

Chemical Analysis Report

WQAP-2017-07-21-01

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

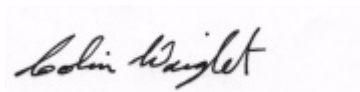
Event Description: **Algal Bloom Response - As needed**
Request ID: **RQ-2017-05-15-50**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
FL Dept. of Environmental Protection
2295 Victoria AVE
Suite 364
Fort Myers, FL 33901
Attn: Kirby Wolfe

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Certified by: Colin Wright, Program Administrator

Date Certified: 25-JUL-2017 11:27

A handwritten signature in black ink, appearing to read "Colin Wright", is placed over a light gray rectangular 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 group are included in this report: 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 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: ALGAE BOLADO CANAL

Collection Date/Time: 07/20/2017 09:40

Field ID: ALGAE BOLADO CANAL

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1915368	EPA 8321B	Microcystin LR**	1.0	U	ug/L	P328892	
		Microcystin LA**	1.0	U	ug/L	P328892	
		Microcystin RR**	1.0	U	ug/L	P328892	
		Microcystin YR**	1.0	U	ug/L	P328892	
		Anatoxin-a**	1.0	U	ug/L	P328892	MS
		Cylindrospermopsin**	1.0	U	ug/L	P328892	
		Microcystin LF**	1.0	U	ug/L	P328892	
		Microcystin LY**	1.0	U	ug/L	P328892	

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B
Batch ID: P328892

Component	Result	Code	Units
Anatoxin-a	1.0	U	ug/L
Cylindrospermopsin	1.0	U	ug/L
Microcystin LA	1.0	U	ug/L
Microcystin LF	1.0	U	ug/L
Microcystin LR	1.0	U	ug/L
Microcystin LY	1.0	U	ug/L
Microcystin RR	1.0	U	ug/L
Microcystin YR	1.0	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P328892

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	104		P	50 - 140
Cylindrospermopsin	108		P	50 - 160
Microcystin LA	104		P	40 - 160
Microcystin LF	91.9		P	40 - 150
Microcystin LR	92.4		P	40 - 160
Microcystin LY	107		P	40 - 150
Microcystin RR	111		P	40 - 160
Microcystin YR	110		P	50 - 160

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P328892

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1914222	Anatoxin-a	188	186	F/F	50 - 140
1914222	Cylindrospermopsin	95.8	97.4	P/P	50 - 160
1914222	Microcystin LA	101	93.0	P/P	40 - 160

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P328892

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1914222	Microcystin LF	85.0	87.1	P/P	40 - 150
1914222	Microcystin LR	93.4	83.1	P/P	40 - 160
1914222	Microcystin LY	96.1	100	P/P	40 - 150
1914222	Microcystin RR	116	106	P/P	40 - 160
1914222	Microcystin YR	97.0	88.9	P/P	50 - 160

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P328892

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1914222	Anatoxin-a	1.41	Spike	P	0 - 30
1914222	Cylindrospermopsin	1.68	Spike	P	0 - 30
1914222	Microcystin LA	8.35	Spike	P	0 - 30
1914222	Microcystin LF	2.49	Spike	P	0 - 30
1914222	Microcystin LR	11.7	Spike	P	0 - 30
1914222	Microcystin LY	4.36	Spike	P	0 - 30
1914222	Microcystin RR	9.41	Spike	P	0 - 30
1914222	Microcystin YR	8.72	Spike	P	0 - 30

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Surrogates

Lab Sample ID: 1915368
Field Sample ID: ALGAE BOLADO CANAL

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Carbamazepine-d10	79.0	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A77912
Included Lab Sample IDs: 1915368

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	113	109	P/P	50 - 160
Cylindrospermopsin	117	124	P/P	60 - 160
Microcystin LA	105	109	P/P	50 - 160
Microcystin LF	97.1	94.4	P/P	60 - 106
Microcystin LR	102	99.3	P/P	60 - 160
Microcystin LY	94.0	93.8	P/P	60 - 160
Microcystin RR	108	105	P/P	60 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A77912
Included Lab Sample IDs: 1915368

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Microcystin YR	92.6	98.4	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		Precision SMP	MS
			LCS			
EPA 8321B	Anatoxin-a	104	188	186		1.41
	Cylindrospermopsin	108	95.8	97.4		1.68
	Microcystin LA	104	101	93.0		8.35
	Microcystin LF	91.9	85.0	87.1		2.49
	Microcystin LR	92.4	93.4	83.1		11.7
	Microcystin LY	107	96.1	100		4.36
	Microcystin RR	111	116	106		9.41
	Microcystin YR	110	97.0	88.9		8.72

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Microcystins in water matrices by HPLC/MS/MS	1915368

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	07/21/2017	07/21/2017	Juyoung Kim	07/24/2017	Juyoung Kim	1915368