

Chapter One

Protecting the Lake

There is something about a beautiful body of water that attracts us. Beyond the normal recreational activities – swimming, fishing, and boating - the natural beauty, diversity of plant and animal life, and the sights and sounds of water have a stress reducing effect on us. Those fortunate enough to live along the shoreline of Smith Mountain Lake share both the privilege and the responsibility for protecting this wonderful asset.



The health of the lake has a direct impact on the value of property along its shore. Unfortunately, the image of the ‘ideal’ lakeshore lot has been shaped by decades of marketing images of plush green expanses of manicured turf grass. Landscaping lakeshore lots with turf grass mowed to water’s edge with no trees or other obstructions to the view of the water leads to a significant loss of natural habitat and deterioration of water quality. The long term quality of the lake is dependent on all property owners’ knowledge of the characteristics of environmentally sound lakeshore properties.

Lake Dynamics & Chemistry

All lakes are continually evolving, interdependent ecological systems. Eutrophication and sedimentation are two of the important natural processes which occur over time in all lakes. One of the goals of this Buffer Landscaping manual is to give you the information you need to mitigate the negative impact of these processes on the quality of the lake.

Eutrophication

Eutrophication can be defined as an increase in the rate of organic matter entering an ecosystem such as Smith Mountain Lake. Increased pollution from runoff and from sediment loaded with the nutrients in fertilizer accelerates the natural aging of the lake. As nutrients such as nitrogen, phosphorus, and potassium wash into the lake in runoff water or eroded soil, they fertilize the lake allowing algae and aquatic weeds to grow at a more rapid rate. As plants die and decompose, they accumulate on the lake bottom as muck. In lakes with high quantities of nutrients, algae, and aquatic plants, oxygen is consumed in the bottom waters by decomposing organic matter. Most fish and other aquatic life cannot survive with low levels of oxygen. Oxygen depleted bottom waters also create chemical changes that allow more phosphorus from bottom sediment to be released into the water. This release can stimulate more plant growth near the surface and perpetuate a cycle of high algal growth and high oxygen consumption as plants decompose on the bottom of the lake.

Sedimentation

Sedimentation is closely associated with eutrophication. Wind and water move soils from the surrounding watershed down into the lake. These soils settle on the bottom of the lake, and the lake becomes increasingly shallow. This process is a natural part of lake aging, governed by gravity and the forces of wind and rain. However, sedimentation is greatly accelerated by human activities that leave the soil without vegetation for extended periods. Construction activity, property with little or no buffer landscaping, and intensive agricultural activities can leave soil vulnerable to erosion.

Water Clarity

Water clarity determines how deeply light penetrates into the water. Without light, aquatic plants cannot grow and produce the oxygen required by fish and other aquatic life. The most important factor in determining water clarity is the amount of algae in the water. Sediment also affects clarity and light penetration. Sediment carried in runoff or stirred from the bottom by fish, boat traffic, or wind causes the water to become murky.

Help Prevent

- Eutrophication
- Sedimentation
- Chemical imbalance
- Toxic Contamination

All of the biological, chemical, and physical systems of a lake are interdependent. When one is altered, all systems are affected. Natural vegetation helps slow runoff and filters sediment and pollutants before they reach the lake. Since polluted runoff is best controlled through wise landscaping practices, you can affect the quality of the water and slow the natural aging of the lake by participating in the buffer landscaping project.