WATER & WETLAND
LAKE, POND & WETLAND MANAGEMENT

October 23, 2025

Town of Mendon – Conservation Commission
20 Main Street
Mendon, MA 01756
Sent via email: concom@mendonma.gov

Re: Lake Nipmuc, Mendon, MA – 2025 Year End Report – DEP File #218-0867

Dear Commission Members:

It is our pleasure to present the 2025-year end summary report to the Town of Mendon regarding the aquatic management program at Lake Nipmuc (pictured in Figure 1 to the right). Lake Nipmuc is approximately 85 surface acres and is located in Mendon, MA (adjacent to Route 16, Uxbridge Road). The lake is primarily bordered by small woodlands mixed in with residential houses along each shoreline. The majority of the shoreline has a natural buffer. Water and Wetland used a small, private boat launch at the intersection of Uxbridge Road and Old Taft Avenue to launch the boat for each site visit.

Figure 1: Lake Nipmuc - Mendon, MA

Historically, Lake Nipmuc has battled invasive species variable milfoil *(Myriophyllum heterophyllum)* and purple loosestrife (*Lythrum salicaria),* in addition to nuisance densities of native pondweeds and filamentous algae. The goal of the 2025 program at Lake Nipmuc was to manage the variable milfoil, bushy pondweed *(Najas flexilis)*, and filamentous algae while monitoring basic water quality data.

During each visit to the lake, a survey was conducted using visual observation paired with a standard throw-rake and handheld GPS/ArcGIS Field Maps, as applicable. Additionally, dissolved oxygen (DO) and temperature readings were collected throughout the season using a calibrated YSI meter with optical sensor. Dissolved oxygen is the amount of oxygen in water that is available to aquatic organisms. DO is necessary to support fish spawning, growth, and activity. Tolerance varies by species, but the figure shown provides a general range of fish tolerance (Source: epa.gov). Dissolved oxygen can be affected by many outside factors, such as: temperature, time of day, and pollution. Dissolved oxygen levels are typically lowest early in the morning. Healthy water should generally have concentrations of about 6.5-8+ mg/L (see Figure 2). Water clarity was also assessed using a Secchi

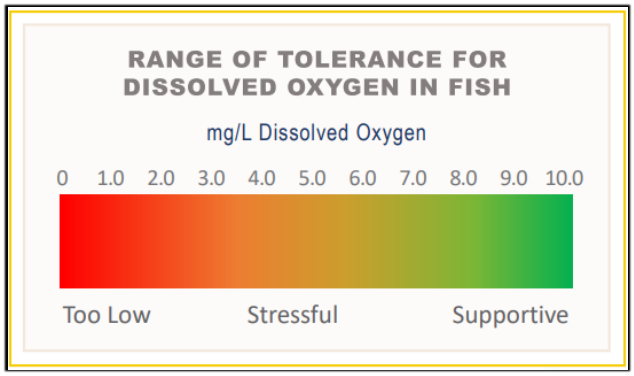

Figure 2: Dissolved Oxygen Table

disk when appropriate. A Secchi disk is a disk with alternating black and white quadrants. It is lowered into the water of a pond or Lake until it can no longer be seen by the observer. This depth of disappearance, called the Secchi depth, is a measurement of the transparency of the water. All readings are included in the tables throughout this report.

Permitting and tasks were slightly delayed due to issues regarding the permit. The table below provides the specific dates of each task. Below the table, each visit/task performed is described in additional detail.

Summary Of 2025 Management Activities

Date	Task/Description
August 7, 2025	Interim inspection completed to confirm potential treatment areas; An herbicide treatment was conducted
August 22, 2025	An herbicide treatment was conducted targeting invasive emergent growth
September 25, 2025	Post-treatment inspection conducted to gauge efficacy of previous treatment and to help determine/guide recommendations for 2026 management

August 7, 2025 - Survey / Herbicide Treatment

On August 7th, Field Biologist, Irini Stefanakos, and Aquatic Field Biologist, Jake McNary, made a visit to Lake Nipmuc. The visit consisted of performing a survey and collection of basic water quality data.

Upon arrival to the site, a survey was conducted using visual observation paired with a standard throw-rake and handheld GPS/ArcGIS Field Maps, as applicable. Plants documented during the survey are documented in the table below. (*) denotes an invasive species. Invasive species are non-native to the ecosystem and are likely to cause economic harm, environmental harm, or harm to human health.

Species Identified	
Common Name	**Latin Name**
Variable Milfoil*	*Myriophyllum heterophyllum*
Ribbon-leaf Pondweed	*Potamogeton epihydrus*
Tape Grass	*Vallisneria americana*
Filamentous Algae	
Bushy Pondweed	*Najas flexilis*
Water Chestnut*	*Trapa natans*

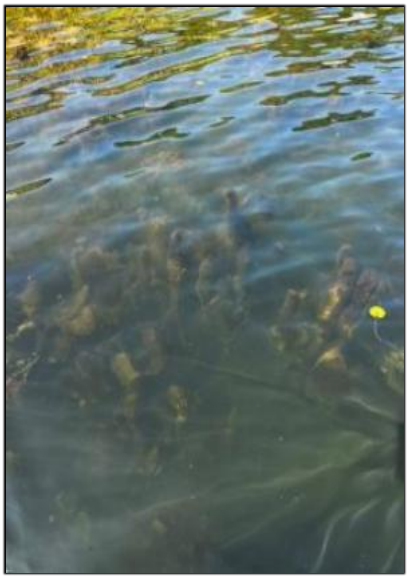

Figure 3: Variable milfoil prior to treatment during August 7th visit

The purpose of this visit to Lake Nipmuc was to complete an herbicide treatment for the curbing of any prevailing variable milfoil within the waterbody. A brief survey and the collection of basic water quality data were also carried out. The target areas for this treatment were the northern, northwestern, and southwestern coves where pondweed densities were at their highest. Overall, the treatment was conducted successfully, and excellent coverage was achieved via jon boat within the target areas listed above. Scarce densities of water

chestnut (*Trapa natans)* were also found in the southwest cove which were promptly removed via hand pulling. During our visit, water clarity was excellent and dissolved oxygen readings maintained healthy levels. Aside from the pondweeds, the site appeared to be in great condition.

Water Quality Data		
Surface Temp (°C)	**Surface DO (mg/L)**	**Secchi Disk Depth (ft)**
27.3	9.35	7'4"

Figure 4: Purple loosestrife plants during the August 22nd visit

August 22, 2025 - Survey / Foliar Herbicide Treatment

On August 22nd, Aquatic Field Biologist, Jake McNary, made a visit to Lake Nipmuc. The visit consisted of performing a survey, collection of basic water quality data, and completing a treatment.

Upon arrival to the site, a survey was conducted using visual observation paired with a standard throw-rake and handheld GPS/ArcGIS Field Maps, as applicable. Plants documented during the survey are documented in the table below:

Species Identified	
Common Name	**Latin Name**
Purple Loosestrife*	*Lythrum salicaria*

This site visit consisted of a survey of the shoreline and a purple loosestrife treatment. The survey was conducted in order to assess the extent of the purple loosestrife population and to determine treatment areas. The purple loosestrife was most dense around the northern cove and on the peninsula. There were also scattered patches of purple loosestrife along the entire shoreline that were treated when observed. Some plants were hand pulled if easily accessible. The prior treatment for pondweed growth appeared to have been effective as the pondweed densities were lower or eliminated in the target areas. Water clarity was good and dissolved oxygen readings maintained healthy levels. Overall, the visit went well, and the treatment was successful at targeting purple loosestrife. The liquid contact herbicide was applied using a treatment boat and a low volume backpack sprayer. This application methodology allows for even coverage within the treatment areas and the ability to be selective in targeting the purple loosestrife.

Water Quality Data	
Surface Temp (°C)	**Surface DO (mg/L)**
22.5	7.23

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September 24, 2025 - Post-Treatment Survey

On September 24th, Aquatic Field Biologist, Jake McNary, and Field Biologist, Irini Stefanakos, made a visit to Lake Nipmuc. The visit consisted of a post-treatment survey and collection of basic water quality data.

Upon arrival to the site, a survey was conducted using visual observation paired with a standard throw-rake and handheld GPS/ArcGIS Field Maps, as applicable. Plants documented during the survey are documented in the table below.

Species Identified	
Common Name	**Latin Name**
Waterlilies	*Nymphaeaceae*
Tape Grass	*Vallisneria americana*
Variable Milfoil*	*Myriophyllum heterophyllum*
Watershield	*Brasenia schreberi*
Bladderwort	*Utricularia*
Microscopic Algae	
Spiny Naiad*	*Najas marina*
Bushy Pondweed	*Najas flexilis*
Purple Loosestrife*	*Lythrum salicaria*

Figure 5: Water and Wetland conducting a post-treatment survey

The visit consisted of a post-treatment survey and the collection of basic water quality data. Water levels were lower than normal at the time of the visit. Bushy pondweed and tape grass (*Vallisneria americana)* were observed in the northeastern cove, along the western shoreline, and in portions of the eastern shoreline; however, populations remained below nuisance densities. Purple loosestrife along the shoreline was dead, consistent with effective prior treatment. Scattered patches of waterlilies (*Nymphaeaceae)* were noted around the shoreline, with watershield (*Brasenia schreberi)* present in the southeastern cove. A few bladderwort (*Utricularia sp.)* fragments were documented in the southwestern end of the pond. Spiny naiad (*Najas marina)* fragments were observed floating along the eastern shoreline, with rooted plants present in the southeastern cove. Small patches of variable milfoil regrowth were also observed at the southern end of the pond. A microscopic algae bloom was evident across much of the southern half of the pond, characterized by a green tint and fine particulate material in the water column. Overall, treatments conducted earlier in the season targeting variable milfoil, bushy pondweed, and purple loosestrife were effective, with significantly reduced densities of these species observed during the survey.

Water Quality Data		
Surface Temp (°C)	**Surface DO (mg/L)**	**Secchi Disk Depth (ft)**
20.9	8.05	9’4”

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Summary / 2026 Recommendations

The 2025 management program at Lake Nipmuc was completed successfully and achieved its primary objectives. The program focused on the continued control of variable milfoil, bushy pondweed, and purple loosestrife. Two herbicide treatments were conducted in August targeting submersed vegetation and emergent shoreline growth, both of which were highly effective. By the September post-treatment survey, densities *of* milfoil, bushy pondweed, and purple loosestrife had declined substantially, and water clarity and dissolved oxygen remained excellent across all sampling points.

Looking ahead to 2026, we recommend maintaining a proactive, monitoring-based management program supported by early-season surveys to guide herbicide timing and treatment coverage. Diquat remains the preferred herbicide for controlling both variable milfoil, bushy pondweed, and/or spiny naiad, given its proven effectiveness and cost efficiency. Since diquat provides only seasonal control, an early-summer application should again be performed to maintain open-water conditions and reduce biomass buildup.

If more persistent or widespread variable milfoil growth is observed, the use of *ProcellaCOR* (florpyrauxifen-benzyl) may be reconsidered as a supplemental tool to achieve multi-year control. However, because this product has limited efficacy on bushy pondweed or spiny naiad, diquat will continue to serve as the primary treatment option.

We also recommend ongoing shoreline monitoring and selective treatment of purple loosestrife to prevent recolonization. Native waterlilies should continue to be observed but do not currently require management intervention. Continued collection of basic water quality data during site visits will remain valuable for tracking long-term ecological trends.

The 2025 program demonstrated continued improvement in vegetation balance and habitat quality within Lake Nipmuc. With consistent annual monitoring, targeted treatment, and collaboration among Water & Wetland, the Lake Nipmuc Association, and the Mendon Conservation Commission, these positive results will be sustained and expanded in the coming years. We greatly appreciate the opportunity to continue this partnership and look forward to another successful season in 2026 and beyond.

Sincerely,

Colin Gosselin
Director of Operations
Senior Aquatic Biologist
c: 508-259-3153
o: 888-4WETLAN(D)
colin@waterandwetland.com - www.waterandwetland.com