Brawley Consulting Group, LLC
Land Conservation and Management Services

Memo

Date: May 5, 2025

To: Bantam Lake Protective Association

From: Brawley Consulting Group

Re: Results of Cyanobacteria Monitoring of May 3, 2025

Summary

Based on cell concentrations in samples collected from the lake and other water quality characteristics measured at the lake on May 3, 2025, the risk to the public from cyanobacteria and harmful algal blooms was low. Cyanobacteria cell concentrations at the three sampling sites, and the lake average were consistent with the State's Visual Rank Category 1 conditions. No public interventions for Category 1 are recommended under these conditions (CT DPH & CT DEEP 2024).

Methods and Conditions

On Saturday, May 3rd, the Brawley Consulting Group collected samples from the lake and analyzed those over the next several days as part of the biweekly Cyanobacteria Monitoring Program. Detailed methods have been described in past summaries. Data and samples were collected at the North Bay, Center Lake, and South Bay sites. Data was collected at Folly Point but water samples were not collected.

Arrival at the Lake was at approximately 10am. The lake water clarity was good. Visible surface blooms were not observed. The skies were generally clear and sunny and winds were light (Weather Underground 2025).

Cyanobacteria and Algae Community

A total of 19 genera were identified in the plankton net or whole water samples. Chlorophyta (aka green algae) and Bacillariophyta (aka diatoms) were each represented by 5 genera. Cyanophyta (aka cyanobacteria or blue-green algae) and Chrysophyta (aka golden algae) were each represented by three genera. Three other algal groups were represented by 1 genus each.

Total cell concentrations were low and between 4,7600 and 7,500 cells/mL among the three sites. Diatom were the dominant group, comprising between 61 and 63% of all cells counted, with the colonial *Asterionella spp.* the most abundant genus. Cyanobacteria cell concentrations were lowest at the Center Lake site at 391 cells/mL. North Bay and South Bay site cyanobacteria cell concentrations were 1,689 and 2,251 cells/mL, respectively. For comparative purposes, the CT DEEP recommends using a threshold of 20,000 cells/mL as the cut off between low public risk and moderate public risk from harmful algal blooms.

The most abundant cyanobacteria genus in all samples was the filamentous *Aphanizomenon spp.* which constituted between 8% and 34% of all cells counted at the three sites.

Water Quality

Several other indicators of cyanobacteria productivity and water quality measured as part of this monitoring program were Secchi disk transparency and relative phycocyanin concentration. Secchi transparency is a measurement indicating how far light transmits through the water column. The more algae and other particulate matter suspended in the water column, the less Secchi disk transparency will be and vice versa. Secchi transparencies on May 3rd were between 3.4 and 3.8 meters and averaged 3.54 meters (Table 1).

Phycocyanin is a photosynthetic pigment mostly unique to freshwater cyanobacteria. It is measured throughout the water column with the fluorimeter in the scientific instrumentation used in the monitoring program. Measures are relative in that the instrument was not calibrated with a primary standard. Although relative, they are useful in that they are comparable to measurements collected at different depths and dates. The average for the top three meters of the water column was used here, as they have in the past.

Relative phycocyanin levels on May 3rd were very low and consistent with the low cyanobacteria cell concentrations. For comparative purposes, we regressed relative phycocyanin concentrations against corresponding cyanobacteria cell concentrations from 2020 to 2024 to create a simple
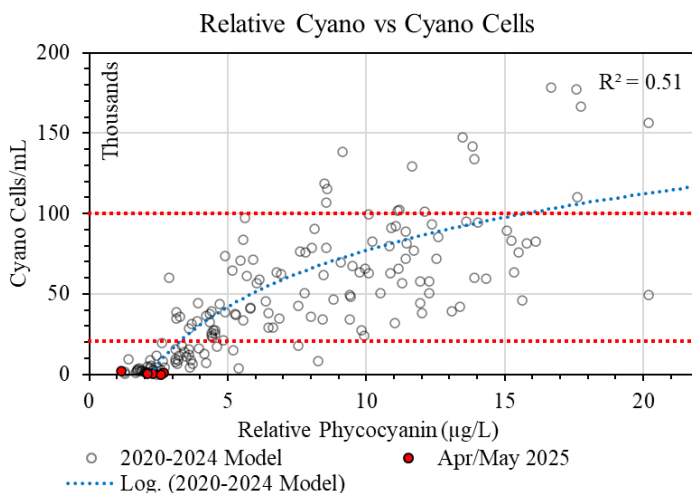

Figure 1. Regression of cyanobacteria cell concentrations and corresponding relative phycocyanin concentrations from 2020 to 2024. The April 14 and May 3, 2025 data were added as a separate dataset (in red). The dotted red lines represent the threshold between Visual Rank Category 1 and 2 (20,000 cyanobacteria cells/mL, and between Categories 2 and 3 (100,000 cyanobacteria cells/mL.

model of Bantam Lake. The April 14th and May 3rd data were added as a separate dataset (Fig. 1). The April / May 2025 data was at the extreme end of the model where water quality is considered at its best.

Table 1. Table 1. Site characteristics and cyanobacteria cell concentrations at Bantam Lake on April 14, 2025.

Sites	Cyanobacteria cells (cells/mL)	Total Depth (m)	Secchi Transparency (m)	Temperature Top/Bottom (°C)	Oxygen Top/Bottom (mg/L)
North Bay	1,689	6.25	3.76	17.0 / 13.6	10.4 / 2.3
Center Lake	391	8.05	3.46	16.3 / 13.6	10.4 / 6.3
South Bay	2,251	4.65	3.37	16.2 / 14.4	10.3 / 8.9
Folly Point	---	6.70	3.57	16.5 / 13.7	10.2 / 3.6

Site Condition

The water columns at all sites were cold, technically mixed, but the start of stratification was observed (Table 1). Oxygen concentrations were high throughout most of water columns at all sites but were notably lower at the bottom. Oxygen concentrations of <1 mg/L were not observed at the bottom.

Conclusions

The public risk from cyanobacteria at Bantam Lake on May 3, 2025, was low. Cyanobacteria cell concentrations were low. Concentrations at all three sites and the lake average were within the Visual Rank Category 1 level. Secchi transparency was good and relative phycocyanin levels were low.

Analysis by

Larry Marsicano
Brawley Consulting Group

Literature Cited

Connecticut Department of Public Health and Connecticut Department of Energy and Environmental Protection. 2023. Guidance to Local Health Departments for Blue–Green Algae Blooms in Recreational Freshwaters. See https://portal.ct.gov/-/media/DPH/EHDW/Blue-Green-Algae-Blooms/Guidance-to-LHD-for-Blue-Green-AlgaeBlooms.pdf