UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8 LABORATORY
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Ref: 8TMS-L

MEMORANDUM

SUBJECT: Analytical Results--- **HAB Emergency Bloom 2016 / 1607029**

FROM: Marcie Tidd, Microbiologist
Mark Murphy, Organic Chemist
William H. Batschelet, PhD, Laboratory Quality Assurance Officer

THRU: Mark Burkhardt, PhD, Director
Laboratory Services Program

TO: Tina Laidlaw, 8MO
Clean Water Act

Attached are the analytical results for HAB Emergency Bloom 2016 1607029. The table below shows the number of containers received , the work order number(s) assigned, and the date received:

	1607029	Total
15-Jul-2016	1	1

These samples were prepared, analyzed, and verified by the Region 8 Laboratory according to the requirements of the Laboratory Services Request (LSR) and procedures found in the laboratory Quality Assurance Manual (QSP-001) dated June 16, 2016.

Sample Receipt
All samples were received in acceptable condition except as noted in the Analyst Comments or Appendix A. The number of samples received and analyses are listed in Appendix B.

Sample Analysis
All sample results are reported on an as-received basis except as noted in the Analyst Comments. All samples were analyzed within holding times except as noted in Appendix A. All analyses met QC acceptance criteria except as noted in the Analyst Comments or Appendix A.

Field Measurements
All field measurements met QC acceptance criteria except as noted in the Analyst Comments or Appendix A.

QC Note
Routine sample quality control results such as blanks, matrix spikes, and laboratory duplicates, etc. are reported on the quality control pages of this report. Certain of the reported QC criteria may not be applicable or otherwise affect the data usability. Appendix C summarizes the guidelines used by the Region 8 Laboratory to qualify data. This is a general table and may or may not be applicable to this project.

Analyst Comments

METHOD: Determination of Microcystins by ELISA (SOP BIOLM-004)
ANALYST(S): Marcie Tidd

Analysis Notes:
Samples were received 2 days post collection, with no ice or water in cooler (ice packs were used). Temperature of samples was measured to be 20 °C. Seven sample bottles were received of varying materials, some containing preservatives. Bottles were not labeled with information from this sampling event. The COC lists one sample and collection time, therefore all bottles were presumed to contain the same sample (this was confirmed with the sampler post-analysis). The analyzed sample was taken from a glass container with no preservative.

Due to the urgency of the request, QuickLyse was used for cell lysing in lieu of a triple freeze/thaw cycle, resulting in a dilution correction factor of 1.11.

The laboratory duplicate sample does not appear in the report as it was conducted on a 50X dilution, which is not reported.

Microcystins by LC/MS/MS

Station ID: UT DEQ 2 **Date / Time Sampled:** 07/13/16 15:00 **Workorder** 1607029
Comment: Utah Lake **Matrix:** Water **Lab Number:** 1607029-01 A

Method	Parameter	Results	Units	Qual-ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
Reg. 8 Lab	Anatoxin-A	< 0.05	ug/L	**J**	0.05	1	07/18/2016	MAM	1600242
Reg. 8 Lab	Cylindrospermopsin	< 0.05	ug/L	**J**	0.05	1	07/18/2016	MAM	1600242
Reg. 8 Lab	**Microcystin-LR**	**0.23**	ug/L	**J**	0.05	1	07/18/2016	MAM	1600242
Reg. 8 Lab	Microcystin-RR	< 0.05	ug/L	**J**	0.05	1	07/18/2016	MAM	1600242
Reg. 8 Lab	Microcystin-YR	< 0.05	ug/L	**J**	0.05	1	07/18/2016	MAM	1600242

Project: HAB Emergency Bloom 2016 LSR No: 1607029 **Certificate of Analysis**

Microcystins by ELISA

Station ID: UT DEQ 2 **Date / Time Sampled:** 07/13/16 15:00 **Workorder** 1607029
Comment: Utah Lake **Matrix:** Water **Lab Number:** 1607029-01 A

Method	Parameter	Results	Units	Qual-ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
Reg. 8 Lab	**Total Microcystin**	**0.89**	ug/L	**J**	0.33	1.11	07/15/2016	mlt	1600235

Note: "J" Qualifier indicates an estimated value.

Microcystins by ELISA - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1600235 - General Prep									
Method Blank (1600235-BLK1)				Prepared & Analyzed: 07/15/16					
Total Microcystin	< 0.30	0.30	ug/L						
Reference (1600235-SRM1)				Prepared & Analyzed: 07/15/16					
Total Microcystin	0.62	0.30	ug/L	0.750		82.3	70-130		

NOTE:
%REC is percent recovery, Result (less sample contribution) divided by the Spike Level
RPD is the Relative Percent Difference (difference between the Result and the Source Result) divided by their average

LSR 1607029

CHAIN OF CUSTODY RECORD

CONTACT INFORMATION	PROJECT INFORMATION	USEPA
Contact: Ben Holcomb	Project Name: Harmful Algae Bloom	National Risk Management Research Laboratory 26 West ~~Martin Luther King~~ Drive ~~Cincinnati~~, OH 45268
Address: UT Dept of Natural Resources, SLC, 84114	Database:	
	QAPP #:	Analysis Required (Any Measurements taken at the plant)
801.536.4373	USEPA Contact: Nick Dugan Phone: 513-569-7259 Email: dugan.nicholas@epa.gov	
Phone:		

Date Sampled	Time Sampled	Sample ID	Sampler Name	Sample Description	pH	Temperature	Turbidity	Remarks
7/13	15:00	UT DEQ 2	BHJVL	Utah Lake	8.6	26.8	—	Bloom Phycocyanin Anatoxin a Total Microcystins Cylindrospermopsin

1607029-01

Special Instructions:

Please provide date of sampling on Chain of Custody Record and on sample bottles

SAMPLE RECEIPT	Relinquished By:	SAMPLE DISPOSAL
Total # of Containers: 7	Date: 7/14/16	Total # of Containers:
Chains of Custody in Container Y/ N/ NA	Company: DEQ	Disposal Date:
Samples intact: Y/ N/ NA	Received By: MarcieTodd	Special Instructions:
Condition of Samples: 20°C, NOT ICED No info on containers	Date: 7/15/16 1000 Company: EPA	

7 containers a mix of plastic/glass - some preserved

Appendix A - Exceptions Report

Lab Number	Sample Name	Analysis	Analyte Name	Explanation
1607029-01	UT DEQ 2	Microcystin by ELISA - Total	Total Microcystin	Temperature outside of criteria.
1607029-01	UT DEQ 2	Microcystins by LC/MS/MS_2016	*ALL*	Temperature outside of criteria.
1607029-01	UT DEQ 2	Microcystins by LC/MS/MS_2016	Microcystin-LR	Continuing calibration criteria not met - low

Appendix B - Samples and Analysis

Work Order #	# Samples	Analysis	Method Name	Lab SOP
1607029	1	Microcystin by ELISA - Total	Reg. 8 Lab	BIOLM-004v10_Microcystin_Abraxis
1607029	1	Microcystins by LC/MS/MS_2016	Reg. 8 Lab	Draft SOP

Appendix C - Data Assessment Guidelines

QC Check (Symbol)	Flagging Criteria
Initial Calibration (ICAL)	All failing analytes for all samples are qualified as estimated.
Initial Calibration Verification (ICV) or Standard Reference Material (SRM)	High failure: All detections for failing analytes for all samples are qualified as estimated. Low failure: All failing analytes for all samples are qualified as estimated.
Continuing Calibration Verification (CCV)	High failure: All detections for failing analytes for all associated samples are qualified as estimated. Low failure: All failing analytes for all associated samples are qualified as estimated.
Continuing Calibration Blank (CCB)	All detections for failing analytes for all associated samples where the concentration in the blank is greater than 1/10 the amount measured in the sample OR the blank contamination otherwise affects the sample results are qualified as estimated.
Blanks (BLK) Preparation Blank, Method, Trip, Storage, etc.	All detections for failing analytes for all samples where the concentration in the blank is greater than 1/10 the amount measured in the sample OR the blank contamination otherwise affects the sample results are qualified as estimated.
Lab Control Sample (LCS) or Standard Reference Material (SRM) or Blank Spike (BS)	High failure: All detections for failing analytes for all associated samples are qualified as estimated. Low failure: All failing analytes for all associated samples are qualified as estimated.
Matrix Spike (MS)	High failure: All detections for failing analytes in the parent sample are qualified as estimated. Low failure: All failing analytes in the parent sample are qualified as estimated. No qualification if the native concentration is greater than or equal to 4x the spike concentration.
Matrix Spike Duplicate (MSD)	%R Failure: Same as matrix spike. RPD Failure: All failing analytes in the parent sample are qualified as estimated.
Duplicate Sample (DUP)	All failing analytes in the parent sample are qualified as estimated. No qualification if the native concentration is less than the RL.
Serial Dilution (SD)	All failing analytes in the parent sample are qualified as estimated. No qualification if native concentration is less than or equal to 50x the RL.
Detection Limit Standard (CRA) or (CRL)	High failure: All detections for failing analytes less than or equal to 5x the concentration in the CRL for all associated samples are qualified as estimated. Low failure: All failing analytes less than or equal to 5x the RL for all associated samples are qualified as estimated.
Internal Standard (IS)	All analytes associated with the failing IS are qualified as estimated.
Surrogate Spike (SURR)	High failure: All detections for all analytes associated with the failing surrogate are qualified as estimated. Low failure: All analytes associated with the failing surrogate are qualified as estimated. If obvious chromatographic interference with the surrogate is present, qualification may not be necessary and will be based on the professional judgment of the analyst.

Note: The J Qualifier is used to indicate an estimated value.