

# Bell Pond

## 2024 Water Quality Report



The City of Worcester

Department of Sustainability and Resilience  
Lakes and Ponds Program



### Summary

The following report is presented by the City of Worcester Department of Sustainability and Resilience (DSR), Lakes and Ponds Program (L&P). It details the program's water quality monitoring results, management activities and outreach efforts at Bell Pond in 2024. The "State of the Lake" will be rated "Excellent", "Good", "Fair", or "Poor" based on the results' implications on water quality and recreational value. This report will also outline projects and opportunities the City of Worcester's Lakes and Ponds Program (L&P) intends to implement at Bell Pond in 2025.

Though Bell Pond is close to Worcester's urban center, it exhibits few water quality challenges. Often exhibiting high water clarity, low nutrient levels, and very low risk of closure due to cyanobacteria and fecal bacteria, Bell Pond supports a healthy ecosystem and a wide variety of recreational opportunities. ***In 2024, Bell Pond received a score of "Excellent"***. Continue reading to learn more about this rating and L&P's water quality monitoring results.

### Background

Bell Pond is an 11-acre pond located in the Bell Hill neighborhood of Worcester (see Figure 1). Once known as "Bladder Pond", Bell Pond served as a fire suppression and drinking water source for the City of Worcester in the late 1800's. These days, Bell Pond provides ample public access for recreation and continues to have high quality water. The pond is bordered on the north by Belmont Street, a highly trafficked road. To the east is the Seabury Heights retirement housing complex, and to the west there are wooded parklands with footpaths and a fishing platform. There is a small City-maintained beach on the west side that is well-used in the summer months. Bell Pond is one of the most accessible waterbodies in the city, with pedestrian access around much of the shoreline. Despite its small size, Bell Pond's deepest point is approximately 17 feet, located in the middle of the waterbody. Water to the pond is primarily supplied by underground springs. The pond's main outlet is a catch basin located near the Seabury Heights driveway. There is also a secondary, less defined outlet to the south of the pond in the vicinity of the fishing platform. The pond is stocked in the spring and fall with rainbow trout by MassWildlife and is a popular local fishing destination. Bell Pond is also home to largemouth bass, chain Pickerel, yellow perch, black crappies, bluegill, pumpkinseeds, and carp.

This report details the results of water quality monitoring programs in 2024, as well as the exciting projects and opportunities the City of Worcester's Lakes and Ponds Program (L&P) intends to implement in 2025. To provide context for the 2024 data, the following paragraph highlights L&P's key findings from recent years.

Prior to the establishment of the Lakes and Ponds Program (L&P), Bell Pond's water quality had not been monitored by the City of Worcester or any other entity. The pond is not listed as impaired on the Massachusetts Section 303(d) List by the Department of Environmental Protection (MassDEP), and since monitoring began in 2017, results have indicated that Bell Pond has few water quality challenges. There has been only one beach closure at Bell Pond due to a fecal bacteria exceedance since L&P began monitoring and collecting data in 2017. In past years there have been no cyanobacteria criteria exceedances, water clarity has been high, and no contaminants have been identified at concerning levels. Anecdotal accounts of litter have continued to be a potential threat to wildlife and recreation. Recently, invasive species have become a bigger concern. In 2020, the invasive mollusk *Corbicula fluminea* was identified in the pond. While not considered a threat to recreation, its threat to local ecology remains unknown. In 2022, the invasive plant *Phragmites australis* was documented along parts of the shoreline for the first time, although the extent of the infestation remains manageable. In annual reports L&P has consistently considered water quality at Bell Pond to be "Excellent".



**Figure 1** – Bell Pond is an 11-acre pond located in the Bell Hill neighborhood of Worcester that sports a bathing beach, wooded park land and a popular sport fishery.

To view full reports from all previous seasons, please visit [WorcesterMA.gov/bluespace](https://WorcesterMA.gov/bluespace).

## **Management Summary**

Since 2017, L&P has conducted lake management activities to mitigate invasive aquatic plants, nutrient and sediment loading, cyanobacteria, and fecal bacteria that have threatened waterbodies throughout the City of Worcester. As Bell Pond is only minorly impacted by these challenges, no management in these areas has been necessary. Based on 2022 findings and a 2024 survey, L&P is developing a plan to eradicate the invasive plant *Phragmites australis*. The Lakes and Ponds Program will continue to monitor Bell Pond to be positioned for quick and informed response should additional lake management be needed.

## **Sampling Analysis and Overview**

Bell Pond was visited twice monthly from May through October and sampled at its deepest point, located approximately in the center of the pond (see Figure 2). As no aboveground tributary exists, no tributary sample was taken. Probe measurements and water samples were collected 1 foot below the surface of the water ("surface"), and 2 feet from the bottom of the lake ("bottom"). During every sampling event

L&P evaluated Secchi disk transparency, dissolved oxygen (DO), pH, total phosphorus (TP), and total dissolved phosphorus (TDP). Samples were also collected monthly for total suspended solids (TSS), ammonia (NH<sub>3</sub>), and nitrate (NO<sub>3</sub>). In past years, L&P collected samples for *Escherichia coli* (*E. coli*) from the lake surface. As in-lake *E. coli* results never indicated concern, L&P ceased collecting them in 2023, although beach testing by the Department of Inspectional Services continues. Altogether, the L&P visited Bell Pond 12 times in 2024.

According to the [Northeast Regional Climate Center](#), the spring of 2024 (Mar - May) had the second highest rainfall total in the period of record (1948 – 2024). Summer of 2024 (Jun – Aug) had below average rainfall, and the fall (Sep – Nov) was the driest in the period of record. The Massachusetts Central Region was classified as Level-3 Critical Drought from 1-Oct through 8-Jan, when it was downgraded to Level-2 Significant Drought. Two of the 12 sampling days in 2024 were considered “wet weather” with 24-hour rainfall totals exceeding 0.25 inches. Those days include 18-Jul (0.41 in), and 1-Aug (0.30 in). Results from wet weather days are denoted with the symbol ☁️ in the figures.

Volunteers from the Worcester Cyanobacteria Monitoring Collaborative (WCMC) collected samples from the beach area for phycocyanin and relative cyanobacteria density analysis to assess bloom risk. Samples were taken six times between late April and October, on 4-May, 18-May, 29-Jun, 27-Jul, 24-Aug, and 26-Oct. Additionally, the City of Worcester Department of Inspectional Services tested the beach area for *E. coli* as an indicator for harmful bacteria on a weekly basis during the summer months.

Raw data are displayed and explained in this report. No statistical analysis has been performed. A laboratory reporting limit is the smallest amount of a substance that a lab can reliably detect and report in a sample. Results below the laboratory reporting limit are expressed with the less-than symbol (<) before the reporting limit. For example, an undetectable result with a reporting limit of 1.0 mg/L is shown as <1.0 mg/L. Subsequent ratings of “Excellent”, “Good”, “Fair”, and “Poor” for reported values are based on the MassDEP SMART Monitoring Watershed Report Card Criteria.

## Monitoring Parameters and 2023 Results

### Quality Assurance/Quality Control



The Lakes and Ponds Program uses Quality Assurance/Quality Control (QAQC) checks to ensure that our data are representative of local conditions and meet precision and accuracy standards. QAQC check results identify data that need to be flagged and/or censored before they are shared and can highlight issues that affect data quality. When data fail to meet acceptable criteria for these checks, they are either flagged as being slightly less robust or censored entirely. Flagged data points are marked with a red flag and censored data are not included in this report. For more information on L&P’s data quality, please contact [greenworcester@worcesterma.gov](mailto:greenworcester@worcesterma.gov).



Figure 2 – Bell Pond location and sampling site.

## Fecal Bacteria

Recreational contact with water contaminated by certain fecal bacteria may cause illness. *Escherichia coli*, or *E. coli* are a type of bacteria found in the digestive tract of warm-blooded animals including geese, pets, and humans. While most strains are harmless, some can cause illness. These bacteria enter the water in many ways, including direct contact with animal waste, runoff from the shoreline and impervious surfaces like paved roadways during rainstorms, leaking septic tanks, and illicit sewer connections that empty sewage to the stormwater system. The Commonwealth of Massachusetts has strict regulations for bathing beaches, and Worcester Inspectional Services collects samples for *E. coli* at Bell Pond weekly at during the swimming season to ensure that the water is safe for direct contact, closing the beach if the results are above the recreational threshold of 235 *E. coli*/100 mL. In past seasons L&P has collected samples for *E. coli* at the surface of certain in-lake sites to assess *E. coli* conditions in open water. As in-lake *E. coli* results never indicated concern, L&P ceased collecting them in 2023.

<b>BELL POND BEACH</b>	
Collected by COW Inspectional Services	
DATE	RESULT <small>E. coli/100 mL</small>
24-Jun	12.1
1-Jul	6.3
8-Jul	29.2
15-Jul	14.8
22-Jul	17.5
29-Jul	8.4 
5-Aug	6.3
12-Aug	2.0
19-Aug	2.0 

Excellent	Good
Fair	Poor
Red Text = Beach Closure	

**Table 1** – There were no beach closures at Bell Pond in 2024 due to fecal bacteria exceedance.

**Fecal Bacteria at Bell Pond.** There were no beach closures at Bell Pond in 2024 (see Table 1). Results of beach *E. coli* testing by Worcester Inspectional Services ranged between <1.0 and 29.2 *E. coli*/ 100mL, falling within ranges considered “Excellent” and “Good” by DEP. As there were no beach closures due to fecal bacteria in 2024, *E. coli* at Bell Pond continued to be considered “Excellent”.

## Water Clarity

Water clarity is a measure of the transparency of water. Cyanobacteria and other microscopic organisms, eroded particles, and re-suspended bottom sediments are factors that interfere with light penetration and reduce water transparency. Clear water allows sunlight to penetrate the depths of a waterbody, supporting growth of aquatic plants, which provide food, shelter, and oxygen to aquatic organisms. Clear water is also pleasant to the eye and may be safer for recreational contact. Turbid water, or water filled with particles, absorbs more heat from sunlight. This reduces the water’s capacity to hold oxygen, creating favorable conditions for algal and cyanobacteria blooms, which further reduce clarity. Water clarity can be measured with a Secchi disk or by quantifying Total Suspended Solids (TSS). A Secchi disk is a weighted black and white disk on a distance-calibrated line that is lowered into the water until it is no longer visible. Secchi readings are collected on each lake visit by L&P. TSS is a measure of the dry weight of suspended particles in a given amount of water. TSS samples are taken once monthly and submitted to a lab for analysis.

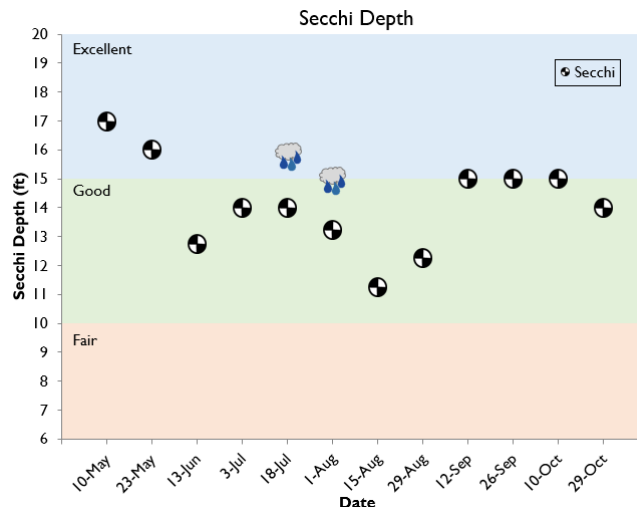


**Water Clarity at Bell Pond.** Historically, water clarity at Bell Pond has been very high in comparison to the Program's other lakes, often the highest in the City. However, in 2023, two low Secchi depth readings were recorded in July and August. In 2024, Secchi depth readings were generally closer to previous norms, ranging between 11.25 and 17.00 ft, or in the ranges considered "Good" and "Excellent" (see Figure 3). Surface and bottom TSS was consistently low with only one detected result and all results in the range considered "Excellent". Bell Pond exhibits the highest clarity of the lakes monitored by L&P and is rated "Good" in 2024.

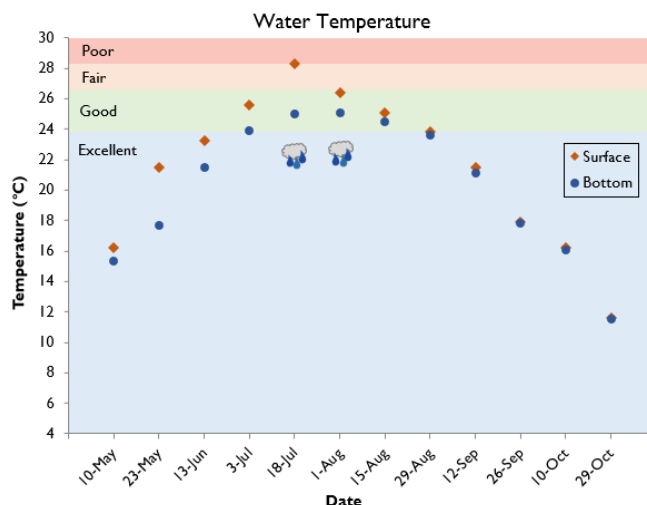
## Temperature

Water temperature impacts both the biology and chemistry of aquatic ecosystems. Because many organisms prefer to live in a narrow temperature range, understanding temperature across the area and depth of a water body is essential. Temperature also impacts the speed of chemical reactions and the ability of water to hold oxygen. Warmer water can hold less dissolved oxygen than colder water. Temperature dynamics in lakes can also determine the level of mixing occurring in the waterbody, affecting the distribution of oxygen, nutrients, and organic matter throughout the lake. Temperature was measured using a thermometer on a handheld probe. To form a more complete picture of how temperature changes through the water column, depth profiles were created by taking measurements at 1-ft increments through the water column.

**Temperature at Bell Pond.** Temperature readings in Bell Pond continued to show trends similar to past years, with surface and bottom temperature below 23.8°C, or in the range considered "Excellent" in spring, early summer and fall. Surface and bottom temperatures rose throughout the summer and peaked at 28.3°C on 13-Jul (see Figure 4).



**Figure 3 -** Secchi depth was categorized as "Good" for all but two readings, where it was considered "Excellent".



**Figure 4 -** Surface and bottom temperatures were in the "Excellent" and "Good" categories for most of the season. Surface temperature was in the "Fair" category on one instance in July.

Temperature was consistent throughout the water column all season, with a maximum difference between surface and bottom of only 3.8°C (see Appendix). This suggests that mixing through the water column is not impeded by thermal stratification. In 2024, temperature at Bell Pond continued to be rated overall as “Excellent”.

## Dissolved Oxygen

Oxygen dissolved in water is essential to aquatic life, just as it is to life on land. Dissolved Oxygen (DO) is a highly variable parameter that is controlled by many factors, including temperature, pressure, aeration, diffusion, rate of photosynthesis, rate of respiration and more. When water temperature rises, water can hold less dissolved oxygen, potentially stressing aquatic organisms. Thermal stratification, or layering in the water column based on temperature, can also create a barrier to waterbody mixing, creating areas with depleted DO in some deeper portions of waterbodies. Increased algal growth followed by excessive decomposition of organic material can also lead to low oxygen (hypoxic)

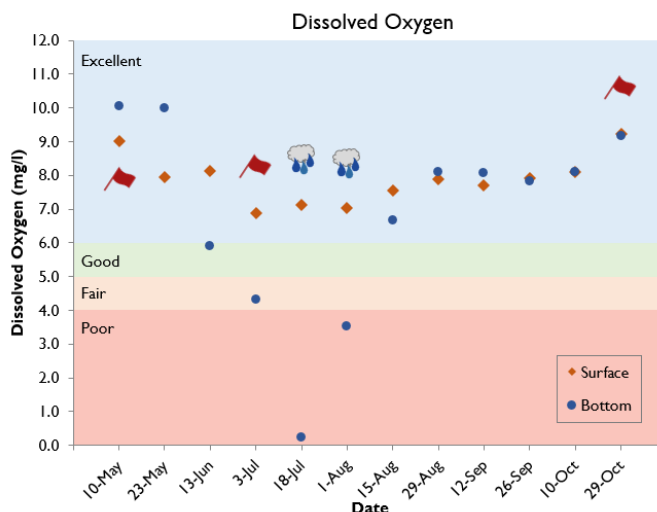
conditions, potentially causing fish kills. DO was measured using a galvanic DO sensor on a handheld probe at the water’s surface and two feet from the bottom at the in-lake locations. To form a more complete picture of how DO changes through the water column, depth profiles were created by taking measurements at 1-ft increments through the water column.

**Dissolved Oxygen at Bell Pond.** At Bell Pond surface readings showed dissolved oxygen ranging between 6.88 mg/L and 9.22 mg/L. On the bottom DO fluctuated more widely. Most notably, DO dropped below 4 mg/L, into the range considered “Poor” on 18-Jul and 1-Aug (see Figure 5).

The water column was adequately oxygenated during all but one sampling session (see Appendix). July 18 was the only day on which hypoxic conditions were observed, with DO below the avoidance limit for fish in the bottom three feet of the water column. In 2024 DO continued to be rated as “Excellent” overall.

## pH

pH is the concentration of hydrogen ions (H+) in a solution. The more H+ ions that are present, the more acidic the solution. On a scale of 0-14.0 units, 7.0 is a neutral pH. As pH increases from 7.0, the solution is more basic, and as pH decreases from 7.0, it becomes more acidic. In aquatic ecosystems, pH affects most chemical and biological processes including species distribution, growth rate, reproductive success, and



**Figure 5** - Surface DO was consistently in the range considered “Excellent”. Bottom DO was more variable, with two readings in the range considered “Poor”.

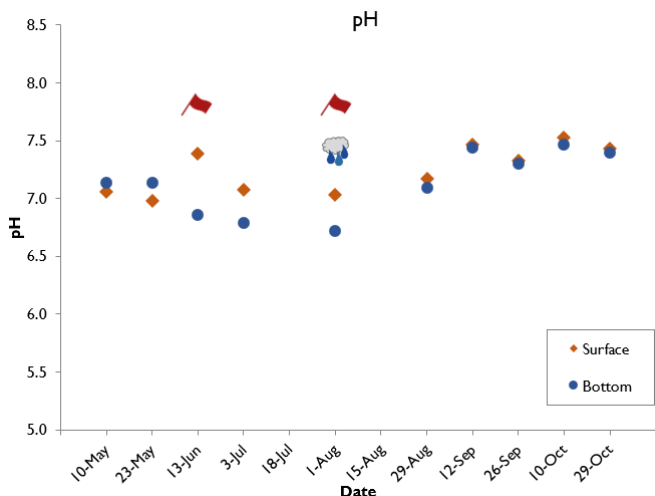
nutrient dynamics in lakes. A high pH can promote chemical reactions that release phosphorus from lake sediments. Healthy lakes in our area have a pH between 6.5 and 8.5. pH was measured using an ion-selective electrode (ISE) pH sensor on a handheld monitoring probe. Readings are taken at the water's surface and two feet from the bottom.

**pH at Bell Pond.** pH readings taken on the surface and bottom of Bell Pond were in the expected range based on past seasons' results. In 2024, pH ranged between 6.98 and 7.53 on the surface and 6.72 and 7.47 on the bottom (see Figure 6).

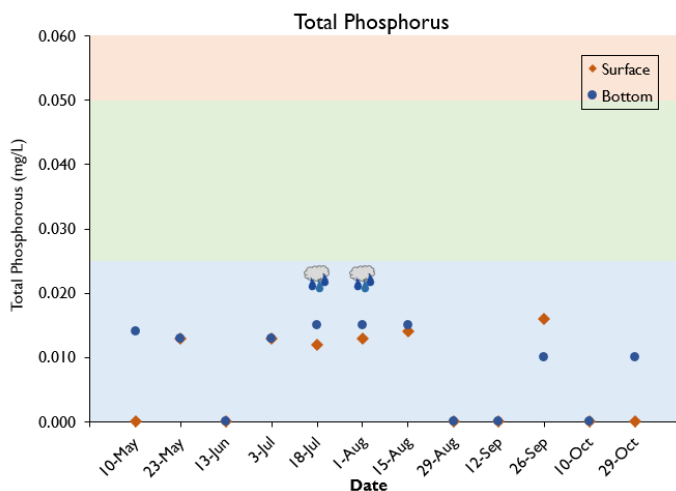
## Nutrients

Nutrients, primarily nitrogen (N) and phosphorus (P), are food sources for aquatic plants and algae. Although plants and algae are the basis of aquatic food chains and are necessary for a healthy lake ecosystem, an overabundance of nutrients can lead to issues such as harmful algal blooms and excessive plant growth. Common nutrient inputs to urban lakes and ponds include fertilizers, pet and goose waste, illicit sewer connections to the stormwater system, and runoff that flows over land into the stormwater system. Additionally, under the right conditions, P can be released from the sediments at the bottom of the lake, becoming more available for uptake by organisms. To examine the nutrients present in program lakes, L&P collects samples for several compounds and submits them to an external lab for analysis. To measure N, samples are collected for nitrate ( $\text{NO}_3$ ) and ammonia ( $\text{NH}_3$ ) at all sites monthly. To measure P, samples are collected for total phosphorus (TP) twice a month at all sites, and total dissolved phosphorus (TDP) twice a month at all bottom sites. TDP is analyzed to understand how much P is dissolved in the water and available for use by aquatic organisms.

**Nutrients at Bell Pond.** In 2024 total phosphorous results were similar to past years, ranging from <0.010 to 0.016 mg/L on the surface and <0.010 to 0.015 mg/L on the bottom (see Figure 7). All results were in the range considered "Excellent". The same was true for total dissolved phosphorus. All but one result



**Figure 6** - pH ranged between 6.98 and 7.53 on the surface and 6.72 and 7.47 on the bottom.



**Figure 7** - Total phosphorus remained in the "Excellent" category throughout the 2024 season at the surface and bottom.

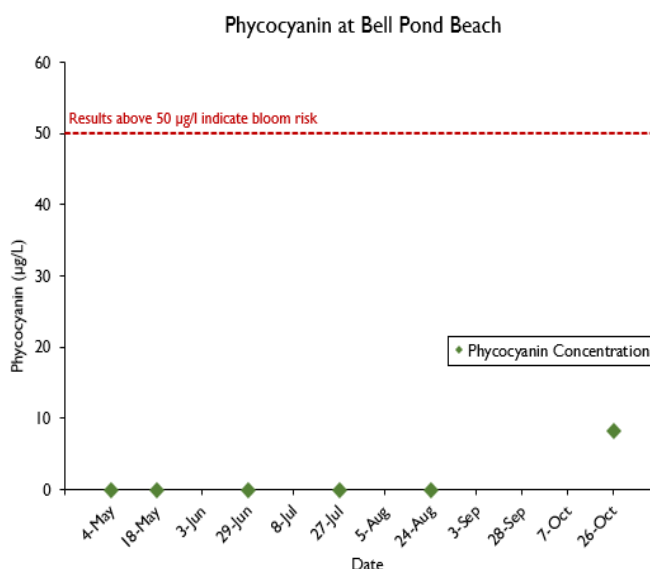
was below the reporting limit, and the one detected result was at the reporting limit of 0.010 mg/L. As in years past, results suggest that phosphorus concentrations at Bell Pond are low and do not pose a significant water quality risk.

At the surface and bottom, NO<sub>3</sub> was below the reporting limit in all but one instance. On 28-Sep, NO<sub>3</sub> was 0.760 mg/L at the surface and 0.080 mg/L at the bottom, both within the range considered “Good”. NH<sub>3</sub> in Bell Pond was below the reporting limit on one occasion and ranged from 0.340 to 0.379 mg/L, or in the range considered “Fair”. When detected, surface readings exceeded those from the bottom. As this was unexpected, L&P will continue to monitor NH<sub>3</sub> to watch for similar results. Overall nutrient results in Bell Pond remain low and were overall considered “Excellent” in 2024.

## Cyanobacteria

Cyanobacteria are naturally occurring microorganisms in waterbodies. Using sunlight and nutrients such as N and P, cyanobacteria use photosynthesis to gain energy similarly to plants. While normal at low densities in healthy ecosystems, under the right conditions some species of cyanobacteria can reproduce quickly and cause potentially harmful blooms. In addition to being unsightly and smelly, cyanobacteria blooms can produce toxins that are harmful to humans and pets. Blooms also have the potential to create hypoxic conditions that can cause fish kills.

To understand the abundance of cyanobacteria and make decisions regarding lake management and safe access, L&P utilizes the data collected by the Worcester Cyanobacteria Monitoring Collaborative (WCMC) to measure cyanobacteria indicators and estimate toxin exposure risk. The WCMC is a group of community science volunteers that collect water quality samples twice monthly between May and October at 24 waterbodies in and around Worcester, including Bell Pond. Parameters examined include phycocyanin and the relative abundance of cyanobacteria taxa. Similar to chlorophyll, the pigment phycocyanin is used by cyanobacteria to harness the sun’s energy, converting carbon dioxide to sugars for growth and reproduction. Phycocyanin is unique to cyanobacteria and can be used as an indicator of cyanobacteria’s relative abundance in a waterbody. Cyanobacteria taxa and their comparative abundance helps determine what toxins may be present. The WCMC is also able to determine relative density of cyanobacteria genera in samples using a high-powered microscope. Using both phycocyanin and comparative cyanobacteria density the WCMC can begin to assign bloom risk at each participating waterbody. For more information on the WCMC and their results, visit [WorcesterMA.gov/WCMC](https://WorcesterMA.gov/WCMC).



**Figure 8** – Phycocyanin was only detected in one result from fluorometry analysis conducted by the WCMC at Bell Pond, indicating that cyanobacteria were not prevalent here in 2024.



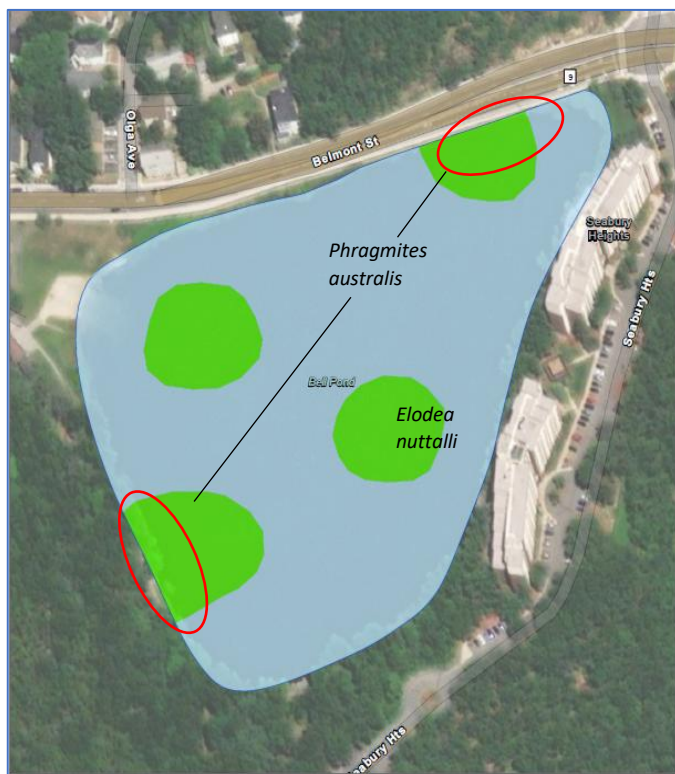
**Cyanobacteria at Bell Pond.** Over the course of the 2024 season, phycocyanin was only detected in two results from fluorometry analysis conducted by the WCMC (see Figure 8), and cyanobacteria density was always rated “none”. The combination of cyanobacteria data collected by the WCMC and high clarity and low nutrient results indicates that Bell Pond is not at significant risk for harmful cyanobacteria blooms. In 2024, Bell Pond continued to be considered low risk for a cyanobacteria bloom and was rated "Excellent".

## **Invasive Aquatic Plants and Animals**

An invasive plant or animal is an organism that is not native to the region and outcompetes local flora and fauna. The absence of natural constraints, like predators or environmental limitations, allows invasive plants and animals to reproduce at a rapid rate. When invasive aquatic plants and animals become too numerous or dominant, they can overtake available space, disrupting local ecosystems and making recreation more difficult. Invasive organisms can arrive at new locations by hitching a ride on boats, pets, or boots. Some are released with good intentions as a beautiful addition to a landscape or sport fishing opportunity. Professional surveys and visual inspections from Lakes and Ponds Program staff are used to make management decisions regarding invasive species.

### **Invasive Aquatic Plants and Animals at Bell Pond.**

In 2022, plant mapping contracted by L&P indicated the presence of the invasive plant *Phragmites australis* along parts of the shoreline for the first time (see Figure 9). The population has not expanded rapidly, but L&P will undertake management efforts in 2025. Additionally, in 2020 the Lakes and Ponds Program found evidence of the invasive mollusk, *Corbicula fluminea*. Although it is not known how long it has been residing in Bell Pond, it does not appear to be impeding lake health or recreation at this point. The Lakes and Ponds Program will continue to monitor changes in the population of this and other mollusks in Bell Pond.



**Figure 9** – Plant mapping contracted by L&P in 2022 indicated the presence of the invasive plant *Phragmites australis* along parts of the shoreline for the first time (circled in red), and the native plant *Elodea nuttalli* (shaded green).

## **Industrial Contaminants**

Worcester is a post-industrial urban center, and legacy pollutants and emerging contaminants of concern from industrial processes are potential threats to recreational waters. These contaminants may cause

negative health and environmental effects. Every three years, L&P tests for a range of these compounds on both a wet and dry weather event. Because most industrial contaminants are legacy pollutants, contamination levels are not expected to change much year to year. In 2022, L&P tested for 74 volatile organic compounds (VOCs), 72 semi volatile organic compounds (SVOCs), 9 polychlorinated biphenyls (PCBs), petroleum hydrocarbons (TPH), 23 perfluoroalkyl substances (PFAS), 21 pesticides, 10 herbicides, and 22 heavy metals. No results of concern were detected. See the [2022 Bell Pond Lake Report](#) or contact [greenworcester@worcesterma.gov](mailto:greenworcester@worcesterma.gov) for more information. L&P will conduct sampling for legacy pollutants and emerging contaminants again in 2025, pending budget availability.

## ***State of the Lake***

For the eighth year running, the Lakes and Ponds Program has rated Bell Pond's overall water quality as "Excellent". Since monitoring began in 2017, there was only one beach closure for a fecal bacteria exceedance, and no lake closures due to cyanobacteria. With a few notable exceptions, results for temperature, DO, *E. coli*, nutrients and are considered "Excellent". Despite occasional lower clarity readings, Bell Pond remains the clearest waterbody monitored by L&P and was rated as "Good". In 2022, the invasive plant *Phragmites australis* was documented along parts of the shoreline for the first time, however, the extent of the infestation remains manageable. While an invasive mollusk is present, it does not appear to be impacting recreation. Bell Pond is an excellent resource for Worcester residents and the Lakes and Ponds Program looks forward to continuing to support its recreational and environmental value.

## ***Ongoing Projects and Plan for 2025***

### ***Water Quality Monitoring***

In 2025, the Lakes and Ponds Program will continue to monitor Bell Pond to ensure that it maintains high water quality. L&P will also continue to monitor the invasive plant *Phragmites australis* to guide management efforts. The WCMC will continue to monitor Bell Pond for cyanobacteria. In addition to collecting phycocyanin and cyanobacteria density data, the WCMC will continue to develop its methods of evaluating toxin exposure risk.

## Lake Management

**Goose Fencing.** In 2021, L&P began implementing a goose fencing pilot project that aimed to reduce the number of beach closures by humanely keeping geese away from the beach. Geese usually enter the beach from the water and are uncomfortable when there are barriers between the beach and the water as the water is their escape route from land predators. However, Canada geese are intelligent and quickly learn to ignore or avoid many types of deterrents. L&P plans to pilot additional management strategies in 2025. L&P has worked with lifeguards at City beaches to pilot different fencing methods since 2021 with varied results due to fence design, lifeguard availability, and quick acclimation of geese to the varied approaches (see Figure 10). In 2025, L&P will continue to refine the approach to deterring geese from City beaches to reduce the risk of beach closures due to fecal bacteria exceedances.

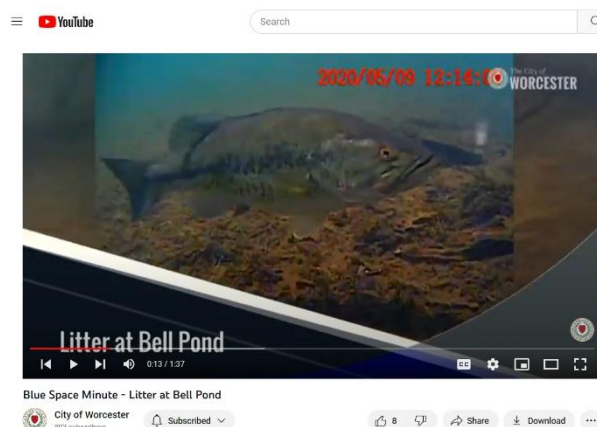


**Figure 10** – New goose fencing materials used in 2024 were implemented by staff more easily but were not as effective at reducing the amount goose droppings on City beaches.

**Invasive Aquatic Plants.** Following the identification of the invasive plant *Phragmites australis* around the perimeter of Bell Pond, L&P will begin the permitting process required for management activities to control the spread of the plant. In response to increased community interest in non-chemical management approaches, L&P will seek to remove *Phragmites* from Bell Pond using volunteer efforts in 2025. If hand removal is unsuccessful, an herbicide application may become necessary.

## Education and Outreach

**Text Message Alert System.** In 2023, the Lakes and Ponds Program launched a text message alert system allowing residents to sign up to receive up to date information on lake access to guide upcoming visits. Text messages will alert residents when a beach is closed for fecal bacteria exceedances, or if a boat ramp is closed because a lake is receiving an invasive aquatic plant treatment. Especially since many lake goers use public transportation to access waterbodies, L&P aims to provide a resource that can help guide plans before people begin travel. The Lakes and Ponds



**Figure 11**– The “Blue Space Minute” debuted an episode on Litter in 2022 on the City of Worcester YouTube Channel.

Program will continue to work with Inspectional Services and the Parks Department to establish a flow of information to keep the system up to date.

*Litter.* Inappropriately disposed waste is harmful to the ecological, aesthetic, and recreational value of lakes and ponds (see Figure 11). In 2024, DSR began work on a Zero Waste Master Plan that will provide a comprehensive strategy for understanding and mitigating the impact of waste in our community. Lakes and Ponds Program will collaborate with DSR staff on ways to reduce impact of waste and litter in our lakes and ponds.

To learn more about Lakes and Ponds Program offerings, please see [WorcesterMA.gov/bluespace](https://WorcesterMA.gov/bluespace).

Appendix: Depth Profiles

