Brawley Consulting Group, LLC

Land Conservation and Management Services

Memo

Date: September 4, 2025

To: Bantam Lake Protective Association

From: Brawley Consulting Group

Re: Results of Cyanobacteria Monitoring of Sep. 3, 2025

Summary

Based on visual assessment on September 3, 2025, the risk to the public from cyanobacteria and harmful algal blooms was high. Cyanobacteria cell concentrations at the three sampling sites, and the lake average were consistent with the State's Visual Rank Category 2 conditions, but shoreline blooms indicated Visual Category 3 conditions. Recommended public interventions for Category 2 include notifying CT DPH and CT DEEP, increased regular visual surveillance until conditions change, and consideration of cautionary postings at public access points. Category 3 interventions include beach closure postings (CT DPH & CT DEEP 2023).

Methods and Conditions

On Wednesday, September 3rd, the Brawley Consulting Group collected data and samples from the lake and analyzed those the next day 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 also collected at the Point Folly site, but water samples were not. An additional sample was collected along the southern shoreline of Deer Island where a bloom was visible for a qualitative analysis.

Arrival at the Lake was at approximately 3:30pm. The lake water clarity was poor. Visible surface blooms were observed and had been reported earlier elsewhere on the lake (Fig. 1). The skies were bright with passing clouds, and winds were light and out of the south (Weather Underground 2025).

Figure 1. Photograph of cyanobacteria bloom taken on September 1, 2025, from the Center Lake shoreline of Deer Island.

Cyanobacteria and Algae Community

A total of 29 algae genera were identified in the plankton net or whole water samples. Chlorophyta (aka green algae) and Cyanophyta (aka blue-green algae or cyanobacteria) had the greatest richness (numbers of identified genera) with 14 and 8 genera, respectfully, identified from those taxonomic groups. Five other taxonomic groups were represented by 1 or 2 genera each.

Total algal cell concentrations were between approximately 53,000 cells/mL at Center Lake and 94,000 cells/mL at North Bay. Approximately 90% to 99% of those cells were cyanobacteria, particularly the filamentous *Dolichospermum spp*. Other cyanobacteria observed at lesser concentrations included *Aphanizomenon spp*., *Woronichinia spp*., *Microcystis spp*., *Aphanocapsa spp*., *Lyngbya spp*., and *Planktothrix spp*.

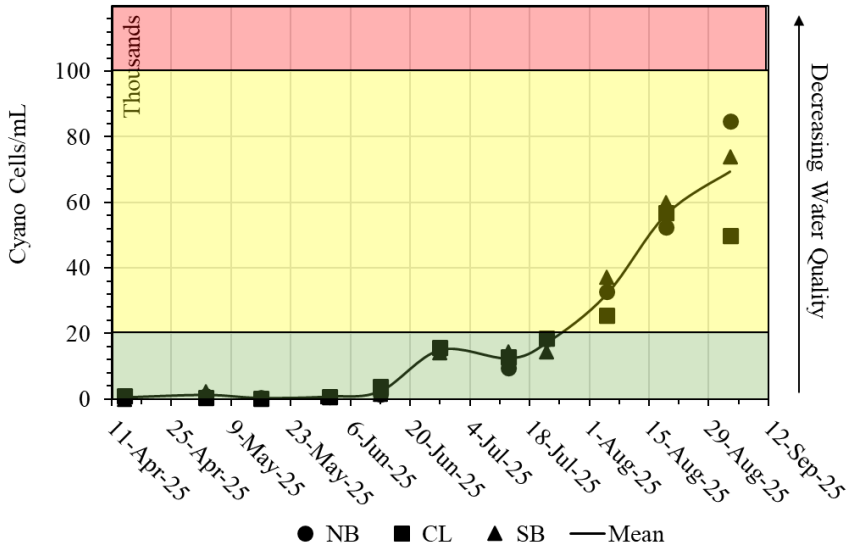

Figure 2. Cyanobacteria cell concentrations at the North Bay (NB), Center Lake (CL), and South Bay (SB) sites in the 2025 season at Bantam Lake. The plot is color coded to represent the CT DEEP's Visual Rank Categories for risk from harmful algal blooms: green = low risk; yellow = moderate risk; red = high risk.

The sample collected from the bloom along the southern shoreline of Deer Island was also predominantly the filamentous cyanobacteria *Dolichospermum spp*.

Cyanobacteria cell concentrations at each site (Table 1) were all within the range of the State's Visual Rank Category 2 designation which indicates moderate risk to human health from harmful algal blooms (Fig. 2). That range is 20,000 cells per mL to 100,000 cells per mL (CT DPH & CT DEEP 2023). Surface blooms like those observed near the shoreline in some areas were not encountered in the open waters of the three sites. Cell concentrations in shoreline blooms were most likely over 100,000 cells/mL which is characteristic of Visual Rank Category 3 conditions.

Table 1. Site characteristics and cyanobacteria cell concentrations at Bantam Lake on July 22, 2025.

Sites	Cyanobacteria cells (cells/mL)	Total Depth (m)	Secchi Transparency (m)	Temperature Top/Bottom (°C)	Oxygen Top/Bottom (mg/L)
North Bay	84,683	6.23	1.23	21.7 / 20.6	12.8 / 0.1
Center Lake	49,866	7.90	1.08	23.0 / 20.5	12.8 / 1.2
South Bay	73,894	6.60	1.14	22.0 / 20.8	13.3 / 5.2
Folly Point	---	4.69	1.16	21.8 / 20.8	12.3 / 9.3

Water Quality

Two other indicators of cyanobacteria productivity and water quality measured as part of this monitoring program are 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 September 3rd were between 1.08 and 1.23 meters (Table 1) and the average for the lake was 1.15 meters. Those measurements and lake average were the lowest of the season to date (Fig. 3).

Phycocyanin is a photosynthetic pigment used as an indicator of freshwater cyanobacteria. It was 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 and the lake average on September 3rd were the highest of the season (Fig. 3). They also resulted in the greatest two-week increase of the season.

Water temperatures near the surface were approximately 22°C to 23°C depending on site (Table 1). Temperatures at the bottom of the water column at each site were between 20 and 21°C. A thermocline with week resistance to mixing was observed within the top 2 meters of the North Bay, Center Lake, and Point Folly sites. This suggests that the lake had completely mixed prior to the day's air temperatures warming up the surface waters of the lake. The South Bay site remained thermally mixed.

Oxygen concentrations were generally high at all sites down to approximately 5 or 6 meters of depth. One exception occurred at the North Bay site where oxygen levels were high down to 5 meters but <1 mg/L at 6 meters. At Center Lake, oxygen levels were >6 mg/L down to 6 meters but decreased to 1.2 mg/L by 7.5 meters.

Conclusions

The public risk from cyanobacteria at Bantam Lake on September 3, 2025 was high based on visual observation along shoreline areas. Cell counts from the open water sites were more indicative of moderate risk. Cyanobacteria cell concentrations at the three sites where samples are collected, and the lake average of 69,481 cells/mL were within the Visual Rank Category 2 level. In addition to Cyanobacteria cell concentrations, relative phycocyanin levels continue to trend up.

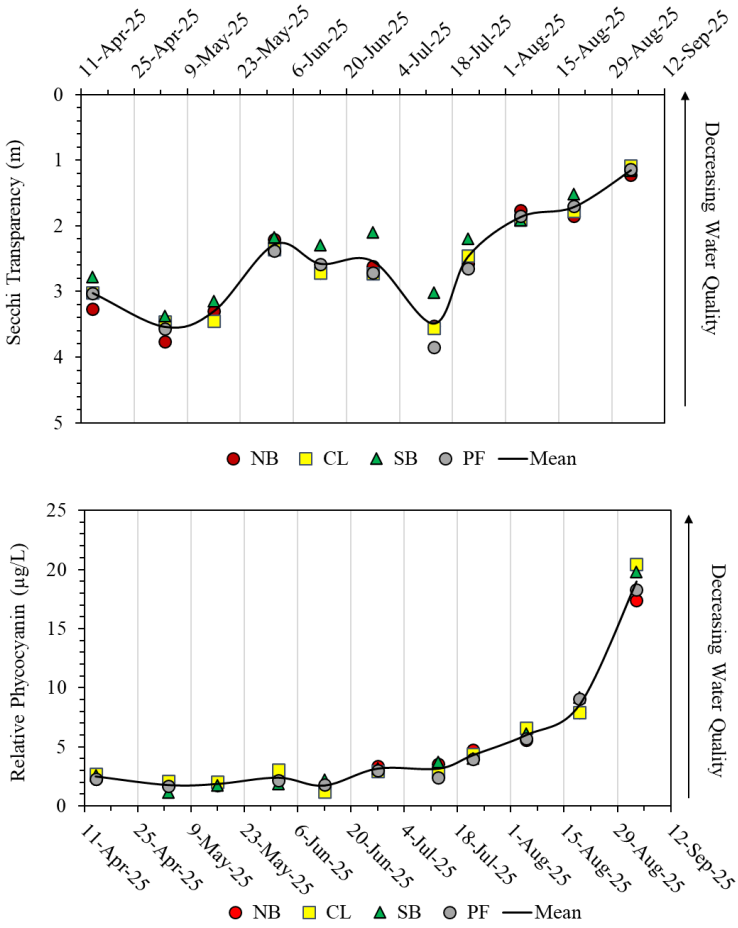

Figure 3. Secchi disk transparencies (top) and relative phycocyanin concentrations (bottom) at the North Bay (NB), Center Lake (CL), South Bay (SB), and Folly Point (PF) sites on Bantam Lake in 2025.

Analysis by

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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