7			0.282

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2139227
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2139227
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2139227
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2139227
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2139228
EPA 8321B / E31780	Microcystins in water matrices by HPLC/MS/MS	2139217

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	11/26/2019			11/27/2019 11:41	Ping Hua	2139227
EPA 351.2 Rev. 2.0	11/26/2019	12/03/2019 12:55	Sima Feizi	12/04/2019 14:54	Jhamieka S. Greenwood	2139227
EPA 353.2 Rev. 2.0	11/26/2019			12/03/2019 09:35	Beverly Y. Sanders	2139227
EPA 365.1 Rev. 2.0	11/26/2019	12/05/2019 12:06	Yen Ta	12/05/2019 21:46	Julia Storbeck	2139227
EPA 365.1 Rev. 2.0 dissolved	11/26/2019			11/26/2019 16:33	Virginia P. Brown	2139228
EPA 8321B	11/26/2019	11/26/2019 11:00	Mohammad Ghaffari	11/26/2019 12:09	Mohammad Ghaffari	2139217