

## ALTERNATIVE STRATEGIES FOR TURFGRASS MANAGEMENT NEAR WATER

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The implementation of buffer areas along waterways is becoming more common throughout our landscape as we strive to protect water resources from contamination. Imposing a “buffer strip” adjacent to a watercourse seems like a logical and simple concept, but can be challenging when you consider the details of size, shape, plant materials, management and function of these areas. Waterways in Michigan are represented in several forms ranging from wetlands, streams, ponds, rivers and lakes. Each one of these may likely have different demands for a buffer strip and therefore the buffer strip itself can take on different forms to satisfy the demands. In all cases, the basic objective of the buffer is to provide protection to the watercourse to the potential contaminants.

The most basic buffer strip is simply an area of undisturbed, natural vegetation that is left intact adjacent to the surface water feature. In many undisturbed areas of Michigan, this is a forested plant community. It’s rather easy to provide this type of buffer strip when you have undisturbed zones adjacent to the water feature, but these situations are scarce when compared to water corridors that have had some sort of disturbance and development. As you move from undisturbed areas and begin to consider creating a buffer strip along a waterway that has been disturbed, the term “buffer strip” can mean many different things. A person interested in promoting fish habitat may have a different vision for a buffer strip than a terrestrial wildlife specialist. Also, some confusion will be expressed as you compare the suggestions for buffer strips from multiple water quality advocates. Most organizations suggest buffer strips adjacent to waterways, but they are not consistent in their suggestions, or they are not practical for golf properties. To make sense out of these variable suggestions, let’s reflect on the intent of a buffer strip and then apply a practical buffer strip to the circumstances on your property. To be successful, first learn to recognize the characteristics of sensitive areas and then evaluate the potential contaminants from your turf site.

The most sensitive water zones on golf course properties are flowing water such as streams or drainage ditches where water moves through and leaves the property. These can range from high quality trout streams to turbulent rivers to drainage ditches. They are important because potential contaminants from the golf property or turfed areas can move off the property and cause an impact into the receiving water body. Other water areas of concern are wetlands, lakes or ponds that the golf property shares with other owners. Finally, ponds or lakes that are resident on the property and are not connected with off property water bodies.

Castelle et al. (1994) identified that *buffers* are vegetated zones that can utilize a wide variety of plants situated between natural resources and adjacent areas that are subject to human alteration. In their review, they determined four basic criteria for determining buffer sizes. For a buffer area to be functional, it should consider the following areas:

- resource functional value;
- intensity of adjacent land use;
- buffer characteristics; and
- specific buffer function required.

Applying these general concepts to the wide diversity of site characteristics present in Michigan would result in a variety of buffer strip prescriptions. To apply these concepts to golf course sites, we considered the primary contaminants with the potential to degrade water resources are inputs of fertilizers and pesticides, and soil sedimentation due to erosion. Cole et al. (1997) suggests that turfgrasses can be used as an effective buffer through the action of filtering and diluting chemicals and reducing surface flow velocity.

To begin the process of establishing golf course buffer zones, an area 50' wide is superimposed around all surface water bodies. Within this zone, minimal inputs of nutrients and pesticides are prescribed. Next, the existing golf holes are also superimposed and those areas where the play of golf and the 50' buffer zone intersect are noted. The buffer area that intersects with golf play is designated with management practices that allow for the play of golf and maximize the protection to the adjacent surface water. Three different zones have been suggested for these "in-play" areas – a region adjacent to the water for terrestrial plants and extending into the water for submergent plants where growth of a minimum of 12-18" is allowed, then an "intermediate buffer" area of grassy vegetation 4-6" tall, then a region of 1.5" of "rough" height grassy vegetation. Specific inputs are designated for each area and designed to minimize impact to the water. Those buffer zones outside of the play of golf holes are also segregated into three different zones, yet allow for a wider variety of plant materials and minimal maintenance inputs. Finally, these buffer zones must be designed, implemented, and managed in a manner that is accepted by the owners and users of the golf course. Information will be prepared to educate these groups regarding the long-term changes to their landscape and the value of these changes. Without their acceptance, even the most thoughtful design will not be successful.

### **References**

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