



CITY OF CONCORD

REPORT TO THE MAYOR AND CITY COUNCIL

FROM: David Gill, Parks and Recreation Director
DATE: July 28, 2026
SUBJECT: White Park Pond Restoration Update

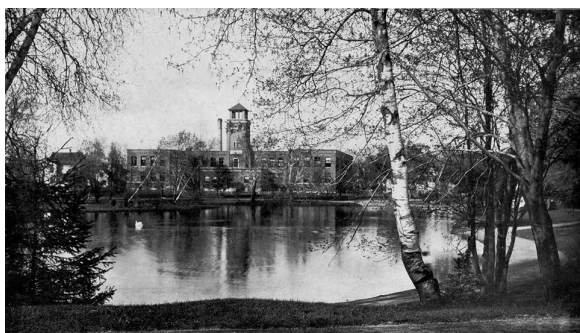
Recommendation:

Review and accept this report

Discussion

White Park was conveyed to the City by Armenia White in 1884, in memory of her husband Nathaniel. Mr. White, a founder of The American Express Company, was a prominent businessman, legislator, and philanthropist. The White Park Pond has been a fixture at the park since the parks beginning in the late 1800's. In 1895 the city started to maintain the pond during the winter months for public ice skating. The water in the pond was even used as a drinking source however in 1910 analysis of the water was made by the state chemist and proved to be unfit for drinking, so its use as a drinking source was discontinued.

The last time the pond was renovated was between 1984 and 1986. The pond was filled with sand and gravel under a "White Park Pond Cleaning Contract." This project reduced the depth of the pond from an estimated 10 feet to around 3-4 feet on average. The northwestern corner of the pond was not filled with sand and gravel due to softer sediments which impeded equipment at the time. The cost of the project was funded by donations from the Concord Women's Club and a Land and Water Conservation Grant.



The first picture of White Park Pond was 1899, second picture is from 1897

In the FY22 CIP#51 budget, there was \$210,000 approved to dredge and clean up the west end of the pond that was not previously dredged in the mid 1980's and removal of the sediment on bottom of pond. Dredging was scheduled to remove approximately 4 feet of material on western end of the pond.

However, with the explosion of the Lotus plant we needed to step back from the original goal and look at an overall pond restoration project, one that looks at the immediate need to remove the Lotus plant, as well as the dredging of the area that was not completed in the 1980's and improving the overall water quality of the pond.

The Lotus is the primary plant genus of concern within the pond at this time. There are two species of water Lotus known to exist in North America. Nelumbo American and Nelumbo Asian are native to the southeast United States, Central America, and the Caribbean. Both are not native to New England States and in Connecticut is listed as potentially invasive and prohibited under Connecticut General Statute. Neither species are currently listed by NHDES as an exotic aquatic species in New Hampshire. Due to the invasive growth habit of both species, the pond is at risk to become overgrown with Lotus if left uncontrolled.

A lone plant with large flower was first seen in 2018 and as of July 2022 the newly identified Lotus Plant had spread to cover approximately 50% of the pond's surface area. The Lotus plant is invasive in NH and to the White Park Pond and if untreated would have taken over the pond in a couple of years. Although we do not know for sure we assume the Lotus plant, like the Koi fish in the pond was placed there by someone.



In the late fall of 2021 (FY22), we hired Solitude Lake Management to perform a mechanical harvest and remove the Lotus plant. This cutting took place in December 2021 and did not kill the plant, only removed the plant material to ensure there was the ability to have safe ice during the winter months. If we did not harvest the plant prior to winter the stems of the plant would allow weak ice to form and may have prevented us from maintaining the pond for winter ice skating.



Controlling the spread of Lotus is not only necessary for the ecological health of native species and habitats within White Park Pond but is also an urgent concern for potential spread to other water bodies in New Hampshire and throughout New England. Every state in New England has at least one group within a public agency dedicated to the identification, prevention, and control of nonnative and invasive species. Eradicating the Lotus from White Park Pond should be considered a priority of regional importance. To date, the New Hampshire Department of Environmental Services (NHDES) has not listed Lotus as an invasive species which is present within the state.

Water Quality and Sediment Depth

Water quality in White Park Pond has not been continuously monitored. On April 22, 2022, VHB and DK Water Resource Company (DKWRC) collected water quality samples from the pond surface and from the northern inlet, which serves as the outlet of a storm drain. Total phosphorus concentrations were reported as 31.8 ppb ($\mu\text{g/L}$) in the center of the pond and 54.8 ppb ($\mu\text{g/L}$) at the northern inlet. The in-pond phosphorus concentration is more than sufficient to support a large biomass of rooted aquatic plants and algal growth.

Sediment depth throughout much of the pond was found to be minimal, with the exception of the northwest corner. Sediment depth was estimated by inserting steel rods into the substrate until refusal. The northwest corner of the pond contained approximately five feet of sediment, while the remainder of the pond averaged less than six inches, with depths ranging from zero to 18 inches at various locations.

An aerial overlay of the pond is shown in Figure 1. Table 1 presents sediment depth data collected by VHB and DKWRC in April 2022, with station numbers corresponding to the identified sampling locations.

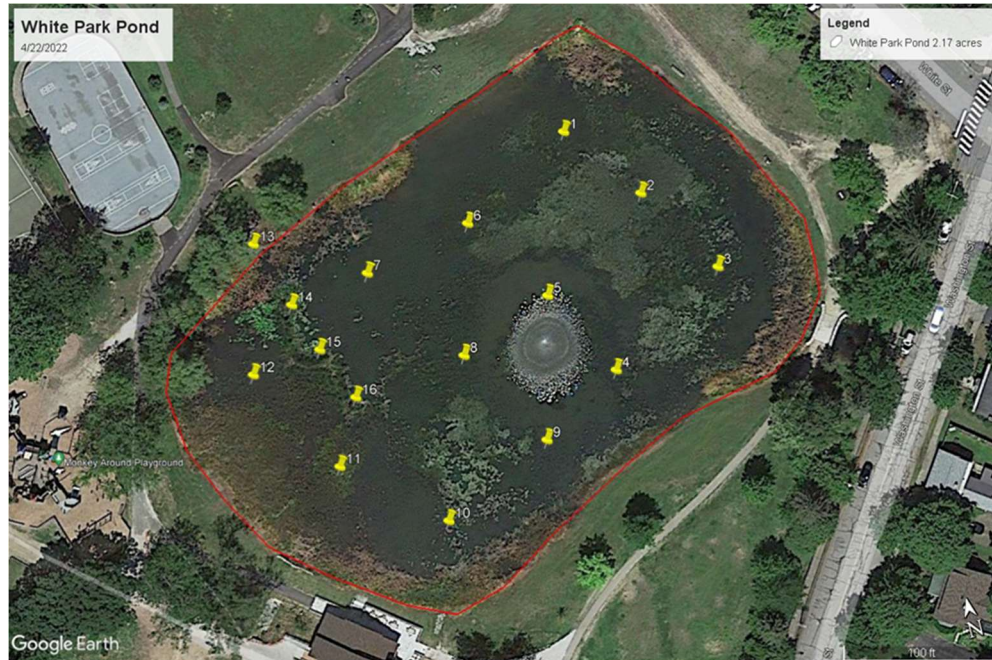


Table 1 Sediment Depth Field Data
April 2022

Station	Water Depth (ft-in)	Sediment Depth (ft-in)
1	3' 3"	0' 2"
2	3' 3"	0' 6"
3	3' 11"	0' 8"
4	3' 3"	0' 0"
5	3' 3"	0' 0"
6	3' 3"	1' 0"
7	3' 7"	1' 6"
8	3' 3"	0' 10"
9	3' 7"	0' 3"
10	3' 3"	0' 3"
11	1' 8"	0' 1"
12	1' 4"	0' 4"
13*	-	-
14	1' 4"	5' 0"
15	3' 0"	5' 0"
16	3' 3"	5' 0"

* Note: Only water quality data collected at station 13 from stormwater inlet

Pond Management (2022–2025)

Over the past four years (2022–2025), pond management efforts have focused on mechanical harvesting to limit further establishment and spread of Sacred Lotus. Mechanical harvesting was conducted annually in mid-summer to prevent seed formation and again in October. Harvesting is performed using a sickle-bar cutter and conveyor system mounted on a floating barge.

While mechanical harvesting does not eradicate the Lotus, it has provided short-term control and limited expansion. Over the four-year period, a reduction in both the size and number of lotus plants within the pond has been observed.



In collaboration with VHB, DK Water Resource Company, and the State of New Hampshire, a full dry dredge was identified as the most effective long-term restoration strategy for White Park Pond. However, due to the significant cost of a full dredge, staff requested additional time at the June 2026 City Council meeting to work with the State of New Hampshire to determine whether the City's existing permit could be amended to allow hydro-raking as an alternative restoration method.

As of July 2026, the State of New Hampshire reviewed our request and updated our permit to allow hydro raking of the White Park Pond.

The objectives of the pond restoration remain unchanged: Improve water quality, remove Sacred Lotus roots, rhizomes, seeds, remove sediments and remove some of the material and plants on the western edge of the pond.

Hydro-Raking

Hydro-raking is a proven restoration method originally developed to mechanically remove invasive aquatic vegetation, including the root systems, while also removing accumulated organic sediment, debris, and leaf litter. The process helps restore water quality, improve water depth, and maintain water flow with minimal disturbance to aquatic life.

Unlike a dry dredge, hydro-raking is performed with the pond full of water. A small excavator mounted on a floating barge removes sediment and vegetation from the pond bottom. The excavated material is placed along the shoreline, where it is allowed to dewater before being transported off site for disposal.

Hydro-raking is particularly well suited for smaller ponds with water depths of less than 10 feet, making it an appropriate option for White Park Pond.

Advantages of Hydro-Raking

Compared to a full dry dredge, hydro-raking offers several benefits:

- Lower overall project cost.
- Reduced equipment mobilization.
- Less disturbance to the surrounding park and adjacent areas.
- Shorter dewatering period for excavated material.
- Reduced impacts to aquatic habitat while effectively removing invasive vegetation and accumulated sediment.

Project Budget and Schedule

The FY27 Capital Improvement Program includes \$200,000 in CIP 51 – White Park Pond Restoration for this project, contingent upon staff reporting back to the City Council regarding the State's response to the permit amendment request. The approved FY27 funding is sufficient to complete the hydro-raking project.

If authorization is granted at the August 2026 City Council meeting, work is anticipated to begin in mid-September and be completed by the end of October 2026.

Approximately 1,200 cubic yards ($\pm$) of sediment and vegetation are expected to be removed. The excavated material will be stockpiled within the park to allow it to dewater before being trucked off site for disposal.

Recommendation

Staff recommends proceeding with the hydro-raking of White Park Pond.