SEDIMENTS

STATE OF NORTH CAROLINA, DEPARTMENT
OF ENVIRONMENT AND NATURAL RESOURCES
William G. Ross, Jr. Secretary

Land Quality Section
Division of Land Resources
Charles H. Gardner, Director

Vol 9 No 2 **April - June 2002**

City of Monroe establishes erosion and sedimentation control program

The N.C. Sedimentation Control Commission has delegated to the City of Monroe authority to implement the Sedimentation Pollution Control Act.

The Monroe City Council unanimously approved an ordinance to establish a local Erosion and Sedimentation Control Program on April 24, 2002. The city's ordinance, which becomes effective July 1, 2002, requires commercial sites of 12,000 square feet or more disturbed area to apply for a permit and implement approved control measures. Residential sites disturbing 12,000 square feet or more (minimum R-20 zoning) will sign an Erosion and Sedimentation Control Installation and Maintenance Agreement form when applying for a building permit, acknowledging the need for proper controls during construction.

The ordinance also requires that on any tract on which five or more acres are to be disturbed, the person conducting land-disturbing activity will be responsible for self-inspection of erosion and sedimentation control facilities at least once every seven days or within 24 hours of a storm event of more than 0.5 inches of rain per 24-hour period.

City of Monroe Erosion and Sediment Control Program
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IN THIS ISSUE

May action of the N.C. Sedimentation Control Commission

In a conference call meeting on May 7, 2002, the N.C. Sedimentation Control Commission (SCC) took the following action:

- Delegated to the City of Monroe authority to implement the Sedimentation Pollution Control Act (see article page 1).
- Approved a Local Program Assistance Grant of $66,189 to the City of Monroe for start-up of its Erosion and Sedimentation Control Program.
- Approved a Local Program Assistance Grant of $5,040 to Pitt County for increased public education and development of a comprehensive site analysis program.
- Approved use of education funds for continuation of the Sediment Intern program.
- Approved use of education funds for the annual Local Programs Workshop and Awards Program.
- Approved use of education funds for continuation of the *Sediments* newsletter.
- Approved use of education funds for workshops to be coordinated by the Water Resources Research Institute to train design professionals.
- Approved use of education funds to continue the Muddy Water Essay Contest for high school students.
- Approved use of eduction funds for two regional workshops for design professionals to be conducted by the Buncombe County Erosion Control Program in cooperation with RiverLink.
- Tabled until the next SCC meeting discussion of funding the Clear Water Contractor Program. Staff recommended shelving the program until a long-term plan can be developed that allows staff of the Land Quality Section to further develop and retain control of the curriculum.
- Requested that staff draft a statement from the commission encouraging the Director of the Division of Land Resources to use the full range of penalty authority when assessing penalties for violation of the Sedimentation Pollution Control Act. The statement is to encourage setting fines at levels that do not allow violators to avoid the costs of compliance and encourages tougher fines on repeat violators. The statement is to be presented to the SCC for action at its August meeting.
- Heard from Land Quality Section Chief Mell Nevils that 13 positions of 74 in the section are vacant and frozen.
- Heard from State Sediment Specialist David Ward that as of the end of February, staff of the Land Quality Section had conducted 2,658 plan reviews, 10,762 construction site inspections, 1,051 dam inspections, and 321 mine inspections since July 1, 2001.

Personnel changes

Charles Gardner, Director of the Division of Land Resources, has announced that he will retire June 30, 2002. Gardner joined the division as chief of the Land Quality Section 25 years ago. He was appointed Division Director in 1990.

David Ward, State Sediment Specialist, will retire June 30, 2002, after 27 years of service. After serving 17 years in the Winston-Salem Regional Office, Ward became Assistant Sedimentation Specialist in 1992 and State Sedimentation Specialist in 2001.

Hubert Hawkins, has joined the Land Quality Section Central Office as Dam Safety Engineer.

NCDENR
North Carolina Department of Environment and Natural Resources

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Send comments to Caroline Medlin, NCDENR- Land Quality, 1612 Mail Service Center, Raleigh, NC 27699-1612. Email: Caroline.Medlin@ncmail.net. Send change of address to WRRI, Box 7912, North Carolina State University, Raleigh, NC 27695-7912(919/515-2815; water_resources @ncsu.edu). Fifty-six hundred copies of this newsletter were printed at a cost of $1,297.44 or 23 cents per copy.

Personnel of the Land Quality Section of the N.C. Department of Environment and Natural Resources provide information and assistance for implementation of the N.C. Erosion and Sedimentation Control Program. For assistance, please contact the Regional Engineer or the Raleigh headquarters listed below:

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The North Carolina
Sedimentation Control Commission

The Sedimentation Control Commission (SCC) was created to administer the Sedimentation Control Program pursuant to the N.C. Sedimentation Pollution Control Act of 1973 (SPCA). It is charged with adopting rules, setting standards, and providing guidance for implementation of the Act. The composition of the Commission is set by statute to encompass a broad range of perspectives and expertise in areas related to construction, industry, government, and natural resource conservation and quality. All members are appointed by the Governor and serve three-year terms, except for the Director of the Water Resources Research Institute of The University of North Carolina, who serves as long as he remains Director. The chairman of the SCC is named by the Governor.

Chairman:
Kenneth H. Reckhow
Durham
Director of Water Resources Research Institute

Commissioners:

John R. Bratton
Knightdale
Rep. N.C. Mining Com.

Donnie W. Brewer
Greenville
Rep. Professional Engineers of N.C.

James Ferguson
Clyde
Rep. N.C. Soil and Water Conservation Com.

Phillip Ray Gibson
Cullowhee
Non-governmental conservation representative

J. Wendell Gilliam
Raleigh
Rep. NCSU Dept. of Soil Science

Gregory D. Jennings
Raleigh
Rep. N.C. Environmental Management Com.

Ray B. Killough
Matthews
Rep. N.C. public utilities

Joseph A. Phillips
Raleigh
Non-governmental conservation representative

Kyle Sonnenberg
Southern Pines
Rep. Association of County Commissioners/
N.C. League of Municipalities

Ralph Stout
Greensboro
Rep. Carolinas Associated General Contractors

F. Roger Watson
Asheville
Rep. N.C. Home Builders Association

Study says reinforcing vegetative filter strips with geosynthetic products improves performance

In a study presented at the 2001 International Erosion Control Association conference, researchers say that reinforcement of natural vegetation with geosynthetics can provide beneficial flow resistance and surface roughness to reduce flow velocity and improve sediment removal efficiency of vegetative filter strips.

The paper "Improving Removal Efficiency of Vegetative Filter Strips" was written by B. Gharabaghi, R.P. Rudra, H.R. Whiteley, and W.T. Dickinson of the University of Guelph School of Engineering. In the paper the researchers describe field experiments conducted near Elora, Ontario, to compare the runoff treatment performance of vegetative filter strips under various flow and pollution load conditions. On parallel plots 1.2 meters wide with a down-slope of 2.3%, the researchers established legume/creeping fescue filter strips of 2, 5, 10, and 15 meters in length on natural soil. Experimental strips of 5 meters in length were planted on a 10-centimeter thick mat of straw fiber, wood excelsior, coconut fiber, and synthetic fiber.

Plots were pre-wetted with clean water for about an hour before the tests to reach a steady state infiltration rate.

A soil slurry was fed at a set rate into a steady, regulated inflow of clear water upstream of the plots, and runoff samples were collected upstream and downstream of the filter strips. Flow rate varied for different runs. A 15-minute clean water flow was introduced between consecutive runs to wash off residual loose sediments and pollutants from the preceding run. A total of 47 runs was completed and 240 runoff samples were collected. Measured parameters included dimensions of the plot, slope of the plot, average grass stem diameter, input flow rate, runoff flow rate exiting the plot, concentration of total suspended sediments at inflow and outflow, aggregate size distribution of sediments at inflow and outflow samples, runoff travel time (residence time), and average depth of flow.

The investigators found that the average removal efficiency for the 2-, 5-, and 10-meter natural vegetation plots was about 84%. Average removal efficiency for the 15-meter strip and for all four 5-meter constructed strips was 97%. The study found that sediment removal efficiency was not very sensitive to input flow rate and that total infiltration rates for the 2-, 5-, and 10-meter natural vegetation plots were relatively small compared to the infiltration rate for the 15-meter plot.

The investigators point out that intense rainfall may generate runoff rates that cause flow to concentration in paths between clumps in vegetative filter strips, reducing sediment removal efficiency. Reinforcement of the natural vegetation with geosynthetic products can reduce flow concentration by spreading flow. Further, in late-winter-early spring when soil is often saturated (reducing infiltration) and vegetative cover is flattened (reducing flow resistance), the efficiency of natural vegetative filter strips is low. Reinforcement with geosynthetics can provide beneficial flow resistance and surface roughness under these conditions and can add extra thickness of filtering material.

The investigators also tested a variety of available sediment transport models for applicability in flow through vegetative filter strips. They will use the results of these tests to improve existing vegetative filter strip models (such as VFSMOD) to design cost-effective constructed vegetative filter strips with enhanced removal efficiency.

DENR reports to General Assembly on feasibility of transferring the erosion and sedimentation control program to local governments

In 2001, the N.C. General Assembly passed a bill requiring the Department of Environment and Natural Resources (DENR) to study the feasibility of transferring the Erosion and Sedimentation Control Program within the Department's Division of Land Resources to local governments. DENR was instructed to consider the economic impact that the transfer would have on local governments, any savings to the State by the proposed transfer, and any statutory changes needed to implement the transfer. The bill required that DENR report its findings by April 1, 2002.

Division of Land Resources Director Charles Gardner and Land Quality Section Chief Mell Nevils convened a group of other DENR personnel, local government officials, and personnel of local erosion and sedimentation control programs for assistance in addressing the General Assembly's mandate. In March, the required report was delivered to the General Assembly's Natural and Economic Resources Appropriations Subcommittee.

The report points out that the legal mechanism already exists in the Sedimentation Pollution Control Act for delegating to local governments that wish to have a program, the authority to implement an erosion and sedimentation control program and that 47 local governments have presently established local erosion and sedimentation control programs under this mechanism.

Economic impact on local governments and savings for the State

Based on a survey of existing local programs, the report estimates that if all local governments in North Carolina established and staffed comparable erosion and sedimentation control programs, the cost to local governments statewide would be $28,248,000. Possible sources of funding would be State subsidies, local fees, or both. Staffing of local programs at the level of existing programs would allow for more frequent inspections and, therefore, better implementation of the Sedimentation Pollution Control Act than is currently possible with the underfunded and understaffed State program.

If all local governments established erosion and sedimentation control programs, and the State program performed only local program monitoring, training, and compliance inspection on DOT and federal projects, the State could save about $4,450,000.

To maintain the current level of State responsibility but improve the State program to a level comparable to full statewide implementation of local programs (monthly site inspections), the State would need to spend an additional $4,450,000 for additional inspectors.

Incentives for establishment of local programs

In conducting the study of transferring erosion and sedimentation control to local governments, DENR was primarily interested in identifying factors that might encourage a voluntary transfer of responsibility. Therefore, the study report identifies several disincentives to establishment of local erosion and sedimentation control programs and proposes possible solutions. Several of he proposed solutions have been incorporated into bills introduced in the General Assembly. The disincentives and solutions are:

- **Cost:** Based on surveys of existing local programs, plan review fees of $300 to $400 per acre are needed to support a local program sufficient to do plan reviews and once-a-month inspections. However, the State program plan review fee is currently limited by law to $50 per acre. The fee difference encourages reliance on the State program. *The disincentive could be eliminated by either providing State subsidies to local programs or by raising the State fee to a level comparable to that which would be required to support a local program.*

- **Low construction activity**. In some areas of the state, there is not enough construction activity to support a fee-based municipal or county erosion and sedimentation control program. *However, two or more county governments could form and staff a regional erosion and sedimentation control program to remove this disincentive.*

- **Oversight of public projects.** Reserving jurisdiction over local public projects to the Sedimentation Control Commission reduces incentives for local governments to establish erosion and sedimentation control programs. *Allowing local erosion and sedimentation control programs to have concurrent jurisdiction with the SCC over local public projects would provide local governments more autonomy and act as an incentive.*

North Carolina Erosion and Sedimentation Control Field Manual updates

are available for those who purchased a Field Manual prior to July 2001. If you have not received your Field Manual update, please contact the Land Quality Section at (919) 733-4574.

SCC member named to EMC

Donnie W. Brewer, a member of the Sedimentation Control Commission since 1996, has been appointed by the N.C. House of Representatives to the N.C. Environmental Management Commission (EMC). A Professional Engineer associated with Rivers & Associates, Inc. of Greenville, Brewer serves on the SCC as the representative of Professional Engineers of North Carolina.

The N.C. Environmental Management Commission is a 19-member Commission appointed by the Governor, the Senate Pro Tempore and the Speaker of the House. The EMC is responsible for adopting rules for the protection, preservation and enhancement of the State's air and water resources.

By law a member of the EMC also serves on the SCC. The EMC's new delegate to the SCC is Greg Jennings of NC State University, Raleigh.

Proposed Effluent Guidelines for Construction and Development Category signed

On May 15, the Administrator of EPA signed a proposed rule for options to address storm water discharges from construction sites. The proposed "Effluent Limitation Guidelines and New Source Performance Standards for the Construction and Development Category" will be published in an upcoming *Federal Register* publication. Comment will be taken for 120 days after publication, and EPA will hold public meetings on the rule. Under a Consent Decree, final action on the rule is required by March 31, 2004. The final rule is to be implemented through NPDES Storm Water permits.

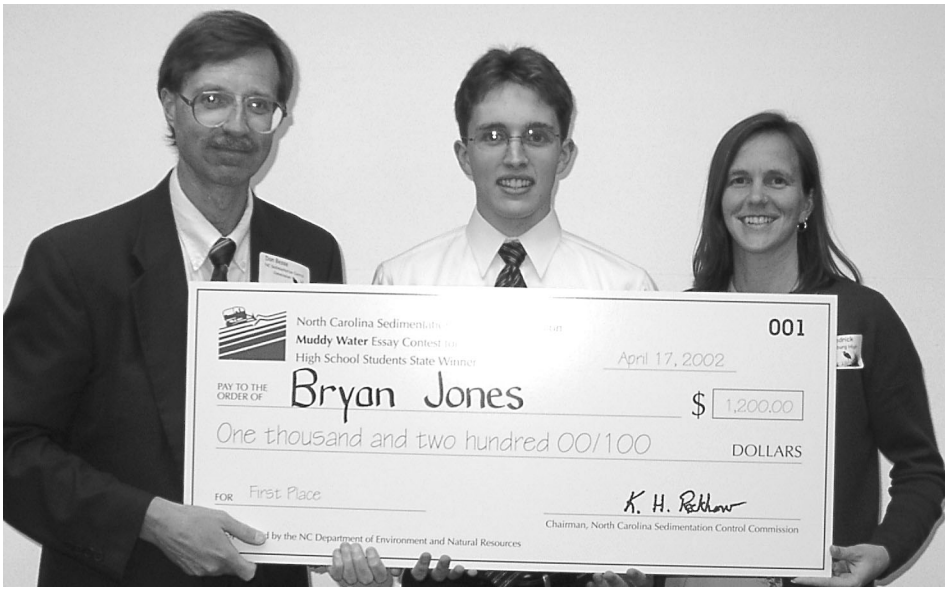
EPA is proposing and soliciting comment on three options for control of discharge of pollutants in storm water associated with construction and development activities. The options do not include requirements for a numerical reduction of turbidity or suspended sediment in discharges, discharge monitoring, or control of fine-grained particles by use of polymers or coagulants, and do not address post-construction runoff control.

Option One would not actually establish effluent limitations but would amend the current NPDES storm water requirements to require construction site inspections and certification that erosion and sedimentation controls meet design criteria. This option could apply to sites of one acre or more or only to sites above 5 acres.

Option Two would establish effluent guidelines that would apply to sites of 5 acres or more of disturbed area. Under this option, construction site operators would be required to design, install, and maintain erosion and sedimentation controls that meet national guidelines; prepare a storm water pollution prevention plan; inspect the site throughout the land-disturbance period; and certify that the controls meet the regulatory design criteria or permit conditions.

Option Three would not establish effluent guidelines or amend the NPDES storm water requirements but would rely on control practices and any certification and inspection requirements established by the local permitting authority (the State).

EPA is proposing a number of variations on options one and two. For more information visit the EPA website: http://www.epa.gov/waterscience/guide/construction/



Muddy Water Essay Contest winner

Bryan Jones (center), a student at East Mecklenburg High School, is the 2002 winner of the Muddy Water Essay Contest. Byran's essay, "The River of '68," won $1,200 for him; $1,000 for his teacher, Ramona Hedrick (right); and $800 for his school. In the photo above Bryan receives congratulations from Sedimentation Control Commission member Daniel Besse (left).

Second place winner, Erika Schneble of Hendersonville High School, won $600 for herself; $500 for her teacher, James Franklin; and $400 her school.

Third place winner, Bridget Alligood of Washington High School, won $300 for herself; $250 for her teacher, Clay Campbell, and $200 for her school.

If funds are available for the program in 2003, information on the 2003 contest will be mailed to schools in October. The deadline for submitting entries to Land Quality Regional Offices will be approximately February 1, 2003.

A toll-free hotline has been established statewide for concerned citizens to report possible violations of the North Carolina Sedimentation Pollution Control Act. To report problems call 1-866-STOPMUD (786-7683)

EROSION AND SEDIMENTATION CONTROL FOR CONSTRUCTION SITES SEMINAR

September 25-26, 2002
Holiday Inn-Select
Hickory, NC

October 23-24, 2002
Sheraton Grand
New Bern, NC

Purpose: This seminar is presented to familiarize design professionals who develop erosion and sedimentation control plans—including engineers, landscape architects, and surveyors—with erosion and sedimentation control principles and practices. Thirteen (13) PDHs are available to professional engineers and land surveyors, and 10 continuing education units are available to landscape architects for completion of both days.

Fee: $125.00. Covers materials, breaks, and lunches.

Deadline: Registrations will be taken on a first-come, first-served basis, but no registrations will be taken after September 13, 2002, for the Hickory seminar, and October 11, 2002, for the New Bern seminar.

For additional information and a registration form go to website:
http://www2.ncsu.edu/ncsu/CIL/WRRI/erosionseminars.html

Sponsored by
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