



TOWN OF LINCOLN

CONSERVATION COMMISSION

CONSERVATION DEPARTMENT
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Guidelines for Comprehensive Pond Management Plans

Adopted by Lincoln Conservation Commission - May 9, 2018

HISTORY AND RATIONALE

Many of the ponds in Lincoln were formed by damming up streams that ran through fields, pastures, or meadows. Hence, they are often shallow - as are Lincoln's natural ponds - and, because of their fertile bottoms and nutrient-rich waters, are natural hosts for aquatic vegetation. This vegetation is composed of both native plant species and non-native invasive species. Pond abutters and neighbors have tried for many years, with mixed success, a number of ways of suppressing or eliminating these aquatic plants. Recently, the most common method of eliminating invasives is to use a variety of chemical aquatic herbicides. For the past 20 years, the Conservation Commission (Commission) relied heavily on the expertise of the herbicide applicators to inform us on the safety of these chemicals.

In 2016, the Commission became increasingly concerned with the widespread use of certain chemicals in our ponds and commissioned a review of the peer-reviewed medical literature to study six of the most frequently used herbicides. Four of the six herbicides reviewed had suspect toxicity profiles: Diquat (the active ingredient in Reward), Glyphosate (the active ingredient in Round-Up), Flumioxazin (the active ingredient in Clipper), and Fluridone (the active ingredient in Sonar). Two other chemicals widely used in herbicides do not have evidence of toxicity in the peer-reviewed literature: Copper Sulfate (the active ingredient in SeClear) and Endothall (the active ingredient in Aquathol). The six chemicals investigated were included on the basis of recent permit applications - if new herbicides appear on future permit applications, the Commission intends to evaluate those as well.

In numerous lab tests, the four herbicides noted above have shown to be potentially hazardous. We acknowledge that herbicide dosing in some studies is higher than those applied in ponds; but the research dosing is designed to identify potential toxic effects quickly. The ideal study design - for the Town to wait for decades following chronic low dose treatment with herbicides - is logistically impractical and prohibitively expensive. Furthermore, the bulk of the herbicide formulations applied are proprietary - their contents are trade secrets and their effects have not been carefully studied in the literature. Since the accumulation and interaction of these four chemicals with other chemicals, and their

repeated application over time, pose a potentially serious threat to life and health, we believe it is our responsibility to institute a new set of standards for the approval of any application of herbicides to bodies of water in Lincoln.

The Commission wishes to work closely with property owners, their agents, and environmental consultants to ensure that aquatic vegetation is managed in a way that is healthy for both ponds and people. Each pond in Lincoln is unique and faces its own particular challenges. We strive to create collaborative relationships to find the safest appropriate remedies for each pond.

APPLICATION PROCEDURE

Each applicant must complete a Comprehensive Pond Management Plan on the pond conditions and describe the proposed treatment for each plant species to be targeted. The contents for this Plan include:

- I. Pond Characteristics
 - History: human-made or natural, water level, and flooding (recent and historical)
 - Physical: topography, inlets, outlets, watershed, area, volume, shoreline characteristics (e.g. wetland, wooded, beach, home lots, paved roads, driveways, parking lots, farmland or grazing animals, playing fields, dams, retention basins, water-treatment systems)
 - Biological: native species, invasive species, wildlife
 - Water quality: including test results for inlets, outlets, and the main body of water. At a minimum, testing should include total phosphorus, nitrate-nitrogen, dissolved oxygen, turbidity, pH, alkalinity, and total dissolved solids.
 - Uses: boating, fishing, swimming, drinking, other
- II. Details Concerning the Species to be Targeted
 - For each species, include species name, location, temporal characteristics, history
 - For each species, explain what success looks like (e.g. complete elimination, elimination in a certain area, partial elimination, short-term “knock-down” to prepare for future efforts, etc.)
- III. History of Past Remediation Efforts
 - Fertilizer use and previous work to reduce fertilizer use
 - For each species and for each type of non-herbicidal remediation, explain what was done, being sure to include relevant pre-and post-treatment data

(e.g. nutrient and other chemical measurements, biomass, etc.). other impacts

- For each species and for each herbicidal remediation, explain what was done, being sure to include relevant pre-and post-treatment data. Dosage, location, detailed methods, pre-and post-treatment data (e.g. nutrient and other chemical measurements, biomass, etc.), and other impacts

IV. Evaluation of Potential Non-Herbicidal Remediations

- Include a comprehensive list of potential non-herbicidal remediations. Non-chemical methods include but are not limited to: reduction of phosphates and other plant nutrients in the water, hand or mechanical pulling of plants, use of barriers to block sunlight to emerging plants, winter drawdown, sonication, and use of organic, nontoxic vegetation controlling compounds.
- For each type, describe the method, rationale for use or non-use, cost estimate, examples of similar ponds in which the method was successful

V. Requested Remediations

- For each remediation, explain the rationale, goal, and process in detail (e.g. specific method, timing, pre-and post-treatment measurements, monitoring)
- Describe how the requested remediations fit in the context of a long-term plan.
- Note that we are striving to achieve reasonable results without use of the four chemicals noted above. If the use of any of these four chemicals is requested, the applicant must show that non-chemical or non-suspect chemical methods have been evaluated and have been shown to be inappropriate for specific reasons summarized by the applicant in this Plan.

All ponds for which permits are requested will require submission of a Comprehensive Pond Management Plan. To allow time for constructive dialogue and planning, the Commission encourages applicants to submit their plans for review and comment as soon as possible. The Commission has agreed to review such plans prior to filing of an NOI or request for permit of extension in order to provide feedback well in advance of remediation activity.

The Comprehensive Pond Management Plan is pond-specific, and it will be of most use if boilerplate language is avoided. Although development of the initial report may be labor-intensive, the Commission is not likely to require a *de novo* report in the future. Instead, the Commission will require that the initial report be updated with interim information when future wetlands filings are submitted.