LAKE IMPROVEMENT PROGRAM

LOWER LONG LAKE

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BACKGROUND

Lower Long Lake is located in Sections 7, 8, and 17 of Bloomfield Township. It has a surface area of approximately 184 acres and an immediate watershed of approximately 446 acres with 5.1 miles of shoreline.

SCOPE

Aquatic weed control has been practiced in past years on Lower Long Lake. The purpose of this report is to define available weed control methods and to recommend a control program for 1986.

CONTROL METHODS

This report emphasizes short term lake management techniques. The weed infestation problem exists. The concern is how to effectively control the situation so as to improve the aesthetics and recreational uses of this valuable resource. There is no intent to discount the importance of prudent long term management. The crux of any weed infestation problem is the existence of high nutrient levels; specifically nitrogen and phosphorus. There are many long term practices which will retard the eutrophication process such as restricted lawn fertilization and implementation of erosion control measures. It is the responsibility of the residents within the watershed to educate themselves and practice these measures. The long term benefit will be a decreasing necessity for costly short term control measures. Following is a description of short term control alternatives:

I. Mechanical Treatment - Harvesting

Harvesting has proven in the past to be an effective control method for Lower Long Lake. Weed harvesting equipment consists of a mechanical harvester with conveyor system. A typical harvester will cut a swath approximately 8 feet wide and 4 to 5 feet deep, utilizing front and side mounted sickle bars. The severed weeds fall on a conveyor belt and are loaded into a hopper on the harvester. When the hopper is filled, the harvester will either return to shore for transferral of the biomass to a vehicle which will haul to a disposal site, or an intermediate transport

vehicle will be utilized in hauling the material to shore. There are various positive and negative effects of harvesting. Positive effects include: (1) organic matter removed is no longer available to deplete oxygen supplies through decomposition; and (2) nutrients are not available for recycling upon plant decay. Negative effects include: (1) a temporary increase in turbidity; (2) potential for increased growth due to removal of shading plant canopy; (3) release of nutrients from harvested plant stalks; and (4) potential for plant spread by vegetative means. It is this last effect or tendency which is of the utmost concern, especially as pertains to Eurasian Milfoil which is a nuisance aquatic weed quite prevalent in waters of this region. To date there is no consensus among aquatic biological experts as to whether or not in the long run harvesting is a truly effective means of controlling this species. Some experts contend that experience with a controlled annual harvesting program indicated a significant reduction of biomass and therefore regrowth rate over a period of time. Other experts have contended that harvesting tends to increase the biomass due to fragmentation. The harvested plant fragments not picked up by the harvester may drift into uninfested areas and take root creating new plants.

II. Chemical Treatment

There are various nuisance aquatic plants found in waters of this region such as Eurasian Milfoil, Common Duckweed and Pondweed. The following chemicals have proven effective in controlling the above mentioned species: The chemical 2,4-D has proven most effective in controlling Eurasian Milfoil. The contact herbicide Diquat has proven effective in controlling Duckweed. For Pondweed, the chemical group consisting of the active ingredient Salt of Endothall has proven very effective. Chara, which is a weed-like algae, is effectively controlled with copper sulfate or chelated copper. Some of the chemicals do carry swimming and/or fish consumption restrictions following treatment. These restrictions may change from year to year. Applicators must be state licensed, depending on the chemicals used, and have current Michigan Department of Natural Resource permits. Caution must be exercised in any chemical treatment program as the potential for disruption to the lake ecosystem is greater than with

harvesting. With chemical treatment the oxygen-carbon dioxide balance will be upset because of decreasing photosynthesis and increased metabolism of dying vegetation. The result is decreased oxygen concentrations. There is a potential for fish kills where a large portion of a lake, heavily infested with weeds, is chemically treated. The decomposing weed matter will release nutrients which when combined with carbon dioxide and improved light penetration, resulting from weed control, might result in algal blooms including such species as Chara or other planktonic algae. Therefore it might be appropriate following chemical treatment for weed control to follow up with a copper sulfate treatment for algae control. It is important in the selected treatment program to achieve an ecological balance. Chemicals are not to be used to eradicate all plant life. Aquatic plants are a vital element in the aquatic food chain and further support life by providing necessary dissolved oxygen levels.

III. Miscellaneous Treatment Methods

There are other available means of aquatic plant control. One such method is mechanical dredging. This method has proven to be very costly and would likely have a dramatic environmental impact on the aquatic ecosystem. Another method involves winter drawdown of lake waters as some species of plant are particularily susceptible to subfreezing temperatures. Although Milfoil appears to be successfully controlled by this method, there are numerous undesirables such as potential fish kills and elimination of desirable food plants for water fowl. Another method involves introduction of a biological control (e.g. shellfish, insects, fish such as common carp and grass carp, etc.). This method is not desirable at this time in that there is little history of the effectiveness of such programs.

RECOMMENDED TREATMENT PROGRAM

The recommended treatment program for Lower Long Lake this year is to consist of mechanical harvesting. This treatment method has less potential for disruption to the lake ecosystem than other available methods. There are two harvests proposed this summer on Lower Long Lake. The first harvest is to be scheduled from approximately June 13 through June 24 and the second from August 8 through August 15. The success of this program will depend to a large extent on control of Eurasian Milfoil. It may be necessary in future years to add a controlled chemical treatment program in conjunction with harvesting to more effectively combat the spread of this species.

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