Minnehaha Creek Watershed District

Water Pro

Information for professionals working with water issues.

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Inside:

Water Wise:

Minnehaha Creek Watershed District's Proposed Buffer Rule Prepares for Public Review

The Value of Buffers

Buffers are an essential part of a developed watershed. Development, by either agricultural intensification or Urbanization, is accompanied by soil compaction, loss of vegetation, and increase in impervious surfaces; all these reduce the absorptive capacity of the land. This loss, coupled with introduction of new sources of non-point source pollution, results in higher volumes and velocities of surface runoff carrying larger loads of contaminants. The consequences to the quality of life in Minnehaha Creek watershed are significant: increased flooding and erosion, water quality degradation, reduced biological productivity, and diminished recreational opportunities in some of the state's highly-prized water resources.

Buffers alone cannot solve problems caused by excess and contaminated runoff, but they can provide a cost-effective approach to mitigating development pressures. In fact, a nationwide effort is underway to protect lakes, rivers and streams, and wetlands by focusing on the critical and highly vulnerable zones surrounding them. This larger effort by federal and state governments underscores the importance of building a partnership among landowners, communities, business, and citizens' groups in Minnehaha Creek to promote the long-term health and beauty of our watershed.

History of the Proposed Rule M

Currently Rule D Wetland Protection establishes the width of the buffer is based on the size of the wetland. The MCWD Board of Managers was interested in determining sound scientific principles to add buffers to lakes and streams so they began a two-year process of review as follows:

- Conducted extensive buffer research and reviewed scientific studies.
- Developed the first draft of Rule M and sent it out for public comment in the spring of 2001.
- Based on comments received, the MCWD conducted additional research.
- Due to input from the Twin Cities Builders Association in 2002, the Board decided it would be in the best interests of the rule and its implementation to base buffers on the Functional Assessment of Wetlands (FAW).
- In 2003, the District completed the FAW for wetlands ¼ acre or larger.
- The board-appointed task force revised Rule M and is being released for public comment in early December 2003.

The FAW was distributed by the MCWD to cities located in the District and other entities such as the Twin Cities Builders Association and Minneapolis Park and Recreation Board and is available to anyone by electronic copy. Maps are available through your city or the MCWD at 952-471-0590.

Highlights of the proposed Rule M are:

♦ *Wetland buffer widths are based on function and value.*

♦ *Currently buffer permits for single family homes are required in most situations. Under the new Rule M, buffers are only required for single family homes when increasing impervious surfaces by 50%, or in large home developments or redevelopments.*

♦ *The rule includes a Comprehensive Site Water Resources Plan, or alternate plan for water quality protection. An alternate plan may be proposed in place of a portion of the buffer area, if it provides the same water quality protection, peak flow and volume control, and plant and wildlife habitat preservation as the established buffer requirements. More simply put…flexibility is provided in the rule for site specific considerations.*

In an effort to help everyone clearly understand the purpose and intent of this rule, the District is developing technical and general public educational WaterPro Fact Sheets about buffers. These documents will include design profiles, plant lists, etc. The following are excerpts from the technical fact sheet.

Buffer Fact Sheet

Design and maintenance of effective buffers

Two key considerations guide buffer design: (1) the functions and values of the receiving water, including its sensitivity to disturbance; and (2) physical characteristics of the riparian zone.

Differing functions and values of lakes, streams, and wetlands in a watershed (including their importance to water supply, fish and wildlife, and recreation) should be assessed in determining buffering needs. In general, recreational lakes and streams, highly diverse wetlands, and sensitive plant or wildlife communities should be given greater protection than wetlands used for stormwater management. It is important to note that, while buffers around lakes, wetlands, and streams are similar in most ways, some differences should be factored into design decisions (see Table B on page 3).

Physical characteristics of a riparian zone should also factor into buffer design. In particular, the presence of steep slopes (greater than 12% grade) and highly erodible soils (0.35 or greater) usually indicate the need to extend the buffer width to the top of a slope wherever possible. Increasing plant density, especially with deep-rooted shrubs and trees, further stabilizes steep and erodible areas.

The effectiveness of buffers in protection or rehabilitating ecological functions and values depends on four factors: width, vegetative character, sheet flow, and maintenance.

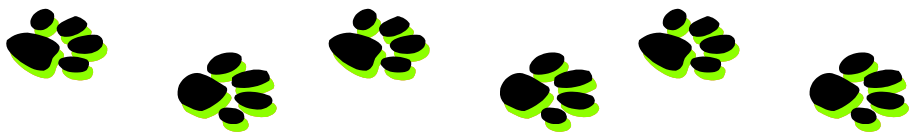
Step-by-Step to Buffer Development

1. Gather basic site information: slope, soil characteristics, drainage patterns, surrounding land uses, and sunlight exposure.

2. Determine location and size of buffers based on site considerations and functional goals. Access to shoreline through buffers should be designed to direct runoff into vegetated areas.

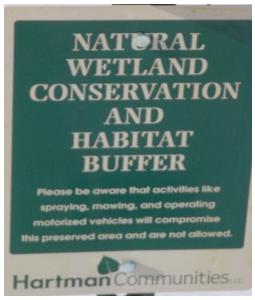
3. Ensure upgradient design to prevent concentrated flow and correct erosion problems. Use low impact construction methods to create uneven group topography.

4. *Natural buffer*: the simplest and cheapest way to naturalize a buffer area is to simply stop mowing and to allow a natural succession of plants to establish themselves—-first grasses and groundcovers, followed by woody species. If this does not produce the desired effect, professional advice on landscaping and plant selection should be sought.



5. *Landscaped buffer:* a more managed buffer takes less time to establish but is more costly. Use natural reference sites to select appropriate native plants for the project site, or talk to local nurseries about plants that are attractive, easy to maintain, and provide wildlife benefits. To avoid genetic competition, native plants should come from local sources. Where possible, incorporate a multiple-zone design: an outer zone of grasses and groundcovers to filter runoff, and inner (shoreline) zones of shrubs and trees to increase infiltration and nutrient uptake. Protect existing native plants before planting and mulch afterwards.

6. Water plants regularly until they are established. Remove diseased or invasive species quickly and, as much as possible, by hand. As a general rule, avoid mowing, raking, or removing leaf litter and deadfall. At a minimum, delaying these activities until late in the growing season decreases the loss of total solids and phosphorus into aquatic systems. Do not use fertilizers and pesticides within 50 feet of waterbodies, and, a special note, after January, 2004, use only phosphorus-free fertilizers in the seven-county metropolitan area.



The eight-page technical WaterPro Fact Sheet #B-001 on Buffers, including plant lists and buffer designs, is available through the MCWD offices at 952-471-0590, jellis@minnehahacreek.org or www.minnehahacreek.org in early December.

Table B

Specific considerations for lakes, streams, and wetlands

Lakes	Lakes are highly sensitive to changes in the watershed and increasingly susceptible to oxygen-depleting algal blooms. Excess algae and invasive plants destroy important recreational resources. Emergent vegetation is critical to buffer shoreland from waves and boat wakes and for fish habitat. Research indicates that clearer lakes are associated with higher property values.
River & Streams	Rivers and streams process energy and material from the surrounding landscape at much higher levels than other ecosystems. To function properly, the connectivity between channel, floodplain, streambank, and terrace should be maintained. The slopes of a river valley or stream bank are especially important in designing riparian buffers. Also, because of periodic flooding, estimated peak flows and elevations for one-, ten-, and 50-year floods should be incorporated into buffer design.
Wetlands	Many different types of wetlands exist in the Minnehaha Creek watershed – shallow and deep marshes, shrub thickets, wet meadows, and swamps – all providing different water quality and quantity functions, and habitat types. The MCWD divides wetlands into four classes: Preserve (high quality and sensitive ecosystems requiring a high degree of protection); and Class 1, 2, and 3 (reflecting differences in quality and vegetative diversity and indicating different stormwater management purposes.)

"Hometime" TV program partners with Trillium Bay Homeowner's Association and MCWD to showcase buffer and shoreline restoration benefits

Shown left to right: Joan Ellis, Monica Gross, Dean Johnson, Scott Thomas, Eric Evenson, Lynne Gildensoph, Donna Woodruff and Mike Mulligan

As a result of a great discussion about shoreline restoration and buffers when applying for a permit at the MCWD, the Trillium Bay Homeowner's Association was a grateful recipient of funding from the MCWD Cynthia Krieg Memorial Stewardship grant program. The grant helped restore their badly eroded five-acre shoreline that had caused trees to tip into the pond, and created a buffer to keep geese away. Dean Johnson, host of the TV program, Hometime, "a do-it-yourself home-improvement series" filmed the project from beginning to end and it will run various times throughout the year. Support from the neighbors grew rapidly as the project came together and they began to see the beauty of the shoreline restoration and how buffers increased wildlife habitat. The Hometime program will film the project again in one to two years to show results. Project videos will be made available to the public.

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