November 2023

Walker Pond Improvements

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Internal Pond Treatment

"All water has a perfect memory and is forever trying to get back to where it was." ~ Toni Morrison

The Internal Pond Treatment phase marks the last category of the Walker Pond Improvement Project to be initiated. Maintaining the pond's water quality and managing vegetation is crucial for the overall health of its ecosystem, and includes addressing water chemistry, excessive plant growth, and invasive species.

Ponds, being intricate ecosystems, demand a delicate equilibrium of nutrients and aquatic life for their well-being. An excess of nutrients and unchecked plant growth can disrupt this balance, resulting in overgrowth and compromised water quality. Effective pond management hinges on maintaining optimal water quality, as subpar conditions can lead to common issues like algal blooms, rampant plant growth, unpleasant odors, and the demise of fish.

The key steps in this phase encompass:

- Evaluating and analyzing the current water quality and vegetation.
- Formulating a comprehensive treatment plan to address any existing water quality issues.
- Controlling vegetation found at nuisance densities and eliminating invasive species.
- Establishing a sustainable treatment and maintenance regimen to ensure continual, safe, and balanced water quality and healthy aquatic life.

The ongoing improvement of Walker Pond's water quality is a commitment to preserving this valuable resource for the local community and the environment. Additionally, within this phase, efforts are underway to address the outlet structure, which requires replacement and has been temporarily reinforced while assessment and final design is developed.

Survey and Sampling

The accumulation of phosphorus over the course of time from the surrounding watershed has resulted in elevated levels of nutrients in the water and sediment of Walker Pond, leading to excessive plant growth and low dissolved oxygen creating an unhealthy imbalance in water quality. The ultimate objective of this phase is to treat the imbalance and encourage improved water quality to promote the pond's overall well-being. This involves comprehensive evaluations and practices encompassing both internal (in pond) and external (watershed) management.

Although watershed-based management strategies have been initiated, such as the extension of the Walker Lane Sewer and the installation of a vegetated filter strip with a subsurface infiltration system, relying solely on these practices is insufficient to remediate excessive nutrient loads which currently exist within the Pond. The initial step towards remediation is to document and assess the current water quality conditions in Walker Pond by conducting visual surveys, water quality, and sediment sampling. These initial sampling efforts were completed in summer and fall 2023. The collected data will be analyzed and build upon the 2017 findings, providing a more comprehensive understanding of internal pond issues such as dense vegetation, elevated nutrient levels in water and sediment near pond inlets, and diminished dissolved oxygen levels. This information will facilitate the development of a five-year Pond Management Plan, guiding ongoing maintenance activities to ensure sustained healthy water quality levels.

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Pond Management Plan

Ponds play a vital role as a resource for wildlife, offering a significant habitat for various creatures like birds, fish, frogs, and turtles. This dynamic ecosystem not only benefits the natural world but also contributes to human life by mitigating nutrient levels and serving as a recreational space, thereby influencing community well-being and property values.

The natural course of pond systems involves the accumulation of organic matter from plant decomposition, animal waste, and sediment deposition. Human activities, particularly driven by population growth, expedite this natural process. In Walker Pond this has led to accelerated degradation of Walker Pond's water quality and associated habitats. Effective management is imperative to restore this valuable natural resource.

A comprehensive five-year Pond Management Plan is currently in the works, incorporating specific actions derived from the results of sampling and surveys conducted this summer and fall. This plan will serve as a guide for management decisions, aiming to swiftly restore vegetation and water quality in the pond while aligning with the long-term efforts of external watershed management to maintain a natural balance. The sampling outcomes and their impact on management decisions will be presented to the conservation commission this winter for commentary and approval.

Recognizing the continued importance of external watershed management, the Town remains committed to implementing stormwater treatment projects in the broader watershed and ensuring the sustained success of this plan. Furthermore, active participation from residents and the Walker Pond Watershed Association in enhancing conditions on private properties is essential to reduce the potential for stormwater pollutant loading, thus ensuring the success of both short-term and long-term efforts in maintaining sustainable nutrient levels.

Outlet Control Structure

Walker Pond is a man-made pond with an outlet control structure where a stream used to exist and is now culverted under Central Avenue and through the Oxbow Road neighborhood. The main purpose of the outlet structure at Walker Pond is to control the pond elevation. The stop logs system currently in use has deteriorated and is no longer functioning necessitating a replacement of the structure.

The planned replacement outlet structure is being designed for the following:

- Maintain desired pond elevation and provide ability for the Town to modify the elevation if needed for pond management
- Maintain discharge flow so not to exceed the capacity of existing downstream system and provide capability to pass the 100-yr storm
- Public safety improvements
- Ability to perform water quality sampling
- Longevity, operations and maintenance ease, safety