

Chapter

5

Unfold Your Imagination
and Redesign
Your Property



Our Imaginary Waterfront Property

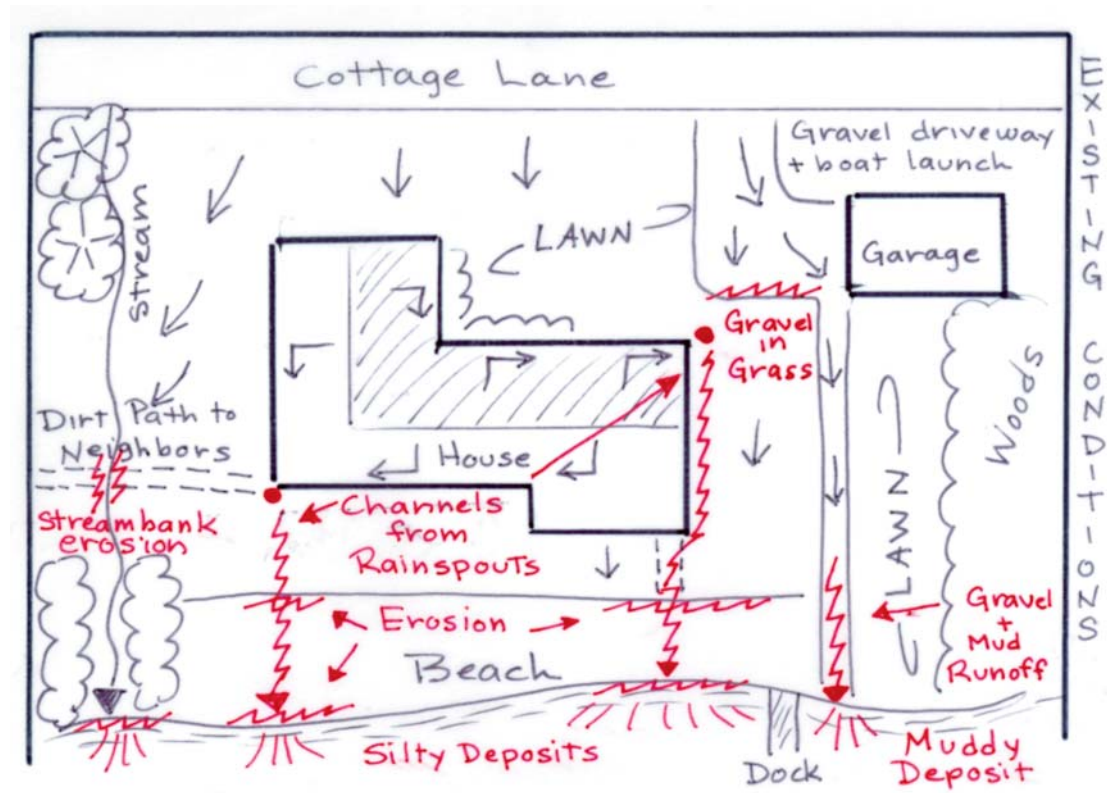
Wondering how to get started on designing your vegetated buffer? We've created a sample of what a typical Site Map, produced during a Rainy Day Survey, might look like. It shows the current condition of a waterfront property, including problematic erosion and runoff.

We have also created a sample Site Map of future ideas and goals for the property. As we discussed earlier, sediment is a major transporter of nutrients, bacteria and other pollutants, so these are the areas on which the owners should focus their attention. We hope you find these samples helpful as you design your own buffer project.

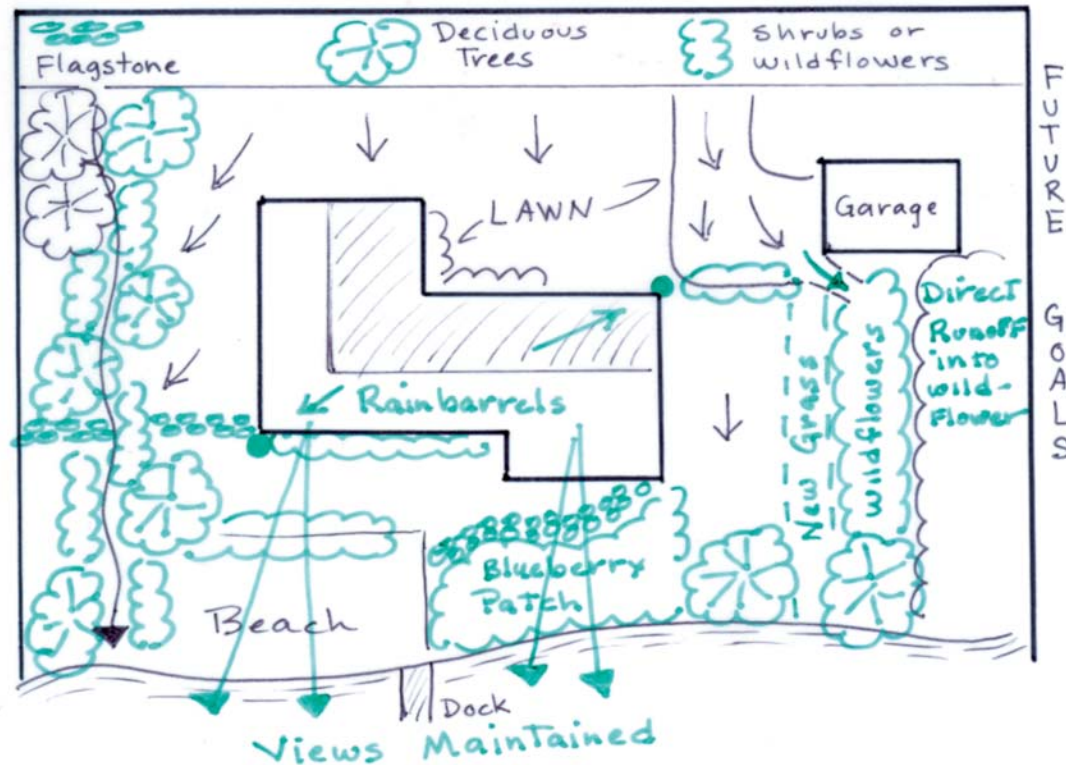
Existing Conditions

The property consists of a modest house on a small building lot. Most of the natural tree cover has been removed. A grass lawn surrounds the house and a sandy beach runs along the full length of the waterfront. The owners conducted a Rainy Day Survey and found these problem areas:

- Informal dirt pathways have been created from heavy use. These include one from the house to the beach and one from the house to the neighbors' property.
- The streambank is eroded where people travel between the two properties.
- The stream has no shading or cover for wildlife.
- Channels have formed in the lawn and on the beach from roof runoff being discharged through the drain spouts. As a result, the soil along the edge of the beach is eroding and the beach sand is being washed into the lake at an accelerated rate.
- The gravel driveway and boat launch often wash out during heavy storms. Gravel from the driveway washes into the grass, sending dirt and stones flying during mowing. Gravel and mud have formed a delta in the lake, making boat launching difficult and unpleasant.



Artist renderings supplied by Okerstrom Lang, Ltd., 2003



New Ideas and Future Goals

- Lay flagstone along the informal dirt pathway between the house and the neighbors' property. Plant grass seed in the spaces between the stones. The grass will hold soil particles and allow rain to percolate into the ground.
- Plant vegetation along the streambank. A mix of trees and shrubs will shade the water and provide cover for wildlife. Deciduous trees provide cooling shade in the summer while allowing warm solar rays onto the house in the winter. The shrubs we chose are Northern Arrowwood, which will form a nice dense hedge with white flowers blooming in mid-summer. The cattails at the water's edge will filter sediment, break the force of waves and wakes, and provide food and cover for wildlife.
- Place rainbarrels to capture roof runoff and provide water for the newly planted vegetation.
- Plant a hedge of shrubs along the boundary between the lawn and the beach. The shrubs provide a landscaped look while helping to bind the soil. The view of the lake from the house is maintained by the low-growing shrubs.
- Replace the informal dirt path from the deck with a curved path of flagstones and grass. The curved design reduces the chance that runoff will form another channel.
- Create a small berm along the lower edge of the driveway and plant shrubs along it. The berm keeps gravel from washing onto the grass and the shrubs will filter overflow during heavy storms. Shrubs will also add a landscaped look to the area.
- Channel driveway runoff through a grassy swale into an area dense with wildflowers. The vegetation will filter runoff and attract songbirds and butterflies. The flowers will add color and depth to the dark green background of mature trees.
- Replace the gravel boat launch with a grassed area. The launch is only used a few times per year, so gravel really isn't necessary.
- Reduce the size of the beach, replacing a portion of it with low-bush blueberries. The bushes will filter runoff from the path and provide fresh fruit, while still maintaining a view of the water from the house.
- Plant trees along each side of the property. The trees will frame the view of the lake from the house; likewise they will frame the house when being viewed from the lake.
- Overall, the appearance of the property is richer, as the vegetation adds a variety of depth and color. In addition, the value of the property is greater, as landscaped properties with mature trees are worth up to 20% more on the real estate market (Fitzpatrick, 2002).



I've planted my buffer - What else can I do?

Now that you understand the role that vegetated buffers play in protecting water quality and providing habitat, we hope that you will share your knowledge with your neighbors, homeowners association, local officials and anyone else who manages land along your stream, river, lake or pond. Here are additional tips to reduce runoff from your property, so that even a relatively narrow buffer will do some good.

- Conduct a Rainy Day Survey of your property. This will help you to determine runoff problems and prioritize improvements. If you are limited as to where you can put a buffer and how wide a buffer you can design, place the buffer in the direct path of stormwater runoff.
- Minimize impervious surfaces wherever practical. Consider replacing blacktop or concrete driveways and walkways with stone or "porous pavement" alternatives that allow some infiltration. Build a wood deck with open slats instead of a concrete pad for your patio.
- Allow the grass to grow to a lush height of 3-4 inches. This will encourage a deeper and thicker root mass that will better resist drought and weeds. It will also improve the capacity of the grass to filter sediment and promote sheet flow.
- Do not allow mowed grass to enter the water. Grass is easily broken down and the nutrients from it can cause algae blooms and accelerated weed growth. This leads to lower oxygen levels for aquatic animals and can cause noxious odors.
- Minimize exposed soils, especially along the water's edge. Revegetate eroded areas like dirt paths, bare slopes and exposed tree roots. Consider replacing dirt paths and driveways with grassed ways. If slopes are severe and stormwater tends to create channels, try constructing wood or stone steps.
- Eliminate direct discharges from your property into the water body. Install a dry well to capture rooftop runoff. Or capture roof runoff in a barrel or cistern and use it to water your lawn and buffer and for washing your car. Redirect gutter drains, driveway ditches, and other channels or pipes through grassed swales or thick vegetation so water can be filtered, or redirect them into low-lying areas so the water can collect and percolate into the soil.
- Do not wash pet waste or direct nutrient-laden water (car wash detergent, fertilizers) into the storm drain system. Chances are, the system collects runoff from your neighborhood and discharges it untreated into your lake somewhere down the line.
- If you must water your lawn or buffer, use slow-watering techniques such as trickle irrigation or soaker hoses. Such devices reduce runoff and are 20% more effective than sprinklers.
- Create berms or plant vegetated buffers around impervious surfaces to hold back runoff and capture pollutants. These berms and buffers can be disguised as flower beds or shrub hedges.
- Minimize your phosphorus use by purchasing fertilizers and detergents that have no or little (less than 1%) phosphorous content. Phosphate content in various dishwashing detergents sold in the state ranges from 0% to 8.7% by weight. Gel detergents tend to have less phosphorous than powder detergents (MA DEP, 2001a).
- Maximize the amount of natural vegetation on the property, especially along the water's edge, to buffer the lake from runoff from human activity. A mix of grasses, leaf litter, shrubs, and trees will impede sediment transfer and capture pollutants (such as nutrients) in runoff.
- Maintain mature trees if possible. Careful pruning of tree branches will frame your view of the lake while maintaining the protection that tree foliage provides.
- Resist the urge to tidy up your buffer. Woody debris and leaf litter enable infiltration, and the cavities of dead trees and fallen logs provide cover for wildlife.