Streamlines

A Newsletter for North Carolina Water Supply Watershed Administrators

Volume 1, Number 8 **December 1996**

Water Reuse

North Carolina is blessed with abundant water resources. Although North Carolina may be in an enviable position, there is growing concern regarding the ability of these resources to continue to support our steady population growth and expansion of business and industry. Several municipalities and industries have already experienced water shortages. The Division of Water Quality has undertaken proactive efforts to address water management concerns before a crisis situation exists. One such effort is the creation of a water reuse program.

WHAT IS WATER REUSE?

Actually, water is reused right now. Nature reuses water through the endless loop of the hydrologic cycle. We withdraw water from surface and ground sources to meet drinking water, industrial and agricultural needs. Then the "used" water is discharged as wastewater back into a stream. Later, downstream communities withdraw the mixture of water and treated wastewater to satisfy their water needs, and so the cycle continues. Water reuse involves taking wastewater, giving it a high level of treatment, and then using the resulting high-quality reclaimed water for a new, beneficial use.

HOW CAN RECLAIMED WATER BE USED?

There are many uses for reclaimed water. Here are just a few:

- *Landscape irrigation* such as golf courses, parks, highway medians and residential lawns.
- *Agricultural irrigation* such as pasture land and non-food chain crops.
- *Aesthetic fountains and lakes*
- *Industrial uses* such as cooling water, boiler feed, and some industrial processes.
- *Fire protection*
- *Municipal uses* such as street washing and sewer cleaning.

REUSE IS SAFE

Reclaimed water is treated extensively; however, not to the level that drinking water would be treated. The treatment is enough to ensure that public health and environmental quality are protected. The degree of treatment and disinfection depends on the use. For instance, reclaimed water used to irrigate pastures and crops which will not be eaten by humans would require a lesser degree of treatment than reclaimed water used to irrigate areas where the public has access (such as golf courses and playgrounds).

REUSE IS ECONOMICAL

Water reuse is economical from an environmental and monetary perspective. Water reuse allows for multiple use of wastewater. It reduces or eliminates discharge of some pollutants into surface waters and may allow for the restoration of

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plant and animal habitat in some areas. It may reduce the demands on surface water and groundwater supplies, which can postpone costly investment in the development of new sources and supplies. Reclaimed water can save industries money. Finally, reclaimed water can effectively and economically enhance aesthetic quality in the landscape in both rural and urban settings.

WATER REUSE IN NORTH CAROLINA

The Environmental Management Commission (EMC) is authorized by North Carolina General Statute §143-215.1 to require a permit for the collection, treatment and disposal of wastewater. The Division of Water Quality is responsible for wastewater permitting in North Carolina. Surface water disposal systems are required to obtain National Pollutant Discharge Elimination System (NPDES) permits and land application of wastewater systems are required to obtain Non-Discharge permits.

The Division of Water Quality gives special attention to NPDES permit applications for surface water discharges to facilitate the consideration of reuse alternatives, as opposed to disposal in the state's surface waters. Principle options in North Carolina include the use of reclaimed effluents for irrigation, cooling water, and industrial process water. Many generators of residual material from various treatment processes currently have land application programs that utilize the micro and macro nutrients of the residuals as opposed to previous disposal methods such as landfilling. Many NPDES permit holders are being forced to produce high quality effluents to protect the aquatic environment or receiving stream uses. Partial reuse or seasonal reuse can be financially beneficial to industries through reduced dependence on potable or higher quality water. As federal and state mandates require more stringent treatment requirements on surface water discharges, more opportunities for reuse should be created.

During 1995, staff of the Division of Water Quality drafted rules pertaining to the establishment and use of reclaimed water and presented these rules to the public at four public hearings. The Environmental Management Commission adopted the rules at their February 8, 1996 meeting and the rules, codified as 15A NCAC 2H .0219(k), became effective on June 1, 1996. The rules address municipal and domestic treatment regulations, reuse options and distribution requirements, as well as those for industrial use. For further information or to receive a copy of the rules, please write to Don Safrit, P.E., Assistant Chief for Technical Support, NC DWQ, P.O. Box 29535, Raleigh, NC 27626-0535 or call (919) 733-5083, ext. 519.

DID YOU KNOW?

Local governments and other suppliers who use lakes and reservoirs as a source of public water supply often think only in terms of surface water protection. However, both surface water and groundwater are components of the same interrelated system. At some time or another, groundwater will become surface water and visa-versa. Therefore, it is important to protect all water in the watershed, not just the water you see!

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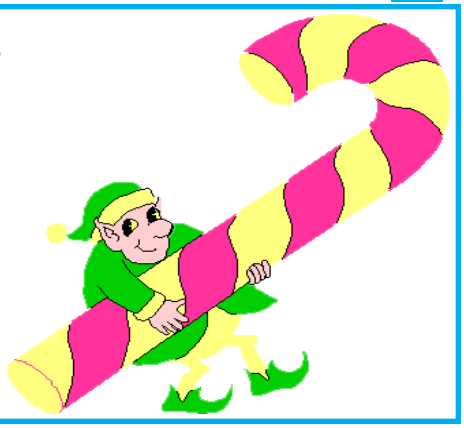
Streamlines is published monthly by the North Carolina Division of Water Quality in order to provide information for local planners, watershed protection administrators, and other interested persons. For assistance with the watershed protection program, to send comments, and/or to make a change of address, please contact NC DWQ, Water Supply Watershed Protection Local Government Technical Assistance, P. O. Box 29535, Raleigh, NC 27626-0535, (919) 733-5083 at extensions:

Lisa Martin ..... Ext. 565
Brent McDonald ..... Ext. 508
Amy Blizzard ..... Ext. 583

Happy Holidays!

DWQ and the Water Supply Watershed Protection Local Government Technical Assistance group wish you and yours the best this holiday season!



Protecting Wetlands

Over the last 200 years, more than 50 percent of the wetlands in the continental United States have been destroyed as a result of conversion to agriculture, mining, forestry and urban uses. Eighty percent of the losses can be attributed to agricultural operations. Within the last 20 years, citizens have begun to demand that their communities implement measures which preserve the function and value of aquatic habitat.

The functions and values of healthy ecosystems may be disturbed or destroyed by human activities. In their natural state, aquatic habitats perform ecological functions which are impossible or difficult and costly to replace. These functions are important to environmental and economic well-being. The functional values of wetlands are classified into three categories: water quality improvement, hydrologic functions (e.g. shoreline stabilization and groundwater recharge) and food-chain support (food and habitat).

FUNCTIONAL VALUES

Water Quality

Wetlands provide erosion and sediment control. The extensive root systems of wetland vegetation stabilize stream banks, floodplains and aquatic transition zones. Wetlands improve water quality by decreasing the speed of water flow and by intercepting and filtering water-borne sediment, nutrients, heavy metals and other pollutants. An urban wetland study conducted in the Minneapolis-St. Paul metropolitan area found that a large percentage of introduced sediments and other pollutants were intercepted and retained by a 15 acre wetland. This study indicated that wetlands retained a very high percentage of suspended solids and a nearly 50 percent retention of dissolved phosphorus and organic nitrogen.

Hydrologic Functions

Vegetated aquatic habitats generally protect the quality of surface waters by restraining the erosive forces of moving water. They provide a natural means of flood control and storm damage protection by reducing flood peaks, which may protect against loss of life and property. The flood storage effectiveness, of course, depends on a number of factors such as wetland size, flooding characteristics and the distribution of streams within the watershed. A wetland only one acre in size can retain about 330,000 gallons of water when flooded to a depth of one foot!

Wildlife Habitat

Aquatic systems provide a source of food and shelter and essential breeding spawning, nesting and wintering habitats for fish and wildlife. Over one-third of the nation's endangered animals reside in association with wetlands or are dependent upon them. Estuaries are important to the fish and shellfish industries by supplying essential nutrients and fresh water to areas that serve as nurseries. Studies have estimated that 90 percent of the species of commercial importance either spend their life cycle in estuarine environments or use estuaries as nursery grounds.

Wetlands are environmentally sensitive systems. Changes in light, hydrology, flow and nutrient loading can threaten the plants and animals that live in wetland systems. In order to protect aquatic habitats, communities must regulate the development activities which contribute to erosion, sedimentation, stormwater runoff and other forms of pollution in the surrounding watersheds.

Source: Terrene Institute. Local Ordinances: A User's Guide, Prepared by Terrene Institute in cooperation with the US EPA, Washington, DC. April 1995.

WELCOME AMY BLIZZARD!

We are proud to introduce a new member of the Water Supply Watershed Protection Program staff. Amy Blizzard began working for DWQ in September. She is a graduate of ECU (Go Pirates!) and formerly served as Redevelopment Director in Farmville, NC. Amy can be reached at (919) 733-5083, ext. 583 or by e-mail at *amy@dem.ehnr.state.nc.us* Welcome!

Next Issue

Barring unusual circumstances beyond our control, the next issue of *Streamlines* should contain an article discussing neotraditional development and the "New Urbanism" especially as it relates to water quality and watershed protection. See you then!

Look for *Streamlines* on the World Wide Web at URL:
http://pluto.ehnr.state.nc.us/wswp/SL/

What's Happening ?

December 11 & 12, 1996 – Water Quality Committee (WQC) and Environmental Management Committee (EMC) meetings - Raleigh, Archdale Building, 512 N. Salisbury Street, Ground Floor Hearing Room, Noon (WQC) / 9am (EMC).

February 12 & 13, 1997 – Water Quality Committee (WQC) and Environmental Management Committee (EMC) meetings - Raleigh, Archdale Building, 512 N. Salisbury Street, Ground Floor Hearing Room, Noon (WQC) / 9am (EMC).

March 12 & 13, 1997 – Water Quality Committee (WQC) and Environmental Management Committee (EMC) meetings - Raleigh, Archdale Building, 512 N. Salisbury Street, Ground Floor Hearing Room, Noon (WQC) / 9am (EMC).

April 5-9, 1997 – CONTRASTS AND TRANSITIONS: American Planning Association (APA) National Conference. San Diego, California, USA. For more information: (202) 872-0611; Fax (202) 872-0643; http://www.planning.org

April 9 & 10, 1997 – Water Quality Committee (WQC) and Environmental Management Committee (EMC) meetings - Raleigh, Archdale Building, 512 N. Salisbury Street, Ground Floor Hearing Room, Noon (WQC) / 9am (EMC).

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