

VIII. Lake and Watershed Management: What Is It?

Lake management requires a general knowledge of lake ecology, the causes of natural and cultural water quality problems, the techniques for restoring and protecting the lake, the legal and financial realities to be considered, and the resources available to concerned citizens.

Lake management begins with ecological awareness. Just as the art of the landscape painter begins with an understanding of the relationship between elements in the landscape, so must a lake be seen as part of an interdependent system of surface and subsurface flowing water and plant and animal habitats that relate to, and rely on, each other.

*‘preventative action
should be the first priority’*

Two Philosophies of Lake Management

Lake management approaches can be divided into two categories. One is the “quick-fix” approach. The other is long-term environmental management.



One pound of phosphorus can grow up to 500 lbs of plants or algae.

1. The “Quick-Fix” Approach

The “quick fix” in lake management is a short-term solution, such as the application of aquatic herbicides to quickly kill unwanted algae. Such chemical applications can go on year after year, becoming increasingly less effective if the underlying causes of the algal growth are ignored.

The “quick fix” treats the biological symptoms of a lake problem, but plant and fish productivity are directly dependent on the chemical and physical processes going on in and around the lake as well. These underlying factors must be the principle consideration in any plan to change the biology of a lake.

2. Long-Term Lake Management

Long-term lake management considers all of the environmental, cultural, and biological factors affecting the lake and sets a higher priority on finding lasting solutions than on pursuing quick, cosmetic treatment of symptoms.

A high quality, financially efficient, environmental project takes time and begins with long-range planning. If immediate in-lake rehabilitation techniques are necessary, the community will need to be sure that such immediate rehabilitation efforts are followed by appropriate long-term management techniques.

IX. Lake and Watershed Management: Taking Action

“When it comes to the future, there are three kinds of people: those who let it happen, those who make it happen, and those who wonder what happened.”

Carol Christensen

Lake management often begins with concern for a particular lake. The lake may no longer live up to someone’s expectations, whatever they might be.

Deteriorated lakes can be rehabilitated, but the task is difficult. Understanding of lake ecosystems is incomplete, and even when technical answers are available, they may be expensive to apply. Further, the results of a lake restoration project may not be apparent for years.

Action to protect and restore a lake may be taken by individual lake property owners and by lake associations, usually with the assistance of one or more governmental units.

A group of concerned citizens uniting as a lake association is the first step toward resolving lake problems. The association may already exist as a local conservation club, a rod-and-gun club, the chamber of commerce, or another concerned group. An effective lake association includes not only lakeshore property owners but also people who have various other interests in the lake. If lake management is initiated by a municipality or other governmental unit, it is a good idea to form an advisory group of interested citizens by seeking volunteers from the association or other concerned civic groups.

Four Initial Steps

1. Set Goals

Where does a lake association begin? The first order of business is to set goals. The goals of a lake management program are set according to what the members of the association expect the lake to be. These goals are usually based on social judgments and definitions of values. Throughout the planning process, these expectations require continual review and modification as information is gathered and as environmental, technical, institutional, and financial realities become clearer. Expert advice should be sought to determine if the goals are realistic. For example, a clear, blue, oligotrophic lake may not be attainable due to various factors such as its location and depth.

2. Find Partners and Assess Levels of Commitment

Identify people and resources that can provide help. Local, county, state, and federal agency staff may be willing to assist you with part of your lake management program. Statewide organizations, such as the Minnesota Lakes Association, provide a forum for sharing experiences and information about lakes and lake management. Know what financial and time commitments the group is willing and able to make. It is easy to overlook these factors in an initial eagerness to get results, but realistic assessments of available time and finances are critical to success.

3. Acquire Background Knowledge

Get acquainted with the principles of lakes. Understand the direct and critical relationship between a lake and its surrounding shoreline. The better the understanding of the relationship of a lake to its watershed, the more likely effective management choices will be made. Help is available in local communities. A high school or community college science teacher may be able to help residents better understand the lake. The county planning and zoning office can provide information on present and future land use in the watershed. The soil and water conservation district can provide information on soils and assist in mapping the area draining into the lake. The Freshwater Society and state natural resource agencies can help increase the understanding of the interdependence of land use practices and lake protection.

4. Determine the Current Status of the Lake

It is important to determine the current water quality or trophic status of the lake. This will provide a baseline for assessing changes in water quality over time and determining the effectiveness of management practices. This may be as simple as getting involved in a citizen's lake-monitoring program. Or, if major management choices are to be made, a complete water quality study of the lake and its watershed may be necessary.

This is a good point at which to seek professional advice. Water quality data may be available from the Minnesota Pollution Control Agency (MPCA), Minnesota Department of Natural Resources (MDNR) or your watershed, county, or city. Data summaries are now widely available on the web. See the Appendix for some of these web addresses.

5. Develop a Lake Management Plan

A lake management plan is a written document that lists known information about a lake, defines existing conditions and problems, and lays out instruction for short and long-term management of the lake. This may include a section on managing the excessive weeds and algae, an exotic species control plan, a plan for lake use and hours for boating, a monitoring plan, a plan for surveying septic systems, an education plan, a fisheries management plan, and other plans that address issues specific to your lake. The lake management plan provides direction for the future activities of the lake association and others concerned about the lake. It helps define a path to reach the goals set by the lake association. Guidance on developing a lake management plans is available on the web as listed in the Appendix.

6. Voice Your Concerns

Let local officials know that there is interest in the lake. When a change in land use is proposed, such as a development or feedlot, attend the meetings where decisions are made and voice concerns. Become informed about the affects of land use changes on lakes and methods to reduce impacts. Educate local officials about the value of the lake to the community.

7. Decide How to Proceed

After the association has gone through these initial steps, it will have a basis for determining the level of management that is reasonable for the group to try to attain. This management may be as basic as fostering the concepts of stewardship among its members and others who live near the lake. To be effective may require that the association work closely with city, county, or state officials to seek enforcement of any existing regulations protecting the lake, as the association has no statutory authority of its own. This level of management may be adequate for preserving the existing quality of the lake.

In cases where the existing quality of a lake is not acceptable, more direct measures may be necessary. Many times these measures are directed at the biological symptoms of the problem such as algal blooms or excessive weed growth, with chemical treatments and weed harvesting being common responses. While these treatments do provide short-term relief from these symptoms, they do not address the underlying cause, which is generally tied to land-use activities in the watershed that promote excess runoff of nutrients and sediment. The association should seek to address the causes as well as the symptoms of such problems.

Even with good stewardship and concerted efforts by a lake association, the water quality of a lake may have deteriorated to the point where basic management of the lake and its shoreline is insufficient to create acceptable conditions. Lakes at this advanced stage of eutrophication are often characterized by fish kills, excessive weed growth, and frequent algal blooms. At this point, restoration may be necessary.