

Bare Hill Pond Watershed Management Committee
Town of Harvard
Harvard, MA 01451

July 29, 2009

Conservation Commission
Town of Harvard
Town Hall
Harvard, MA 01451

Re: Proposed Fall 2009 Drawdown and 2009 Report

Dear Commissioners:

On behalf of the Bare Hill Pond Watershed Management Committee, we are submitting our annual report under our 3 year 2008 Notice of Intent.

Last year, we took a year off from a deep pumped draw down in accordance with the recommendations of the GEIR and our 2002 ENSR Report on conducting drawdowns. The theory is that continuous deep draw downs could result in the establishment of a population of drawdown resistant species and that taking a year off periodically or documenting an ineffective drawdown year (due to a lack of a freeze or excessive rainfall) would maintain competition between drawdown responsive species and resistant species.

In our 2008 report, we reported continued improvement in the reduction of invasive species following a drawdown of 5-5.5 feet. Although we continue to see an increase in the diversity of the plant life in the pond, the gravity drawdown last winter no or little effect outside the 3.5 foot drawdown zone. As a result invasive species of milfoil and fanwort have increased in the 3.5- 6 foot zones during the past year. This was noticed at the Beach, in particular, and in certain other locations in the Pond, although not in all locations. Notably, the shallower areas between the beach and the dam and behind Minister's Island continued to remain under control. They were heavily infested with milfoil 5 years ago and now are populated mostly by native water lilies and bottom growing plants. Like last year, although with a bit more prevalence, milfoil and fanwort can still be found in scattered, but dense stands in the 5-7 foot zones around the pond but not in continuous growth around the Pond.

In the Clapps Brook Area in particular, the shoreline phragmites have become a dominant species again along the shore with native grasses and water lilies. General consensus is that invasive species have increased in the last year, and we believe this is due to taking a year off.

Our proposal will be to proceed this fall with a gravity drawdown of up to 6 feet. This increases incrementally the deep pumped drawdown of 2 years ago. Like 2 years ago, we propose proceeding to the 4 foot level and holding at 4 feet prior to October 30 at the request, and for the purpose of allowing for safe use of the Pond by the crew team. In the past we held it

at 4 feet until October 24, but the state meet is now the last weekend in October. We then propose to resume pumping to the five foot level and holding to allow for an examination of the shoreline mussel populations. With 5 feet of water removed, we can then examine the mussel population in the 5-7 foot zone. If the mussel population is evident beyond the 6 foot depth, we would then resume pumping to the earlier to occur of 6 feet, the first freeze, or November 24. This allows us enough time at 1" per day to reach 6 feet, if possible. We will notify the Conservation Commission of the findings of our examination of the mussel beds prior to resuming pumping beyond 5 feet.

Our observation of the invasive species growth patterns suggest that it would benefit the continued decline of invasive species and restoration of native species by proceeding to 6 feet. At the same time, we do not wish to go beyond 5 feet without assuring ourselves that the mussel population continues to thrive. Publications concerning water height change suggest that mussels that are not trapped by rock formations will move with the water as it recedes, but we would like to satisfy ourselves that this is in fact occurring.

Independent of the drawdown, harvesting and handpulling (coupled with a surface fence have even further reduced the level of waterchestnuts in Clapps Brook. This year, Rick Dickson had to harvest approximately 14.5 loads as compared to harvesting 60 loads last year. This is a very impressive reduction in biomass. Last year the density was very high and this year, the density was significantly reduced although plants were still prevalent throughout the inner Clapps Brook area. Rick, with help from volunteers, again harvested all of the waterchestnuts from the harvestable area and the final waterchestnut pull will concentrate on strays that have grown close to shore. We are optimistic we will observe a similar 75% reduction next year and that we may succeed in removing them from the Pond altogether in the next 2 years with significantly less effort being required.

Coupled with the drawdown, significant re-emergence of grasses and reed type plants along the shoreline continues to occur. In other respects, this year's monitoring results are consistent with our observations over the past and continue to support the efficacy of utilizing drawdowns.

We have also continued our volunteer wildlife monitoring efforts. I have conducted turtle counts this year and the results, like last year were not meaningful or comparable to prior years. As noted last year, I generally see only several turtles in an hour rather than 40-50 in the Clapps Brook shoreline area. I am now convinced that the poor count is the result of the method adopted for the count a few years ago. The method was to count turtles along the shoreline (mostly sunning on logs and rocks) in a one hour period. With the re-emergence of the significant growth of shoreline grasses and cat tails and the restoration of the lily pads in those areas, sunning locations are no longer visible from a canoe or kayak. Last year, Rick Dickson says he was regularly removing (without harm) turtles from the conveyor on the harvester. This year he says he typically removes 4 to 5 turtles per harvester load which he says is similar to his experience last year. This suggests that we are not seeing a change in population. We probably should switch to this protocol for year to year comparisons. I continue to regularly see water

snakes (a rather large one is always on the dam on sunny days when I check the water level) and this year continue to see juveniles in June on the way from their nests to the Pond.

We also continued to take secci disk readings to evaluate turbidity. The results are consistent with last year ranging from 5.5 feet on windy days or days with high boating activity to 6.0 feet early in the morning when there is light wind and traffic on the pond. On several mornings there was 6.5 feet which is more than in prior years

Beaver activity was significant in the downstream wetlands this Spring causing flooding near route 110 as well as on the Pond itself which evidence of tree cutting. Fox activity continues to be active in the early morning hours.

Frog counts continued this year under the leadership of Jeff Ritter. Spring peepers, wood frogs, pickerel frogs and other species were heard and the counts were higher than last year. A copy of his report is attached.

The Park and Recreation Commission gave 3 fishing derbies permits this year and there results were all positive. The fishing clubs report that the fishing in Bare Hill Pond is excellent.

I planned to take the 100' segment photos the first week of December this year, having been away during Thanksgiving weekend. Unfortunately, the Pond froze and I was not able to get out on the water, nor did the ice freeze enough until there was snow cover. As a result, we do not have 100' photos to submit for the 2008-09 year. My general observations are that the shorelines continue to have less silt and more exposed rocks and that the 100" photos have not revealed any significant changes. We plan to take the photos again this year, as in the past.

Taking this into account, we propose the following plan for the Fall 2008 gravity drawdown to be conducted under the terms of the Order of Conditions to be issued:

1. Initiate the gravity drawdown the week of September 21, limit the drawdown to 4.0 feet until October 24, resume pumping and then stop at 5.0 feet for a mussel population review, and then if acceptable, resume pumping to 6.0 feet prior to the first freeze or November 20, at all times at a rate not to exceed 2" per day per the Order of Conditions. Per the Order of Conditions, stop the drawdown process prior to the first freeze. Prior experience indicates that this will occur well before the first freeze.
2. Initiate the Refill on or before February 1, 2010. Our objective is to bring the Pond to the level of the gravity drawdown on or before the date we have historically initiated the gravity drawdown refill. The prior to deep draw downs both had more than sufficient time to refill when started at this time. The water table is unusually high this year due to the level of rain so that should also mitigate any refill concerns.

Conservation Commission

July 29, 2009

Page - 4 -

We appreciate the time the Commission has take, and the effort made to understand, and help manage the project. We will schedule a meeting in August to review our proposal.

Sincerely,

A handwritten signature in blue ink, appearing to read "B. Leicher".

Bruce A. Leicher

Chair, Bare Hill Pond Watershed Management Committee

Cc: Conservation Commission Members
Pond Committee Members
Selectmen

2008-2009 Drawdown Data

The drawdown and the refill were measured weekly from the top surface of the dam to the surface of the water to measure the rate of decline or rise in water level. The following table shows the data collected:

Date	Distance from top surface of dam
9/21	26" (low starting point – normal is 20-22")
9/21	26" Initiate Drawdown
9/27	32"
10/3	40"
10/12	50"
10/18	54"
10/25	56"
11/1	58-60" through 1/31
1/31	58" 18" snowpack in watershed
2/1	58" add boards
2/7	59" snow and cold all week
2/13	55" Melt on 2/8 and 2/9 then cold
2/22	48" some rain and more melt
2/28	45" no rain some melt
3/7	39" cold then some melt Thursday and Friday
3/14	31" no rain – high 30s and low 40s
3/21	26" some rain
3/28	23" Normal Height
4/4	19" High normal for Spring

Summary of 2008 Bare Hill Pond Watershed Amphibian Monitoring Program

Amphibian Counts for 2009

Two amphibian counts were conducted in 2009, on April 1st and May 4th. On April 1st, under light rain, four people surveyed four locations around Bare Hill Pond between 7:40 pm and 8:45 pm. The evening offered ideal weather conditions (43 degrees air temperature, light west wind) for early amphibians to engage in spring mating behavior. The only noticeable sounds were Spring Peepers in moderate to full chorus, most likely due to the early spring date. Two people commented that they have also heard large numbers of Wood Frogs in the vernal pools on their property or around the Town, indicating that the ecology of our small landlocked pools is healthy, and that vernal pools provide critical biological resources for this important species.

On May 4th five people in two groups (under 62 degree calm air) surveyed five locations, and heard light peeper activity and substantial Pickerel activity, even up to moderate Pickerel chorusing. This noticeable up tick in Pickerel activity is a positive sign. The diversity of species in the watershed ecosystem has improved, when compared to years past, where Pickerel activity was often minimal or non-existent. In addition to substantial Pickerel activity, lesser choruses of peepers also occurred, typical of the tapering off of early seasonal activity.

In general, we are able conclude that the number of and variety of frogs in the Bare Hill Pond watershed over the past three years is both stable and improving, showing the beginning signs of genuine biosphere improvement. There is still an absence of activity by American toads, a native species not yet abundant in Bare Hill Pond. And Bullfrogs will be counted later in the season, typically in August, when the hot days of summer cause their activity to peak. This year June and July have had lower temperatures.