# Creating And Maintaining Lakeshore Vegetative Buffers:

*A Living Filter To Protect Lake Wickaboag From Harmful Ground Water And Excessive Stormwater Runoff*

## The Lake Wickaboag Preservation Association

The Lake Wickaboag Preservation Association (LWPA) mission is to encourage, organize and support programs and activities that promote, restore and maintain the ecological health of Lake Wickaboag through involvement in issues of lake water quality and watershed protection and management. Over the years, the LWPA has been fulfilling its mission, in part, by educating West Brookfield residents through its semi-annual newsletter and annual meeting.

Visit www.lakewickaboag.com for further information, including how to become a LWPA member, or to view current and past LWPA newsletters.

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## About This Brochure

This brochure was published by the LWPA to promote ecological, lake-friendly living. It is designed to be a simple educational reference guide about the benefits and "how-to's" of vegetative buffers. It was compiled using various professional resources including the Massachusetts Department of Environment Protection and the Connecticut River Joint Commission. For further information, visit www.cwp.org or www.stormwatercenter.net

## What Is A Vegetative Buffer?

Simply put, a vegetative buffer is a protective transition zone between human activity and a body of water that slows stormwater runoff and reduces sub-surface nutrients (the bi-product of development) from flowing into the body of water. A vegetative buffer, also called a riparian buffer, provides a "living filter" and typically consists of tall ornamental grasses, shrubs and trees along the water's edge. A variety of trees and shrubs do the best job of filtering runoff, and while the bigger the buffer, the better the filter, even a small buffer of 5' can provide enormous water quality benefits.

## How Can A Vegetative Buffer Improve Lake Wickaboag's Water Quality?

Water quality issues are created by "non-point source pollution", which is a direct result of land use and occurs when rain water, snow melt and irrigation filter into the land or run over land and pick up pollutants that then flow into the lake. Sediment is a major transporter of pollutants, including nutrients and phosphorous, which are main contributors to algae blooms, dense weed growth and eutrophication. Eutrophication (the abundant accumulation of nutrients that support dense growth of algae and other organisms) is a major factor in sediment build up, which eventually leads to loss of lake depth. Vegetative buffers filter pollutants that are carried by stormwater runoff by slowing down runoff and physically trapping sediment, trash and animal waste, and filtering pollutants through soil and root systems.

## The benefits of vegetative buffers are that they:

1. Filter pollutants of surface runoff and ground water including nutrients from fertilizers, septic systems and stormwater runoff. To learn more about steps that you can take to preserve lake water quality, refer to the LWPA brochure titled '*Best Management Practices: A Practical Guide To Preserving Lake Wickaboag's Water Quality*'
2. Provide better infiltration of water by intercepting and removing sediment runoff
3. Stabilize eroding banks
4. Contribute to the natural aquatic food chain
5. Provide wildlife habitat
6. Provide shade and cover for aquatic life
7. Act as a physical barrier for geese
8. Provide privacy for landowners
9. Reduce landscape maintenance and costs
10. Maintain a more constant water level and temperature through groundwater recharge

# Three Steps To Creating A Vegetative Buffer

## Step 1: Assess Your Property

Before designing and implementing a vegetative buffer, assess your property's soil type, vegetative cover, slope - including any stormwater runoff problems, and any areas with impervious surfaces, such as a driveway, patio, rooftop, etc.

Soil type will help you determine how wide to make your vegetative buffer zone. Follow the guidelines below, which are based on a lot size of 1 acre with 100' of lake frontage:

- Sandy soil – 15' wide
- Silt or clay – 35' wide

The best way to assess whether you have a runoff problem is by watching where stormwater flows during a heavy rain storm. If an unstable bank is revealed, this should be addressed immediately.

## Step 2: Design Your Buffer

Planting ground cover, shrubs or trees helps mitigate runoff issues by filtering and preventing surface pollutants from entering the water, and helping stabilize an unstable bank. When choosing what to plant in your vegetative buffer, native plantings are the way to go. Use a variety of plants of different shapes and sizes, including deep and dense root systems, and be sure to plan for enough plantings for your vegetative buffer to be effective.

- Native tree species include Cottonwood, Black Willow, Silver Maple and Red Maple. Native shrub species include Silky Dogwood, Winter Berry, Elder Berry and High Bush Blueberry. Native ground covers include Foam Flowers, Goldenstar and Wild Ginger. Visit www.mass.gov, The Massachusetts Buffer Manual, for a more detailed list of native plant and flower species.

If you have lawn at the water's edge, you can begin a buffer by starting a wildflower meadow. Creating islands of unmowed areas and seeding them with wildflowers is a beautiful and inexpensive way to protect the lake.

For runoff issues, regrading with stones or landscape timbers may be necessary to divert stormwater to flatter areas where the water can slowly filter into the ground instead of running into the lake.

Other areas to consider are your path to the water through your buffer zone and any runoff issues from the street into your yard. If you have these kinds of runoff issues, consider making your path curved and graded to divert runoff water into buffer areas. A vegetative buffer on the street side of your property may also be beneficial to slow runoff from the street into your yard and into the lake.

## Step 3: Implement Your Buffer Design

Before you begin planting or constructing your vegetative buffer, you will need to consider state and local laws and regulations. The planting of native trees, shrubs and ground cover are generally considered "minor" activities that do not require a permit under the Wetlands Protection Act. However, if you plan to use any heavy or hydraulic equipment, you will need to submit your plan and receive approval from the Town's Conservation Commission. For more information on permitting requirements, visit www.mass.gov/guides/protecting-wetlands-in-massachusetts#-local-wetlands-bylaws.

With your plan and permit in hand, as needed, you are ready to implement your vegetative buffer. Plant shrubs 3'-5' apart, small trees (25' at maturity) 15' apart, and ground cover 1'-3' apart. This will result in a beautiful, dense and effective buffer at maturity.

## Once your buffer is implemented...

Resist the urge to tidy up! When it comes to a buffer, the best care is minimal care. Let the buffer grow wild, leaving any undergrowth intact. Follow these easy tips to maintain your vegetative buffer:

- Check for erosion regularly and redirect runoff, as necessary
- Replace plantings that do not survive
- Pick up and properly dispose of pet waste
- Limit foot traffic to a curved and graded path
- Mow grass to a height of 2"-3" and remove grass clippings
- Avoid fertilizers, herbicides and pesticides in the buffer. If you must fertilize, use lime or wood ash sparingly
- Avoid using cedar and redwood bark mulch, as their chemistry interferes with neutralizing nutrients. Instead, if you choose to mulch in your buffer zone, use leaf hummus, aged wood chips and pine mulch to minimize erosion, suppress weeds and retain soil moisture