

Streamlines

A NEWSLETTER FOR NORTH CAROLINA WATER SUPPLY WATERSHED ADMINISTRATORS

Volume 3, Number 1

March 1998



Greenways and Stream Buffers

Greenways can be an effective, attractive, and useful means of protecting water quality and enhancing the aesthetic and recreational amenities of a community. Greenways are areas of open space or reduced development density which are generally linear in nature and can be located along stream

or river corridors or used to surround and/or connect community features. Greenways provide excellent chances to preserve agricultural land, create recreational opportunities, and protect natural resources in close

proximity to even highly developed urban and suburban areas. Similarly, water quality buffers tend to be linear in nature; they are areas of natural or planted vegetation along streams, rivers, lakes, or wetlands through which stormwater flows in a diffuse manner so that runoff does not become channelized and so that infiltration of the runoff and filtering of pollutants is possible. Vegetated buffers play a vital role in protecting water quality by reducing erosion and by trapping nutrients and preventing them from entering waterways and wetland areas. Greenways and riparian buffers can be used in conjunction to protect water quality by creating a vegetated corridor along surface waters.

WATER QUALITY PROTECTION

Buffers and greenways function as a trap for pollutants and nutrients suspended in stormwater runoff. Leaf litter and groundcover slow stormwater velocity, thereby reducing soil erosion and stream sedimentation. The minimum effective buffer

or greenway width to protect water quality depends on factors such as the type of soil, slope, and volume and type of pollutants which would be found in the runoff.

Under the Water Supply Watershed Protection (WSWP) Rules, a minimum 30 foot vegetated buffer is required along perennial streams for low density development; and a 100 foot buffer is required for high density development (see Box, page 2). Unpaved paths are allowed in the buffer; however, paved pathways would have to be located outside the vegetated buffer area. The vegetated buffer or greenway protects the stream from pollutants transported in urban stormwater runoff. Undisturbed, forested buffers are recommended, and may be more ef-

fective for protecting streams from nutrients transported in runoff from agricultural lands.

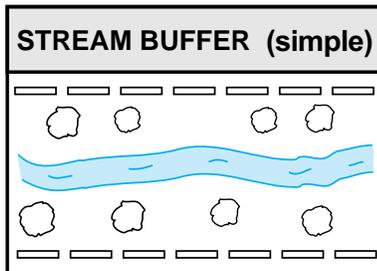
GREENWAYS AND PROPERTY VALUES

One great selling point for buffers and greenways is that property values tend to increase as a result of open space provision within and around developments where lots have been sized to create that open space. Protected open space in cities and towns of all sizes increases the marketability of adjacent property. This can be an important factor in terms of long-term resale value and appreciation and, of course, the local tax base. Providing buffers and greenways along surface waters therefore achieves multiple goals by protecting the environment, increasing the tax base, and providing recreational opportunities for the community.

GREENWAY PLANNING

If we are to understand the impact of development (whether urban, suburban, rural, or agricultural) on the landscape, we must look at it not as independent pieces -- a woodlot here, a river there,

(continued on page 2)

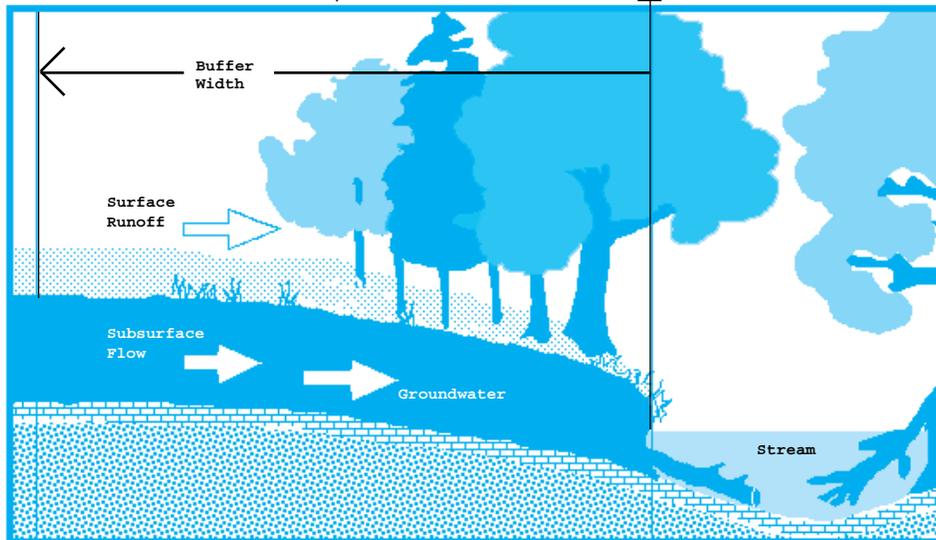


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- 100' for High Density
- 30' for Low Density
- measured from the bank of each side of perennial waters

Bank of Stream or River; Normal Pool Elevation of Reservoirs



BUFFER RULES

The state water supply watershed protection (WSWP) Rules require a minimum 100 foot vegetated buffer along all perennial waters for high density development projects. A minimum 30 foot vegetated buffer is required for low density development. The buffer is measured landward from the normal pool elevation of impoundments and from the bank of each side of streams or rivers. No land disturbing activity which adds to or changes the amount of impervious or partially impervious cover is allowed in the buffer areas. Exceptions include water dependent structures and public projects such as road crossings and greenways where no practicable alternative exists, built-upon are is minimized, and BMPs are utilized to decrease direct runoff to surface waters [15A NCAC 2B .0202 (11, 20), and .0214-6 (3)(b)(i)(G, H)].

municipalities and counties have incorporated greenway networks into their comprehensive plans and maps.

While it is easier to create buffers, greenways, and linear parks as an amenity for new developments, it is certainly possible to create these features in areas that are already built out. Open space acquisition, including fee simple purchase as well as purchasing development rights, has been used in Massachusetts and Maryland to preserve farmland and can be used here in North Carolina as well. (Transfer of development rights is not currently enabled in North Carolina however.) While these measures are permanent ways to preserve open space, they are expensive and rarely protect large, contiguous tracts of land. More often, greenways and open space are created through dedication and fee-in-lieu provisions within local government zoning ordinances.

Greenways (from page 1)

and a pasture yonder -- but as intricately connected parts of a larger whole. Any given part of the landscape affects other parts. When designing a greenway, it is important to consider what impact it will have on natural processes. Greenways, like natural environmental corridors can operate in six basic ways:

1) as habitat for plant and animal communities;

- 2) as a conduit for plants, animals, water, sediment, and chemicals;
- 3) as a barrier preventing movement;
- 4) as a filter allowing some things to pass while inhibiting others;
- 5) as a source for animals or seeds which move to other parts of the landscape; and
- 6) as a sink for trapping sediment, toxins, or nutrients.

Successful completion of a greenway network depends on that network being planned, and it is usually much easier to plan for linear corridors in advance of development. If every square foot of land in a new project is assigned to individual lots or streets (or not planned at all), then wetlands, streams corridors, ridgelines, and other areas suitable for greenways may be rendered inaccessible by lot lines which extend so that each building parcel adjoins similar lots on all sides. Recognizing that it is easier and cheaper to reserve greenway corridors in advance of development rather than to acquire easements which cross property lines after land is subdivided and sold, a number of North Carolina

STREAMLINES

Vol. 3, No. 1
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Streamlines is published "bi-monthly" by the North Carolina Division of Water Quality in order to provide information for local planners, watershed protection administrators, and other interested persons statewide. For assistance with the watershed protection program, to send comments, and/or to make a change of address, please contact NC DWQ, Water Supply Watershed Protection Local Government Technical Assistance, P. O. Box 29535, Raleigh, NC 27626-0535; or call (919) 733-5083, extension 508.

Look for *Streamlines* on the World Wide Web at URL:
<http://h2o.enr.state.nc.us/wswp/SL/>

GREENWAY GUIDELINES

There are several ways to make the water quality protection aspect of greenways more effective:

- Make greenways continuous along the river or stream.
- Locate greenways on both sides of the river or stream, if possible.
- Include the river's flood plain, riparian forest, associated wetlands, intermittent tributaries, gullies, and swales in the greenway.
- Either undertake a study of the site's sediment and nutrient flow to establish how much is entering the riparian zone and how much it will

Resources



- Arendt, Randall. *Rural by Design: Maintaining Small Town Character*. American Planning Association: Chicago, IL, 1994.
- Labaree, Jonathan M. *How Greenways Work: A Handbook on Ecology*. Conservation Fund American Greenways Program, 1992. (see URL: <http://www.qlf.org/greenways/>)
- Scheuler, Thomas R. *Blueprint to Protect Coastal Water Quality*. The Center for Watershed Protection: Ellicott City, MD, 1995.
- Scheuler, Thomas R. *Site Planning for Urban Stream Protection*. The Center for Watershed Protection: Ellicott City, MD, 1995.
- Terrene Institute and the U.S. EPA. *Local Ordinances: A User's Guide*. 1995.

need to filter, or rely on results from studies done on similar sites.

- Make greenway widths site-specific as opposed to jurisdiction-specific. Greenways which neighbor intensive land uses such as clearcutting, dense residential development, or shopping malls will need to be

wide enough to absorb excess nutrients and toxins.

- Maintain a band of natural vegetation along the stream bank to protect against temperature increases.
- Minimize or avoid mowing stream-side vegetation because it may decrease filtering effectiveness.

SANITARY SEWER OVERFLOWS

Almost everyone has heard about or dealt with a Sanitary Sewer Overflow (SSO) in some form or another. Unfortunately, SSOs are not new to North Carolina and have probably been happening since the first sewer line was installed. So, what exactly is a SSO?

A SSO occurs when a sewer line is either blocked or has too much wastewater coming into it. The wastewater has to go somewhere and that somewhere is usually the nearest manhole (or in some cases, a home or business!). Whenever wastewater leaves any part of the sewer system, it is considered a SSO.

Are SSOs a *serious* problem? YES!!! Not only in terms of the smell, but also in terms of the potential to adversely affect water quality when wastewater enters streams and creeks. Depending on the volume of the spill, wastewater discharged into a surface water can cause a myriad of problems including fish kills and algal growth and can impact drinking water supplies.

Even the most sophisticated and well maintained systems will at some

time experience some problems. Local governments and individuals (even those served by utilities) can do their part to help prevent SSOs from occurring. These are some things that can be done:

- Collect grease, fats, and oils from cooking in a container and dispose of it in the garbage;
- NEVER flush items such as disposable diapers, condoms and personal hygiene products down the toilet;
- Dispose of food scraps in garbage containers or a compost pile, not the sink disposal; and
- Implement a sewer use ordinance to help enforce these measures.

Local governments that experience an SSO should call the Division of Water Quality's regional office in your area and let them know what happened and what is being done to clean it up. Reporting SSOs and implementing measures to prevent future overflows is the right thing to do. We are all responsible for protecting water quality in North Carolina.



CONCLUSIONS

Nature is a series of interactions among plants, animals, and even air, soil, and water. A healthy environment depends upon keeping those interactions intact. Threats to our environment result from alterations we have made in the landscape that hinder natural processes. The challenge is to ensure that development occurs in a way which will allow the continuity of natural processes.

Local governments, private landowners, developers, and land trusts play important roles in establishing greenways and protecting stream buffers. The purpose of setting aside buffer zones is to create a zone of transition between two different land uses -- the water and the development -- in order to protect them from one another. A vegetated buffer or greenway may catch and retain sediment carried by overland water flow from construction sites and developed landscapes. The buffer or greenway may also help to protect development on those sites from flooding. Protecting environmental corridors through establishing and managing greenways represents one important method which will safeguard vital ecological processes.



What's Happening ?

April 4-8, 1998 – American Planning Association (APA) 1998 National Planning Conference - Boston, MA. For more information, contact APA at (312) 431-9100 or visit the APA website at URL: <http://www.planning.org>

April 8 & 9, 1998 – Water Quality Committee (WQC) and Environmental Management Commission (EMC) meetings - Raleigh, Archdale Building, 512 North Salisbury Street, Ground Floor Hearing Room, Noon (WQC) / 9am (EMC).

April 17 & 24, May 15 & 20, 1998 – Training Workshops on the Neuse River Basin Riparian Buffer Area Rule. Raleigh: April 17, May 15. New Bern: April 24, May 20. For more info, contact Annette Lucas at (919) 733-5083, ext. 587.

May 3-6, 1998 – “Watershed ‘98 -- Watershed Management: Moving From Theory to Implementation.” Denver, CO: Colorado Convention Center. For more information, contact the Water Environment Federation at (800) 666-0206.

May 17-22, 1998 – Conference of the Association of State Floodplain Managers. Flood hazard mitigation, watershed planning, etc. Milwaukee, WI. For more info, contact Diane Watson at (608) 274-0123, or e-mail: asfpm@execpc.com

May 20 & 21, 1998 – North Carolina Chapter of the American Planning Association (NCAPA) 1998 North Carolina Planning Conference. Greensboro, NC: Koury Convention Center. For more information, contact the Institute of Government at (919) 966-5381, or visit the web site at URL: <http://ncinfo.iog.unc.edu/planning/progapa.htm>

June 1, 1998 – Deadline for applications for the next funding cycle for the Clean Water Management Trust Fund (CWMTF). For more information, contact Steve Bevington of the CWMTF at (919) 830-3222.

July 5-9, 1998 – Balancing Resource Issues: Land, Water, and People. San Diego, CA. For more information, contact Charlie Persinger of the Soil and Water Conservation Society at (515) 289-2331, ext. 12, or e-mail: charliep@swcs.org

July 18-22, 1998 – The Urban and Regional Information Systems Association (URISA) 1998 Annual Conference and Exposition. Charlotte, NC. For more information, call URISA at (847) 824-6300, or e-mail: info@urisa.org

Five hundred copies of this newsletter were printed at a cost of \$92.85 or 19 cents per copy



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