

LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

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STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Missouri	880
Alaska	IN00035	Montana	CERT0026
Arizona	AZ0432	Nebraska	NE-OS-05-04
Arkansas	IN00035	Nevada	IN00035
California	2920	New Hampshire*	2124
Colorado	IN00035	New Jersey*	IN598
Colorado Radiochemistry	IN00035	New Mexico	IN00035
Connecticut	PH-0132	New York*	11398
Delaware	IN035	North Carolina	18700
Florida*	E87775	North Dakota	R-035
Georgia	929	Ohio	87775
Hawaii	IN035	Oklahoma	D9508
Idaho	IN00035	Oregon (Primary AB)*	4074
Illinois*	200001	Pennsylvania*	68-00466
Illinois Microbiology	17767	Puerto Rico	IN00035
Illinois Radiochemistry	IN00035	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187-18-12
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA014	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
EPA	IN00035		

*NELAP/TNI Recognized Accreditation Bodies

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 South Bend, IN 46617
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Laboratory Report

Client: City of Durham

Attn: Jimmy Gamble
 Williams WTP
 1405 Hillandale
 Durham, NC 27705

Report: 452508
 Priority: Immediate Written
 Status: Final
 PWS ID: NC0332010

Sample Information					
EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
4296555	Williams Tap	L231	05/15/19 11:05	Client	05/16/19 09:30
4296556	Brown Tap	L231	05/15/19 11:40	Client	05/16/19 09:30
4296557	Williams Raw	L231	05/15/19 11:10	Client	05/16/19 09:30
4296558	Brown Raw	L231	05/15/19 11:42	Client	05/16/19 09:30
4296559	Lake Michie	L231	05/15/19 12:40	Client	05/16/19 09:30
4296560	Little River	L231	05/15/19 12:00	Client	05/16/19 09:30

Report Summary

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Pat Muff at (574) 233-4777.

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Authorized Signature

Title

05/20/2019

Date

Client Name: City of Durham

Report #: 452508

Sampling Point: Williams Tap

PWS ID: NC0332010

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
64285-06-9	Anatoxin-a	L231	---	0.02	< 0.02	ug/L	---	05/17/19 21:49	4296555
143545-90-8	Cylindrospermopsin	L231	---	0.05	< 0.05	ug/L	---	05/17/19 21:49	4296555
96180-79-9	Microcystin-LA	L231	---	0.1	< 0.1	ug/L	---	05/17/19 21:49	4296555
154037-70-4	Microcystin-LF	L231	---	0.1	< 0.1	ug/L	---	05/17/19 21:49	4296555
101043-37-2	Microcystin-LR	L231	---	0.1	< 0.1	ug/L	---	05/17/19 21:49	4296555
123304-10-9	Microcystin-LY	L231	---	0.1	< 0.1	ug/L	---	05/17/19 21:49	4296555
111755-37-4	Microcystin-RR	L231	---	0.1	< 0.1	ug/L	---	05/17/19 21:49	4296555
101064-48-6	Microcystin-YR	L231	---	0.1	< 0.1	ug/L	---	05/17/19 21:49	4296555
118399-22-7	Nodularin	L231	---	0.1	< 0.1	ug/L	---	05/17/19 21:49	4296555

Sampling Point: Brown Tap

PWS ID: NC0332010

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
64285-06-9	Anatoxin-a	L231	---	0.02	< 0.02	ug/L	---	05/17/19 22:02	4296556
143545-90-8	Cylindrospermopsin	L231	---	0.05	< 0.05	ug/L	---	05/17/19 22:02	4296556
96180-79-9	Microcystin-LA	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:02	4296556
154037-70-4	Microcystin-LF	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:02	4296556
101043-37-2	Microcystin-LR	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:02	4296556
123304-10-9	Microcystin-LY	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:02	4296556
111755-37-4	Microcystin-RR	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:02	4296556
101064-48-6	Microcystin-YR	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:02	4296556
118399-22-7	Nodularin	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:02	4296556

Sampling Point: Williams Raw

PWS ID: NC0332010

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
64285-06-9	Anatoxin-a	L231	---	0.02	< 0.02	ug/L	---	05/17/19 22:16	4296557
143545-90-8	Cylindrospermopsin	L231	---	0.05	< 0.05	ug/L	---	05/17/19 22:16	4296557
96180-79-9	Microcystin-LA	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:16	4296557
154037-70-4	Microcystin-LF	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:16	4296557
101043-37-2	Microcystin-LR	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:16	4296557
123304-10-9	Microcystin-LY	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:16	4296557
111755-37-4	Microcystin-RR	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:16	4296557
101064-48-6	Microcystin-YR	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:16	4296557
118399-22-7	Nodularin	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:16	4296557

Sampling Point: Brown Raw

PWS ID: NC0332010

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
64285-06-9	Anatoxin-a	L231	---	0.02	< 0.02	ug/L	---	05/17/19 22:29	4296558
143545-90-8	Cylindrospermopsin	L231	---	0.05	< 0.05	ug/L	---	05/17/19 22:29	4296558
96180-79-9	Microcystin-LA	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:29	4296558
154037-70-4	Microcystin-LF	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:29	4296558
101043-37-2	Microcystin-LR	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:29	4296558
123304-10-9	Microcystin-LY	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:29	4296558
111755-37-4	Microcystin-RR	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:29	4296558
101064-48-6	Microcystin-YR	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:29	4296558
118399-22-7	Nodularin	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:29	4296558

Sampling Point: Lake Michie

PWS ID: NC0332010

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
64285-06-9	Anatoxin-a	L231	---	0.02	< 0.02	ug/L	---	05/17/19 22:42	4296559
143545-90-8	Cylindrospermopsin	L231	---	0.05	< 0.05	ug/L	---	05/17/19 22:42	4296559
96180-79-9	Microcystin-LA	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:42	4296559
154037-70-4	Microcystin-LF	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:42	4296559
101043-37-2	Microcystin-LR	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:42	4296559
123304-10-9	Microcystin-LY	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:42	4296559
111755-37-4	Microcystin-RR	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:42	4296559
101064-48-6	Microcystin-YR	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:42	4296559
118399-22-7	Nodularin	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:42	4296559

Sampling Point: Little River

PWS ID: NC0332010

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
64285-06-9	Anatoxin-a	L231	---	0.02	< 0.02	ug/L	---	05/17/19 22:55	4296560
143545-90-8	Cylindrospermopsin	L231	---	0.05	< 0.05	ug/L	---	05/17/19 22:55	4296560
96180-79-9	Microcystin-LA	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:55	4296560
154037-70-4	Microcystin-LF	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:55	4296560
101043-37-2	Microcystin-LR	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:55	4296560
123304-10-9	Microcystin-LY	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:55	4296560
111755-37-4	Microcystin-RR	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:55	4296560
101064-48-6	Microcystin-YR	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:55	4296560
118399-22-7	Nodularin	L231	---	0.1	< 0.1	ug/L	---	05/17/19 22:55	4296560

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

