

Chemical Analysis Report

WQAP-2020-06-26-01

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

Event Description: **Algal Bloom Response - SWD**
Request ID: **RQ-2020-03-30-08**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
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Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 08-JUL-2020 13:11



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: Little Lake Parker - SE Corner

Collection Date/Time: 06/25/2020 09:15

Field ID: HAB-SW-0018

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2178807	EPA 8321B	Anatoxin-a**	0.25	U	ug/L	P383718	
		Cylindrospermopsin**	0.25	U	ug/L	P383718	
		Desmethyl microcystin LR**	0.25	U	ug/L	P383718	
		Microcystin LA**	0.25	U	ug/L	P383718	
		Microcystin LF**	0.25	U	ug/L	P383718	
		Microcystin LR**	0.25	U	ug/L	P383718	
		Microcystin LW**	0.25	U	ug/L	P383718	
		Microcystin LY**	0.25	U	ug/L	P383718	
		Microcystin RR**	0.25	U	ug/L	P383718	
		Microcystin WR**	0.50	U	ug/L	P383718	
		Microcystin YR**	0.25	U	ug/L	P383718	
2178821	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P383772	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.6		mg N/L	P383881	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P383912	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P383813	
2178822	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P383777	

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P383772

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383881

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P383912

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P383813

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P383777

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

Reference Method: EPA 8321B
Batch ID: P383718

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: P383772

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P383881

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P383912

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: P383813

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: P383777

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

Reference Method: EPA 8321B
 Batch ID: P383718

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	85.9		P	40 - 140
Cylindrospermopsin	111		P	40 - 140
Desmethyl microcystin LR	110		P	40 - 140
Microcystin LA	117		P	40 - 140
Microcystin LF	120		P	40 - 140
Microcystin LR	103		P	40 - 140
Microcystin LW	109		P	40 - 140
Microcystin LY	126		P	40 - 140
Microcystin RR	99.8		P	40 - 140
Microcystin WR	112		P	40 - 140
Microcystin YR	85.7		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P383772

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2178943	Ammonia-N	98.8	98.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383881

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2178772	Kjeldahl Nitrogen	104	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P383912

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2178772	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P383813

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2178749	Total-P	103	99.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P383777

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2178681	O-Phosphate-P	98.3	98.9	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P383718

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2178877	Anatoxin-a	82.1	86.3	P/P	40 - 140
2178877	Cylindrospermopsin	107	105	P/P	40 - 140
2178877	Desmethyl microcystin LR	114	120	P/P	40 - 140
2178877	Microcystin LA	111	112	P/P	40 - 140
2178877	Microcystin LF	107	116	P/P	40 - 140
2178877	Microcystin LR	108	116	P/P	40 - 140
2178877	Microcystin LW	96.1	118	P/P	40 - 140
2178877	Microcystin LY	115	130	P/P	40 - 140
2178877	Microcystin RR	103	112	P/P	40 - 140
2178877	Microcystin WR	100	110	P/P	40 - 140
2178877	Microcystin YR	91.5	92.1	P/P	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P383772

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2178943	Ammonia-N	0.485	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P383881

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2178772	Kjeldahl Nitrogen	1.65	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P383912

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2178772	NO2NO3-N	0.499	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P383813

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2178749	Total-P	3.76	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P383777

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2178681	O-Phosphate-P	0.609	Spike	P	0 - 20

Reference Method: EPA 8321B
 Batch ID: P383718

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2178877	Anatoxin-a	4.95	Spike	P	0 - 30
2178877	Cylindrospermopsin	1.16	Spike	P	0 - 30
2178877	Desmethyl microcystin LR	5.04	Spike	P	0 - 30
2178877	Microcystin LA	0.831	Spike	P	0 - 30
2178877	Microcystin LF	8.30	Spike	P	0 - 30
2178877	Microcystin LR	7.38	Spike	P	0 - 30
2178877	Microcystin LW	20.7	Spike	P	0 - 30
2178877	Microcystin LY	12.0	Spike	P	0 - 30
2178877	Microcystin RR	9.08	Spike	P	0 - 30
2178877	Microcystin WR	9.45	Spike	P	0 - 30
2178877	Microcystin YR	0.682	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2178807
Field Sample ID: HAB-SW-0018

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	104	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A99498
Included Lab Sample IDs: 2178807

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	84.6	86.4	P/P	50 - 160
Cylindrospermopsin	116	121	P/P	60 - 160
Desmethyl microcystin LR	130	122	P/P	60 - 160
Microcystin LA	146	127	P/P	50 - 160
Microcystin LF	158	152	P/P	60 - 160
Microcystin LR	124	124	P/P	60 - 160
Microcystin LW	145	132	P/P	60 - 160
Microcystin LY	151	135	P/P	60 - 160
Microcystin RR	108	99.5	P/P	60 - 160
Microcystin WR	143	138	P/P	60 - 160
Microcystin YR	114	107	P/P	60 - 160

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A99557
Included Lab Sample IDs: 2178821

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A99558
Included Lab Sample IDs: 2178822

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.9	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A99590
Included Lab Sample IDs: 2178821

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A99621
Included Lab Sample IDs: 2178821

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: A99625
Included Lab Sample IDs: 2178821

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.8	90.9	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	100	98.8	98.3			0.485
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.9	104	101			1.65
EPA 353.2 Rev. 2.0	NO2NO3-N	101	100	100			0.499
EPA 365.1 Rev. 2.0	Total-P	103	103	99.1			3.76
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.6	98.3	98.9			0.609
EPA 8321B	Anatoxin-a	85.9	82.1	86.3			4.95
	Cylindrospermopsin	111	107	105			1.16
	Desmethyl microcystin LR	110	114	120			5.04
	Microcystin LA	117	111	112			0.831
	Microcystin LF	120	107	116			8.30
	Microcystin LR	103	108	116			7.38
	Microcystin LW	109	96.1	118			20.7
	Microcystin LY	126	115	130			12.0
	Microcystin RR	99.8	103	112			9.08
	Microcystin WR	112	100	110			9.45
	Microcystin YR	85.7	91.5	92.1			0.682

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2178821
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2178821
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2178821
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2178821
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2178822
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2178807

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	06/26/2020			06/28/2020 13:12	Ping Hua	2178821
EPA 351.2 Rev. 2.0	06/26/2020	06/30/2020 14:30	Jhamieka S. Greenwood	07/01/2020 11:14	Jhamieka S. Greenwood	2178821
EPA 353.2 Rev. 2.0	06/26/2020			07/01/2020 08:35	Beverly Y. Sanders	2178821
EPA 365.1 Rev. 2.0	06/26/2020	06/29/2020 13:17	Yen Ta	06/30/2020 09:48	Benjamin T. Nordmann	2178821
EPA 365.1 Rev. 2.0 dissolved	06/26/2020			06/26/2020 17:11	Jhamieka S. Greenwood	2178822
EPA 8321B	06/26/2020	06/26/2020 13:00	Juyoung Kim	06/26/2020 16:15	Juyoung Kim	2178807