**Friends of Leverett Pond**

**c/o Mitchell T. Mulholland**

**35 Cider Mill Road, PO Box 209**

**Leverett, MA 01054**

**Home 413-548-9161, cell: 413-531-2730**

**Email: mulholland@anthro.umass.edu**

 April 20, 2022

### Mr. Adam Kohl

### Administrator

### Leverett Conservation Commission

PO Box 300, 9 Montague Road

Leverett, MA 01054

**Annual Proposal 2022**

**Friends of Leverett Pond, Inc.**

**Leverett Pond Weed Management Project, Leverett, Massachusetts**

**DEP Permit 200-0196**

**Year #1**

Dear Adam and LCC members,

The Friends of Leverett Pond (FLP), in the spirit of Integrated Pest Management practices (IPM), propose to conduct nuisance aquatic weed management for 2022, as outlined in our Notice of Intent for Wetlands Protection Act Permit 200-0196 and Order of Conditions. This is the first year of the five-year project.

**Summary.** FLP proposes two alternative scenarios that are dependent upon issuance of a Massachusetts Department of Environmental Protection, Division of Waterways Dredging Permit for mechanical management.

1. FLP proposes to conduct harvesting of milfoil using an Eco-Harvester operated by C&D Underwater Maintenance of New Milford, CT. Harvesting will take place within a selected eight-acres of shallow water that has milfoil. *This approach is dependent upon FLP receiving a Division of Waterways Dredging Permit which is being applied for. The application could not be submitted earlier because ice on the pond prohibited acquisition of typical bottom profiles and FLP did not yet have an Order of Conditions which must be attached to the application).*
2. Or as an alternative if Eco-harvesting cannot be done in 2022…. Application of the herbicide *ProcellaCOR* specifically targeting milfoil in the same area. If a DEP Division of Waterways Dredging permit has been issued in time for mechanical use, this will be followed by removal of detritus and any remnant weeds using an Eco-Harvester. If no permit has been issued in a timely manner, follow-up will be in the 2023 season and included in the annual proposal to the Leverett Conservation Commission (LCC) for that year.

Hand‑pulling and raking (possibly SCUBA in some areas if appropriate) is proposed to remove detritus and remaining invasive and nuisance plants near shore.

FLP’s IPM approach includes an herbicide treatment within an eight-acre area to kill and inhibit milfoil weed growth and to reduce the possibility of plant migration; mechanical removal of detritus and roots; benthic barriers; hand raking; and if warranted, SCUBA hand-removal. Prior to the herbicide treatment, 1) FLP will conduct a visual survey of areas to be treated in 2022 as recommended by the LCC in the Order of Conditions (see attached). FLP’s continued survey will provide continuity with surveys conducted by FLP since 2018. 2) FLP also will hire Solitude Lake Management, Inc. (SOL) to conduct a survey of the areas proposed for treatment.

As outlined in the Order of Conditions for DEP Permit 200-0196, all herbicide applications, use of mechanical equipment, and other weed removal techniques on the Pond require the prior annual approval of the LCC before such actions may occur. Use of mechanical equipment on Leverett Pond (categorized as a *Great Pond* by the Commonwealth) also will require a DEP Division of Waterways Dredging Permit. That permit application is being forwarded to the DEP Waterways. Following issuance of the Waterways permit, FLP will hire SOL or C&D to remove roots and detritus from treated areas.

**Proposal for 2022 Weed Management.**

**Approach 1) Eco-Harvester**. This approach is dependent upon a timely issuance of a DEP Division of Waterways Dredging Permit which is being applied for and/or the ability to schedule the service in 2022. The use of an Eco-Harvester as proposed will target areas of both variable and Eurasian milfoil (*Myriophyllum heterophyllum* and *M. spicatum*) in selected shallow areas adjacent to the shore, and in discovered areas of high milfoil growth in shallow water away from shore. The machine will also be able to remove detached “floaters” such as bladderwort and curly-leaf Pondweed. Note that milfoil grows in up to five feet of water and is found in abundance along the shoreline. Milfoil is less abundant in heavy growth of emergent plants such as floating-leaf vegetation. An Eco-Harvester pulls up the roots of plants using a roller system that presses the pond bottom while a “clam-dredge-like” system pulls weeds and roots and compresses them into a hopper. The machine will also be used to cut vegetation like a standard mechanical harvester. The harvester both pulls aquatic vegetation by the root system and skims floating weed fragments, weed mats and algae blooms. The advantage of this machine over other mechanical harvesters is that it is able to remove milfoil with limited spreading of the plant and can pull roots. Once the hopper is full, the Eco-Harvester deposits the weeds on the shore at a planned location (not within a wetland or buffer), or into a provided trailer, and once that is full, conveyed to a dump site.

The Eco-Harvester is owned and operated by C&D Underwater Maintenance of New Milford, CT. The harvester will be inspected by FLP personnel prior to launch to assure the machine is clean and weed-free. The Eco-Harvester is cleaned with water and bleached for 24 hours at the Connecticut facility before being transported to Leverett Pond.

**Alternate Approach #2 – Herbicide Treatment.** If a Waterways Dredging Permit is not received in time to harvest weeds by June or July, or cannot be scheduled in 2022, the FLP proposes as an alternative to apply one herbicide treatment (of *ProcellaCOR*) to target Variable and Eurasian milfoil (*Myriophyllum heterophyllum* and *M. spicatum*) in selected shallow areas adjacent to the shore and in any newly discovered areas of high milfoil growth in the main body of the Pond (e.g. a one-acre area at the north end of the channel from the Public Access. (*Note that milfoil generally grows in up to five feet of depth and is most common along the shore of the Pond or in other areas of shallow water*. *Milfoil is less common in dense growths of floating-leaf vegetation*.) The proposed herbicide treatment will be conducted by Solitude Lake Management, Inc. of Shrewsbury, MA, a contractor licensed by the Commonwealth. Prior to treatment SOL and FLP will apply for a *License to Apply Chemicals for Control of Nuisance Aquatic Vegetation* from the DEP Bureau of Resources Protection (BRP WM 04 permit). A copy of the license will be provided to the LCC prior to treatment.

Provided that milfoil (a cloning plant) is adequately reduced following the herbicide application Eco-Harvesting is planned in selected treated areas. Hand-raking also will remove detritus and remnant milfoil.

Following four to five weeks after the herbicide application and provided that the DEP Division of Waterways Dredging Permit is received, follow-up mechanical treatment using an Eco-Harvester is recommended for any remnants from previous treatments of the invasive weeds curly leaf pondweed (*Potomogeton crispus*) and swollen bladderwort (*Utricularia inflata*) and where possible to reduce detritus. A hydro-take could be substituted for the Eco-Harvester if scheduling is not possible. The Eco-Harvester is the preferred tool. If the Waterways Dredging Permit is not received in time, follow-up will be conducted in the 2023 season and will be included in the 2023 proposal to the LCC.

As presently planned, Eco-Harvested material will be loaded onto a trailer, will be deposited on farmland nearby, and not within a wetland or wetland buffer. If for any reason the farmland is not available, harvested weeds may be placed temporarily on shore and once dry transported to dumping locations that are not within a wetland or wetland buffer. If a hydro-rake must be substituted for an Eco-Harvester, hydro-raking will remove roots and detritus. The raked materials will be placed on shore to dry as described in the NOI and then removed to an area that is not wetland or wetland buffer. Several hydro-raked piles will be moved by landscaping companies to their “stump dumps” away from the pond. FLP is also researching a commercial composting operation as a deposit location.

Mechanical treatment will focus on removal of detritus, and invasive plants. It should be noted that in some areas nuisance plants not officially categorized as invasives (such as waterweed, large-leaf pondweed, purple bladderwort) may be mixed closely with invasive plants such as milfoil, curly-leaf Pondweed, and swollen bladderwort, but this is not a large-scale occurrence. An example of this is in the pool at the public access where milfoil, curly-leaf Pondweed and waterweed are intertwined, growing thickly and encouraging conditions for algal growth. The weed removal will follow the stipulations in the Order of Conditions (200-0196).

The proposed herbicide to be used is *ProcellaCor* which will be mixed to specifically target milfoil. FLP knows from experience (from a 2019 treatment) that *ProcellaCOR* is very effective in controlling milfoil for up to a three-year period. By the third year, milfoil was beginning regrowth with some areas of emergence from the surface, and by the fourth year milfoil was growing heavily. The herbicide treatment will be conducted by Solitude Lake Management, Inc. (SOL) of Shrewsbury, MA, an applicator licensed by the Commonwealth of Massachusetts. If weather conditions are warm, an algaecide (e.g., copper sulfate) will be added to the treatment to avoid algal growth that could follow the demise of the milfoil.

The timing of herbicide application will coincide with the peak growth of milfoil in May through July (with a preferable application in June or July). SOL has noted that for milfoil, the peak growth period is the most effective time to apply the herbicide to achieve maximum weed control. That peak corresponds with June and July. Because the shallow area of the Pond is immediately adjacent to the deeper areas where only a trace of milfoil remains, the slight down-slope drift from the near shore areas into this zone is beneficial in controlling any remnant plants in those areas.

*ProcellaCOR* dosage will be mixed to target milfoil and not other plant species. Following the 2019 treatment with *ProcellaCOR* that targeted milfoil, the only other species temporarily affected was watershield (*Brasenia*) and this weed regrew within about four weeks. Leaves of watershield were discolored up to about 15 feet from the area of treatment. Watershield (*Brasenia*) while not listed yet as an invasive plant in Massachusetts, has monoculturistic growth behavior, grows like an invasive, and is considered a nuisance plant in other states and by the U.S. Forest Service. Watershield is the most common floating leaf weed on the Pond. In the past few years it has out-competed lilies.

The total area of proposed treatment within the approximately 102-acre pond, is approximately eight acres. A map of treatment areas is provided with this proposal.

Because *milfoil* can spread from broken fragments of the plant, the herbicide application(s) will be made using a shallow-draft airboat. This will minimize the threat of spreading the plant to other areas.

Prior to treatment, SOL and FLP will inspect the pond and finalize the treatment areas. The separate SOL and FLP weed surveys will be conducted at this time as recommended by the LCC and the treatment will be modified if appropriate. It is proposed that the treatment will take place in June or July 2022 to coincide with season of high milfoil plant growth. FLP will conduct a follow-up survey in the fall.

"Touch-up" applications of herbicide may be proposed, as needed, as a follow‑up to eliminate or retard re‑growth of milfoil. Any “touch up” applications will be first reviewed by the LCC.

Areas to be treated under both approaches will include:

* the pool adjacent to the public access north of Depot Road;
* an approximate one-acre area at the north end of the channel that connects the Public Access pool with deeper water;
* the channel from the public access pool to deep water (*Eco-Harvester only*);
* and selected areas in shallow water and along the shore where milfoil is evident.

The FLP is working with SOL to determine whether or not alternative chemicals currently being researched may be beneficial especially in a case of the unexpected discovery of an invasive plant not previously observed. If appropriate, and licensed by DEP, these herbicides could be substituted. Any substituted chemicals must be on the DEP’s list of approved chemicals, and will be covered under the 2022 DEP/BRP license. Should there be a substitution, FLP will notify the LCC immediately and will provide evidence of the state approval for their use in the 2022 *License to Apply Chemicals for Control of Nuisance Aquatic Vegetation* from DEP.

**Post-Treatment-Chemistry**. Testing for chemical residuals will be conducted within four to six weeks of the chemical application. Tests will be analyzed by Microbac, Inc. of Dayville, Connecticut.

**Public Notification.** Prior to the herbicide application, brightly colored (Dayglo orange) precautionary signage will be posted around the pond: at all road entrances and along Putney, Long Hill, Cider Mill, and Camp Roads; at the public right-of-way on Depot Road; at waterfronts and other areas of known unsupervised pond use; on the Town Hall bulletin board; and on the Post Office bulletin board. Approximately 40 signs will be posted. Landowners and known pond users will be notified by email, phone or postal mail as needed. Residents abutting the Pond will be notified in writing before herbicide or mechanical treatment takes place. A notice will be filed with the LCC for posting on the Town web site as soon as dates are known. During treatment, an FLP member will accompany the applicator’s airboat at a distance to warn off anyone entering the Pond during the day of application.

Prior to conducting the herbicide and mechanical operation, the FLP will contact the LCC administrator to have a notice included in the Town of Leverett’s web site. This will be done as soon as the schedule is known.

**Proposal for 2022 Manual Removal**. If approved by the LCC the small area of cattails that is blocking the picnic area and brook by the public access (less than 200 square feet) will be removed by a hydro-rake (if used) and/or by hand with volunteers. This area is fully described in the Notice of Intent for 200-0196. Drawings of this area are attached to this proposal. Disposal of removed weeds from the public access area will be conducted by the Leverett Highway Department and deposited at the town “stump dump.”

**Proposal for Other Methods.** The FLP continues to research alternatives to herbicide treatment.Following herbicide treatment and hydro-raking, FLP proposes to continue experimentation with geo-textile fabric. At present there are four geo-textile benthic barriers in use around the pond authorized under 200-0166, and their effectiveness is good, but they cover only a tiny area (each approximately 20x12 feet in size). Annual maintenance is required. This is done on a limited basis as a non-herbicide method to further restrict re-growth in small areas.

*Hand-pulling* of weeds also will be conducted by volunteers, or shoreline abutters. SCUBA hand-pulling will also be conducted if warranted.

**Pre- and Post-Treatment Surveys.** The following surveys will be conducted on the Pond as recommended by the LCC:

* FLP presently is surveying the entire pond for the occurrence of milfoil. This is being conducted by FLP volunteers after a training session on milfoil identification. This survey will be complete in May 2022.
* FLP will hire SOL in the summer of 2022 to conduct a survey of the entire proposed treatment area. The survey will identify the location of invasives. The SOL survey will take place before treatment and the treatment area will be modified as needed.
* FLP will continue to conduct the annual surveys that were begun in 2018 (in both the spring and fall). The purpose is to provide information that allows evaluation of the effectiveness of herbicide and mechanical control of invasives. This survey will include photographs of infestations. Continuation of this survey will permit comparison with past years’ surveys. Areas to be surveyed have been selected based upon the following treatment characteristics and will be surveyed annually every spring and fall. They include:
	+ Areas treated only with herbicides;
	+ Areas treated with both herbicides and hydro-rake;
	+ Areas not treated (control areas).

Each area will be surveyed prior to treatment, and again in the fall. Additional areas are being added in 2022 that are more distant from the shore. Both surveys will provide information about how effective the treatment methods are from beginning to end of season, and from year to year. Test locations are identified visually and with GPS. Each test area is approximately 4x4 meters. Where possible, plants are identified visually. If visibility is impaired, an “aqua scope” or drag rake is used. most areas are shallow enough to permit visual identification. Photographs of weed infestation will be taken at the time of the survey and will be taken again up to two weeks to a month from weed removal.

* FLP will continue the dissolved oxygen study begun in 2021. Samples are taken from several areas including open water, areas of emergent floating-leaf vegetation, the public access, etc.

**Reporting of Results.** In December, the FLP will supply the LCC with a report of results in an Annual Report to include both the FLP and SOL surveys; results of weed management; an evaluation of progress; and will propose continued *best management practices*.

If at all possible, the FLP requests a review of this proposal by the LCC at the May 2022 Leverett Conservation Commission meeting.

If you require additional information, you can reach me at home (413-548-9161) or cell: (413-531-2730). I will provide you with a hard-copy of this proposal at the Town Hall. My email address is mulholland@anthro.umass.edu.

Sincerely,

Mitchell T. Mulholland

VP of Aquatic Weed Management

Friends of Leverett Pond

Attachments:

Order of Conditions (200-0196)

Map of proposed treatment areas

Map and profile of proposed cattail removal at public access