

SEDIMENTS

Newsletter of the North Carolina Sedimentation Control Commission

Erosion Control Products - Netting and Snakes

By Rich McLaughlin, Professor, Department of Soil Science, NC State University.
Adapted from article in *Environmental Connection* 6(3): 10-11

In 2005, a report was published on snake entanglement in netting that was part of rolled erosion control blankets (RECPs) used in wetland restoration projects in South Carolina¹. The authors reported a total of 19 snakes were found, mostly dead, entangled at the 15 restoration sites, all of which had a single width (2.4 m, 8') of blanket installed. The plastic mesh openings were reported as 10 or 20 mm², with either coconut/straw or coconut filler. The most common snake found was a black racer, which tends to undulate rapidly when trapped, a behavior which only makes matters worse when caught in netting. One of

their recommendations was smaller (<5 mm²) openings, such as are typical of permanent RECPs.

Another report was published in 2011 based primarily on snake entanglements that were reported to state officials in Wisconsin.² The incidents, which occurred in various parts of the state over a period of 7 years, were photographically documented and included several cases of plastic netting used for animal exclusion in addition to RECPs. It appeared that the RECPs were all installed adjacent to streams or wetlands. Additional cases were

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SEDIMENTS is a newsletter published by the N.C. Sedimentation Control Commission to provide information and assistance to the regulated community and to facilitate communication among personnel of state and local erosion and sedimentation control programs. SEDIMENTS is available in electronic form at: <http://portal.ncdenr.org/web/lr/newsletters>

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State of North Carolina,
Department of Environment & Natural Resources
John E. Skvarla, III, Secretary

Division of Energy, Mineral, and Land Resources.
Tracy Davis, Director



Dead copperhead entangled in plastic netting of an erosion control blanket adjacent to a sediment basin. Photo courtesy Rich McLaughlin, North Carolina State University.

News from Land Quality Section

Division Name Change

The Division of Land Resources, NC Department of Environment and Natural Resources has a name change to: Division of Energy, Mineral, and Land Resources. This change is due to the passage of Shale Gas Bill (2012-143). The Shale Gas Bill has delegated the rulemaking process to the Division of Energy, Mineral, and Land Resources. A new Energy Program is housed within the Land Quality Section with likely 3 new positions.

LQS Personnel Changes

Andrew Schneider, formerly the ASDE for power dams, is now the Assistant Dam Safety Engineer (ADSE), effective November.

William E. Toby Vinson, Jr. was hired in November as the new Chief Engineer.

Jim Simons, Director of State Division of Land Resources, retired May 31.

Tracy Davis was promoted to Director of State Division of Energy, Mineral, and Land Resources in July.

Jim Simons Retired

James D. Simons came to the Land Quality Section around 1976 where he worked as a mine inspector, and was later promoted to the State Mining Specialist. He served in that role until 1986, when he was transferred to the position of State Dam Safety Engineer. In 1991, Jim was promoted to Chief Engineer over the LQS until June 2002, when he became Acting Division Director. He became the permanent Director in November 2002 and retired on May 31, 2012.

LQS Welcomes New Director

Tracy Davis, PE, CPM, Director, Division of Energy, Mineral, & Land Resources

Tracy Davis of Raleigh was named as Director of the N.C. Division of Energy, Min-

eral, & Land Resources in July 2012. Davis, a career staff member in the division's Land Quality Section, replaces Jim Simons, who retired last May. Mr. Davis, a licensed professional engineer and certified public manager, has worked for DENR for nearly 25 years. He started his career as an assistant State Mining Specialist in the Land Quality Section, and was then promoted to manage the section's mining permit program. Davis has served as the Section's Chief Engineer since 2003. In that role, he managed the Section's engineers and environmental professionals across DENR's seven regional offices, and led special projects, including the statewide implementation of the express permitting program for erosion and sedimentation control projects.

LQS Welcomes Chief Engineer

William E. Toby Vinson, Jr. PE, CPESC, CFM, Chief Engineer - Land Quality Section

Mr. Vinson worked with Land Quality Section as the State Sedimentation Education Specialist, Assistant Regional Engineer in Winston-Salem and the Regional Engineer in Fayetteville. He left the State to work with Mr. Ralph D. Stout, Jr. at Southern Seeding Services Inc. for 10 years. Immediately prior to coming back to the Land Quality Section, he worked as the Erosion Control Engineer/Watershed Manager/Floodplain Administrator for City of Winston-Salem/Forsyth County.

New SCC Member

Mr. Tommy C. Anderson filled the representative role of the League of Municipalities and NC Association of County Commissioners in May 2012. He is a construction specialist with the City of Jacksonville, which among other duties addresses sedimentation and erosion control issues.

To report possible violations of the NC Sedimentation Pollution Control Act, call

1-866-STOPMUD
786-7683



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Send comments to Evangelyn Lowery-Jacobs, NCDENR-Land Quality, 1612 Mail Service Center, Raleigh, NC 27699-1612. Email: evangelyn.lowery-jacobs@ncdenr.gov.

To receive an email notice of *Sediments* issues, please see page 1 for list service instructions.

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

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Swannanoa, NC 28778
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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 NC 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. The following is a list of current members with the organizations they represent:

Chair:

Robin K. Smith
Burnsville

Non-governmental Conservation

Commissioners:

Heather E. Jacobs Deck
Washington

Non-governmental Conservation

Mr. Tommy C. Anderson
NC League of Municipalities
NC Association of County Commissioners

Joseph E. Glass
Fayetteville
Professional Engineers of NC

Kevin Martin
Franklinton
NC Environmental Management Commission

Rich McLaughlin
Raleigh
NC State University, Dept. of Soil Science

Charlotte Mitchell
NC Mining and Energy Commission

Randy Veltri
Charlotte
NC Public Utilities

Jonathan K. Bivens
Goldsboro
Carolinas Associated General Contractors

Vacant
Raleigh
Water Resources Research Institute of
The University of North Carolina

Rob Weintraub
Wake Forest
NC Home Builders Association

Manly West
Moyock
NC Soil and Water Conservation Commission

NC Sedimentation Control Commission: May Actions

At its meeting on May 24, 2012 the NC Sedimentation Control Commission (SCC) took the following actions:

James D. Simons Retirement

The SCC passed a resolution and presented a certificate of appreciation to Jim Simons for his many years of contributions. The SCC also congratulated him on his retirement.

Delegated Local Programs

• *NCDOT, Expansion of Delegation:*

Approved the expansion of the NC Department of Transportation (NCDOT) delegated authority to administer Public-Private Partnership (P3) projects for which NCDOT owns the Right-of-Way. Also required will be a notification by NCDOT to Land Quality of the financially responsible party(s). Such projects might include toll roads near Charlotte and the Currituck Bridge that will be funded by private partners.

• *New Hanover County:* Approved the continuation of Local Delegation of erosion and sediment control (ES&C) program contingent upon LQS staff commendations to differentiate between comments and corrective actions on inspection reports and to enforce temporary stabilization on projects with inactive bare areas (basin slopes and diversions) to prevent erosion within the measures.

• *City of Greensboro:* Approved the continuation of Local Delegation.

• *Lincoln County:* Approved the continuation of Local Delegation.

• *Catawba County:* Placed on probation until a follow-up report at the next SCC meeting. LQS staff recommended that the County needs to improve the quality of plan review, site inspections, and take appropriate enforcement action for violations. The County is implementing a new software tracking program which should help with these issues.

• *City of High Point:* Approved the continuation of Local Delegation.

• *Guilford County:* Approved the continuation of Local Delegation contin-

gent upon LQS staff recommendations to require adequate ground cover within the time limits of the approved plan and to continue to check for self-inspection reports.

- *City of Greenville:* Extended the current probation. The city has made improvements towards getting construction projects under compliance with increased inspections and follow-ups with owners/designers regarding issues to address.

Memorandum of Agreements (MOA) with Local Programs

The new MOA was approved by the SCC in May 2011 and is to be adopted by each local program and submitted for approval by the SCC. http://portal.ncdenr.org/c/document_library/get_file?uuid=e04f02e5-6d80-4cc6-abe9-aa6a6d5775fd&groupId=38334

- *New Hanover County:* Approved the MOA submitted to the SCC.
- *Iredell County:* Approved the MOA submitted to the SCC.

Education Projects:

- Approved the funding for WRRI to support the NC Sediment Control Commission (SCC) and the Department of Environment and Natural Resources (DENR) Division of Land Resources (DLR) Land Quality Section (LQS) staff by providing assistance in the continuation of workshops for design professionals. Five one day workshops will be conducted. Based upon the recent needs survey, these workshops have been shortened from the previous two-day format (\$33,374).
- Approved the funding for NC State University to continue the electronic production of two *Sediments* newsletters (\$17,020).
- Approved the funding for WRRI to continue support for the annual workshop and Local Erosion and Control Programs, including meeting facility and attendee travel (\$69,869).



NC Sedimentation Control Commission:

August Actions

At its meeting on August 23, 2012 the NC Sedimentation Control Commission (SCC) took the following actions:

Request to share Design Manual

- Approved request from Malaysia to use specifications and details from NC Erosion and Sediment Control Planning and Design Manual for their development of an erosion control program. They learned about the NC Manual from attending NCSU/DOT Workshops and Tours (e.g., Installation of Construction Site Erosion & Sediment Control Devices; and Level I and II Erosion & Sediment Control).

Delegated Local Programs

- *Wake County*: Approved the continuation of Local Delegation of erosion and sediment control (ES&C) program, contingent upon following the LQS staff recommendation to indicate the site is out of compliance if violations are noted on the inspection report.
- *Durham County*: Approved the continuation of Local Delegation.
- *Jackson County*: Approved the continuation of Local Delegation.
- *Swain County*: Approved the continuation of Local Delegation.
- *Rowan County*: Approved the continuation of Local Delegation.
- *City of Greenville*: Approved removal from probation based upon improvements in their ES&C program and continuation of Local Delegation with LQS review within one year.
- *Catawba County*: Continue probation period until the November SCC meeting because the local water resource engineer is on medical leave.
- *Haywood County and the Town of Maggie Valley*: Approved the request from Maggie Valley and Haywood County for expansion of Haywood County's jurisdiction to include the incorporated Town of Maggie Valley.

Note: All Local Delegations approved were also contingent upon following the LQS recommendations to continue to require adequate ground cover within the time limits of the local ordinance and

approved plan and to continue to check for self-inspection records on site.

Memorandum of Agreements (MOA) with Local Programs

- *Haywood County*: Approved the MOA submitted to the SCC.
- *Lincoln County*: Approved the MOA submitted to the SCC.
- *Swain County*: Approved the MOA submitted to the SCC.
- *Town of Southern Pines*: Approved the MOA submitted to the SCC.
- *Beech Mountain*: Approved the MOA submitted to the SCC.
- *Town of Highlands*: Approved the MOA submitted to the SCC.

Compost Blankets and Porous Baffles – Specifications

- Adopted practice standard and specification for the E&SC Planning and Design Manual for Compost Blankets and Porous Baffles as recommended by the Technical Advisory Committee (TAC). These can be found at:
 - Compost Blankets: http://portal.ncdenr.org/c/document_library/get_file?uuid=d2575b64-3b14-4e02-8f81-a91182b7564a&groupId=38334
 - Porous Baffles: http://portal.ncdenr.org/c/document_library/get_file?uuid=d04f7d76-be85-4476-8a95-3caf96cb2cd3&groupId=38334

NC Sedimentation Control Commission:

November Actions

At its meeting on November 14, 2012 the SCC took the following actions:

Delegated Local Programs

- *NC Department of Transportation (NCDOT)*: Approved the continued delegation of erosion and sedimentation control plan approval, contingent upon LQS staff recommendations to verify the skimmers used by contractors do not dewater at a rapid rate; increase ground cover on slopes steeper than 2:1 by the use of matting, bonded fiber matrix, or flexible growth media; and improve the erosion control oversight NCDOT has on its Design-Build contracts. Specifically, NCDOT must be able to direct design-

build contractors to revise erosion control plans, take corrective actions and provide additional measures as required by the SPCA to restrain sediment; and NCDOT should revise the plan approval process for Design-Build projects to enable sufficient time for NCDOT's Roadside Environmental Unit (REU) to thoroughly review initial and revised Design-Build erosion and sedimentation control plans to verify conformity with design criteria. Design-build contracts should provide for field inspection and plan revision by the engineering design firm on at least a monthly basis for the duration of the project. REU Field Operations staff should have authority to require additional measures or a revised plan in conformity with the SPCA. Revised policies and procedures related to Design-Build projects by NCDOT should be submitted to the Sedimentation Control Commission for review and approval.

- *Chatham County*: Approved the continuation of Local Delegation of erosion and sediment control (ES&C) program.
- *Winston-Salem/ Forsyth County*: Approved the continuation of Local Delegation.
- *City of Burlington*: Approved the continuation of Local Delegation.
- *City of Monroe*: Approved the continuation of Local Delegation.
- *Gaston County*: Approved the continuation of Local Delegation.
- *Town of Holly Springs*: Approved the continuation of Local Delegation.
- *City of Raleigh*: Approved the continuation of Local Delegation.
- *Catawba County*: Approved removal from probation based upon improvements in their ES&C program and continuation of Local Delegation with LQS review within one year.

Note: All Local Delegations approved were also asked to follow the LQS recommendations to continue to require adequate ground cover within the time limits of the local ordinance and approved plan and to continue to check for self-inspection records on site.

Memorandum of Agreements (MOA) with Local Programs

- *Gaston County*: Approved the MOA submitted to the SCC.

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- *Pitt County*: Approved the MOA submitted to the SCC.
- *Rowan County*: Approved the MOA submitted to the SCC.
- *City of Greenville*: Approved the MOA submitted to the SCC.
- *City of Monroe*: Approved the MOA submitted to the SCC.
- *Town of Apex*: Approved the MOA submitted to the SCC.
- *Town of Holly Springs*: Approved the MOA submitted to the SCC.
- *Town of Kitty Hawk*: Approved the MOA submitted to the SCC.
- *Town of Lake Lure*: Approved the MOA submitted to the SCC.
- *Town of Nags Head*: Approved the MOA submitted to the SCC.
- *Town of Wake Forest*: Approved the MOA submitted to the SCC.

Amendment to Local Programs Ordinance

- *Henderson County*: Approved the submitted amendments for the Erosion Control Ordinance. Three major changes were made: 1) To change the time limitations from 30 to 60 days for the Zoning Board of Adjustment to hold a hearing on appeals for soil erosion and sedimentation control plans and permits, 2) to eliminate the soil erosion permit, and 3) require a Soil Erosion Plan when disturbing more than 1 acre of land; or disturbing more than ½ acre with an average slope of 16 to 25 percent; or disturbing more than 1/4 acre with an average slope of more than 25 percent. (This is still more stringent than the state requirement that requires a formal erosion control plan when disturbing more than 1 acre.)

SCC 2013 Meeting Dates

10am, Ground Floor Meeting Room,
Archdale Building

- Thursday, February 28
- Thursday, May 16
- Thursday, August 15
- Thursday, November 7

Environmental Education Key to Sedimentation Pollution Control

By *Evangelyn Lowery-Jacobs*, Division of Energy, Mineral and Land Resources-Land Quality Section, Raleigh, NC (adapted from annual NPS report)

The NC General Assembly passed the Sedimentation Pollution Control Act (SPCA) in 1973. Its main goal is to keep sediment from impacting natural watercourses and adjacent property owners, while allowing development to continue. There are four exemptions to the law: production of plants and animals beneficial to man, production and harvesting of timber products, mining, and emergency situations. The law has five mandatory standards: buffer zones along water bodies, establishment of groundcover, sufficient measures to prevent sediment loss, erosion and sedimentation control plan approval, and following the approved plan. The NC Department of Environment and Natural Resources, Division of Energy, Mineral and Land Resources, Land Quality Section (LQS) enforces these standards.

In the 1930's, farmers recognized the importance of protecting the land and streams. The nation's first Soil and Water Conservation District was born in Anson County. After WWII, urbanization and additional highway construction warranted concern about accelerated erosional processes and sediment laden runoff impacts to streams. Citizen concern prompted local governments to pursue legislation for environmental protection.

There are several benefits of compliance with the law. The land is protected from accelerated erosional processes thereby maintaining the valuable nutrient rich topsoil. Wildlife and aquatic habitats are protected from sediment impacts. The cost of power and drinking water treatment is decreased. Chances of flooding are lessened and water pollution from chemicals being carried on soil particles is reduced.

Sedimentation is the number one source of water pollution by volume in the state of North Carolina. From July 2011 to June 2012, approximately 24,495 acres of land were disturbed for new construction in North Carolina. Each year we lose more valuable topsoil to erosion, and sedimentation threatens many of our waterways.

Environmental education is one of the most effective preventative tools in use today. The legislature provides funding for sediment education projects. These projects may be utilized for researching new erosion and sedimentation control technologies, providing workshops for industry professionals, creating activities for students, and distributing publications to the general public. This information allows citizens and professionals to remain informed on the degrading effects of erosion and sedimentation. It helps to maintain clean natural water, and preserve the state's mountain and beach areas. It is important that the Sedimentation Education Program has the opportunity to reach every corner of the state to ensure that people within each river basin and county realize the effects that their actions may have on their neighbors, and on future generations. Environmental education is only effective when you reach the public and leave a lasting impression.

LQS Environmental Program Priorities

Education/Workshops

- Continue to emphasize technical training for the regulated community (contractors, developers and consultants), other governmental programs, and education of the general public.
- Display, exhibit, and/or speak at science fairs, career days, or technical conferences.
- Create presentations for workshops, K-12 Enviroscape demonstrations, or internal employee training events.
- Develop/maintain chapter on Sediment Education for LQS Employee Handbook.

Publications/Website/Information Requests

- Develop technical material and presentations. Distribute and order brochures and lessons on erosion and sedimentation control. Educate general public on prevention of Non-Point Source pollution. Update materials and web site periodically to ensure availability of current information. A new web address has recently been established for DEMLR, and information is being transferred from the old web site.

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- Provide public assistance and technical assistance. Answer public inquiries from students, reporters, teachers, legislators, etc.
- Field complaints from the toll free 1-866-STOPMUD number. Manage public assistance and complaint databases. Complaints are entered into IBEAM, and routed to the appropriate regional office for investigation. Follow-up is conducted, as necessary, to ensure the concerns of the complainant are addressed.
- Distribute information on the *NC Erosion and Sedimentation Control Planning and Design Manual, Field Manual, Inspector's Guide* and video.
- Revise the *NC Erosion and Sedimentation Control Planning and Design Manual, Field Manual, and Inspector's Guide* as approved by the Technical Advisory Committee (TAC). The TAC is currently working to update the manual with new practice standards. Additional revisions for the design manual will be required to ensure practice standards comply with regulations regarding the Effluent Limit Guidelines (ELGs) for construction stormwater.
- Coordinate production of *SEDIMENTS* newsletter.
- Fulfill Local Programs information requests via email, mail, and phone.
- Revise and edit erosion and sediment control brochures, manuals, and promotional materials.

Annual Award/Contest Programs

- Display, exhibit and distribute materials to students and science teachers at various conferences, career fairs, and school science days.
- Conduct annual awards program to recognize outstanding delegated erosion and sedimentation control programs.

Sedimentation Control Commission/Sedimentation Education Committee/Technical Advisory Committee

- Serve as staff to the Sedimentation Control Commission, Sedimentation Education Committee, and Technical Advisory Committee.

Technical Oversight/Assistance

- Offer interagency coordination – NC DOT, PAO, EE, DWQ etc. Support research projects and NPS Phase II educational outreach initiatives.
- Field legislative inquiries and offer peer review of technology and research.

Accomplishments

- In 2011-12, three Erosion and Sedimentation Control Seminars were conducted for design professionals, with a total of 279 participants. Presentations were given on *Design Manual* and Sedimentation Pollution Control Act updates, erosion and sediment control measures, and design criteria at various events. Topics related to Low Impact Development (LID), native riparian area vegetation, and designing stream crossings were discussed with the participants. Various online tools and software programs were introduced to aid in preparation of erosion and sediment control plans. Updates were also provided on the new NPDES General Stormwater Permit for Construction Activities, NCG 010000, which became effective on August 3, 2011. The requirements of the permit were outlined, including details on authority specific to DWQ and LQS/delegated local governments. The LQS has assisted local governments and private organizations with their own erosion control workshops.
- An annual workshop was conducted for the delegated local erosion and sediment control programs to train local government staff in erosion and sediment control related issues. Fifty local governments participated in the workshop with a total of 104 participants. An awards program was conducted to recognize local governments that excel in erosion and sedimentation control efforts. Plaque presentations were made to the small and large local program winners: Town of Southern Pines and the City of Raleigh. Dr. Rich McLaughlin (NC State University-Soil Science Department) was the speaker for the ceremony, offering the keynote address, "*How are we going to manage turbidity?*" The presentation discussed options to satisfy the proposed Effluent Limit Guidelines (ELGs). Guidance was provided to help make passive treatment perform effectively on construction sites. Various case studies were shared with the group to illustrate alternatives available for use, including comparison test results.
- Training sessions were conducted in each of the seven regional offices to discuss the new NPDES General Stormwater Permit for Construction Activities, NCG 010000, which became effective on August 3, 2011. The sessions were conducted to discuss the federal regulations adopted by the U.S. Environmental Protection Agency (EPA) and North Carolina Division of Water Quality (DWQ). The Self-Inspection/Self-Monitoring requirements of the SPCA and the NPDES were summarized to the representatives from each of the delegated local erosion and sediment control programs. The sessions provided definitions of terms, specific details on monitoring and recordkeeping, and recommendations to maintain compliance. The role of Land Quality, DWQ, and the local programs were described to clarify any questions regarding implementation of the new NPDES General Stormwater Permit.
- Presentations were given to organizations such as science teachers, citizen groups, contractors, design professionals, and public schools. DEMLR Geologic Survey and Land Quality staff exhibited at the 2011 North Carolina Science Teacher Association (NCSTA) Conference, which was attended by approximately 1,200 teachers from across the state. It was an opportunity to distribute instructive materials to the participants on erosion and sedimentation control that could be incorporated into classroom curriculum. The DEMLR staff also participated in the "Rock and Minerals Giveaway Exhibit." The samples and an identification key are given to the teachers for use in various programs of study.
- The Sedimentation Education Specialist attended the 2012 Career Day Explosion at Lucile Souders Elementary School in Fayetteville. Representatives from ten local organizations were present to share knowledge with the students on their affiliated agency. The Sedimentation Education Specialist provided information to the students in

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Environmental Education

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grades K-5 on soil erosion, and its effects on our environment. The effects of erosion on water quality and aquatic habitat were discussed with the groups. Reference materials were provided to the students and teachers for inclusion in the classroom curriculum. The students had an opportunity to ask questions about the sediment program, and education requirements for jobs related to that field.

- The Sedimentation Education Specialist attended the 2012 Area VII Envirothon held on the campus of Southeastern Community College in Whiteville. The Envirothon is an annual competition in which teams compete for recognition and scholarships by demonstrating their knowledge of environmental science and natural resource management. The program is an ecology field day/competition event for five-member high school and middle school teams. The resource subject areas are: Wildlife, Soils, Forestry, Current Environmental Issues and Aquatics. Nineteen Teams from Bladen, Columbus, Cumberland, Harnett, Hoke, Richmond, Robeson, Sampson, and Scotland counties competed for the opportunity to go to the State competition.
- Distributed information on the *Erosion and Sedimentation Control Planning*

and *Design Manual*, inspector's guides and videos. Managed orders, and conducted sales of erosion and sedimentation control materials. The design manual is available for download on the DEMLR website.

- Oversaw the revisions of the NC *Erosion and Sedimentation Control Planning and Design Manual*. Additional revisions are underway in response to Technical Advisory Committee comments. Efforts are in progress to include new erosion and sediment control technology, such as coir logs and composting, in the *Design Manual* as recommended options to put into service on project sites. Practice standards were approved at the August 2012 Sedimentation Control Commission meeting for Porous Baffles and Compost Blankets. The two new standards are being prepared for inclusion in the *Design Manual*, which will be published on the DEMLR website. Two additional standards (Compost Sock and Riparian Area Seeding), currently in development by the TAC, will be submitted to the SCC for consideration.
- Conducted literature review of Compost Use BMPs, to determine feasibility of use in erosion and sedimentation control. A practice standard for Compost Blankets was approved by the SCC, which will be included in the *Design Manual*.

- Answered public information requests, ordered publications, and organized educational functions. The Sedimentation Education Specialist responded to numerous email information requests. One request was fulfilled for the Green Dozer Modules for contractor training, which were distributed to the client on CD.
- Collected and analyzed information request data by date, county, region and river basin.
- The semi-annual newsletter, *Sediments* was made available online for interested parties across NC and neighboring states. The newsletter featured articles on law changes, Sedimentation Control Commission actions, workshops, new technologies and hot issues in erosion and sediment control. The electronic *Sediments* newsletter is distributed among a listserv of approximately 500 recipients, and is also made available as an online news publication on the DEMLR website.
- Served as staff to various committees such as the Sedimentation Control Commission, Sedimentation Education Committee, Technical Advisory Committee, and 319 Non Point Source Workgroup to promote environmental education and erosion and sediment control training. Organized meetings and recorded minutes for committee meetings. Evaluated the FY2012 319 grant proposals. Participated in reviewing the ranked list of applicants to identify finalists for interviews.
- The Sediment Education Program logged calls from the toll free STOP-MUD hotline. Collected data was analyzed. Complaints were referred to the appropriate regional office for investigation.



Evangelyn Lowery-Jacobs (NCDENR-LQS) talks with a group of fourth grade students at Lucile Souders Elementary School about erosion and its effects on the environment.



The group discusses current environmental issues in order to raise awareness of the students.

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Evangelyn Lowery-Jacobs (NCDENR-LQS) and Kay Bullard (Cumberland County Soil & Water Cons. District) exhibit reference materials at the 2012 Career Day Explosion at Lucile Souders Elem. School.

- Supported interagency relations by conducting training sessions with the Division of Water Quality (DWQ) in each of the seven regional offices to discuss the new NPDES General Stormwater Permit for Construction Activities, NCG 010000, which became effective on August 3, 2011. Offered peer review of technical documents.
- Provided input on format and content of website upgrades to conform to state standards. Recent website updates include dividing Chapter 6, *Practices and Specifications*, into searchable categories to allow for quicker reference and download by users. The sedimentation education specialist has been granted rights to edit the DEMLR website. Information has been transferred from the old webpage and is being edited to ensure availability of current information.
- Submitted paperwork and managed four contracts for sedimentation education projects. Managed workplan, quarterly reports, invoicing, and funding for Sedimentation Education Specialist position.
- The Sediment Education Specialist administered a contract for a training needs assessment for audiences throughout North Carolina that need or have received sediment and erosion control training. The economy has changed, which has resulted in fewer staff and less funding for continuing education. There was a need to evaluate how the training providers approach education so that they 1) meet the needs of the audiences targeted, 2)

understand and address new priorities that have emerged, 3) maximize the benefit of training sessions, and 4) avoid duplication of effort in providing training on the same topic as other providers.

The Center for Urban Affairs and Community Services (CUACS) conducted the needs assessment, which was a web-based survey, distributed to past workshop participants by email. Participants were able to provide answers to key questions posed by the project partners to refine the design of training efforts. The CUACS staff generated a detailed report that discussed the survey, data analyses procedures, and project findings. The survey results prompted a change in the structure of the fall 2012 training opportunities provided by DEMLR. The survey participants requested one day workshops to minimize participation cost (i.e., registration, travel, etc.), and time away from work. Suggestions were also provided on training preferences, related to subject matter. The training sessions for FY2012-13 have been modified to satisfy the requests of the audience related to training format and content. The tailored training format will continue for a trial period to determine efficiency. The objective is to provide the most effective training opportunities to draw participants.

Additional Opportunities/Future Initiatives

- Produce additional revisions to the *Erosion and Sedimentation Control Planning and Design Manual*. Create new mailing list for revisions. Also complete revisions to the *Field Guide and Inspector's Guide* to reflect updates in the *Erosion and Sedimentation Control Planning and Design Manual*.
- Produce revisions to the Erosion Patrol Curriculum for 3rd through 5th grade.
- Coordinating education efforts with the Natural Resource Conservation Service and Division of Soil & Water, and converting erosion and sedimentation educational materials into Spanish.
- Develop new brochures for local programs on how to submit a good E&SC plan.
- Develop new display material.

- Work with DWQ to resolve turbidity and storm water management issues.
- Notify field staff and educate public on new legislation and revisions to the Sedimentation Pollution Control Act and the *Erosion and Sedimentation Control Planning and Design Manual*. Revisions to the NPDES General Stormwater Permit for Construction Activities, NCG 010000, are approaching and will need to be discussed with the public to ensure compliance. Workshops will be conducted, within each region, to discuss the new requirements with the local programs.
- Modify education project priorities according to new legislative funding mandates, including an ability to fund research in the future with allocated education funds.
- Increase outreach and public service through sedimentation education programs.

Significant Challenges/Unaddressed Issues

- The most significant challenge the LQS continues to have is the staffing level. Only one full-time staff person (the Section 319 Base Program Sediment Education Specialist position) is dedicated to education, technical training and research. High outputs are continuing to be required of fewer staff.
- The SCC and LQS have activities for elementary and middle school students. A high school curriculum needs to be developed.
- Create public service announcements (TV, radio, billboard) about the Sedimentation Pollution Control Act. Produce Video/DVD publication for general public education.
- Educational modules for the Green Dozer Contractor program and training modules for instructors have been proposed and revised. The presentations, and possibly video components, may need to be added to the website.
- Website upgrades need to be undertaken to make more information readily available to the public. This may include a more non-technical section of information for laypeople, as well as training/installation videos for professionals.

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Environmental Education

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- Continue research funding for projects such as new statewide vegetation/native grasses specifications and improved design efficiencies for erosion control measures.

Resource Needs

- Funding to contract with NCSU Sediment and Erosion Control Research and Education Facility to perform controlled research on the effectiveness of various best management practices and to test erosion control products. Then, present the results in field training seminars.
- Staff and funding for the production of a pocket Field Guide for erosion and sedimentation control.

In summary, the North Carolina Sedimentation Education program strives to meet two main Non-Point Source objectives of the EPA: to protect water quality and to educate the public on the harm that is caused by uncontrolled soil erosion and stream sedimentation and effective ways to prevent non-point source pollution from sedimentation.



Getting to Know You: A Statewide Assessment of Erosion & Sediment Control Professionals

By Nicole Saladin Wilkinson, Coordinator for Research & Outreach, Water Resources Research Institute, Raleigh, NC

Personal and professional stories abound related to declines in staff, resources, funding, and capacity as linked to the economic downturn. Trainers and educators who target audiences in some of the private and public sectors that have been hit hard in the last five years (specifically, engineers, designers, landscape architects and others in municipal, county, and state governments, and private firms whose work is closely linked to building and construction projects) have seen workshop attendance steadily decline at a time when environmental regulations continue to change, concerns over

natural resources continue to grow, and the need for disseminating information in these fields becomes increasingly important.

Anecdotes indicate that a key advantage to attending training in a downturned economy is the opportunity to keep one's skills and certifications current, and to network with other professionals and increase one's prospects for new or continued employment. Perceived key barriers to attending trainings were the time away from professional duties in a time where those still in the field were regularly given more roles and responsibilities, and cost to attend training when travel and education budgets were being slashed.

In North Carolina, several key groups that provide training related to erosion and sediment control were interested in learning more about their audiences in the hope that they could better tailor their offerings to meet changing needs and demands. The North Carolina Water Resources Research Institute lead an effort to conduct a statewide needs assessment of erosion and sediment control professionals with strong support and financial contributions from NC DENR's Division of Energy, Mineral and Land Resources Land Quality Section and NC State University's Soil Science Department, both of which sponsor highly recognized training programs in the state.

Over 700 professionals responded to a lengthy survey about their preferences and needs related to the following aspects of training: incentives for and barriers to attendance, topics of interest, duration, format, costs, materials, and communication. This assessment confirmed some anecdotal evidence that had been used as guidance in developing training, and dispelled other assumptions that likely were adding to either dissatisfaction with training or contributing to a decrease in attendance. Some of these key findings are summarized below and are being addressed through modifications to training offerings.

When asked why training needs were not being met, just under a third of respondents viewed subjects as not relevant to their work, with plan reviewers and designers (at 37% each) as the most likely audiences to feel this way. Surprisingly, only 12% indicated this was because of changing jobs leading to changing needs, so perhaps there is more consistency in needs and job stability than we anticipated but that a significant portion of training content still needs to be assessed for relevancy. Lack of relevance was cited as the most significant barrier to

attending training (around 48% overall). Registration cost and travel cost were both significant barriers for the private and public sectors (around 40% each). The next most significant barrier was travel time and time spent away from duties, lending support for more regional workshops around the state (additional questions revealed that the mountains and outer banks are not well served), as well as support for shorter workshops (full day events were the most preferred duration, with two-day events the least preferred). Only about 20% indicated that permission by employers to attend was a barrier, so presumably if a strong case can be made for relevance of the training to a job duty and a reasonable amount of time away from work, then employers would generally be supportive of training pursuits.

Not surprisingly, CEUs and PDHs were the biggest incentive for attending training, but surprisingly, networking with other professionals was the least significant incentive (in conflict with our anecdotal evidence).

The assessment also explored interest in 59 training topics related to erosion and sediment control. Interest and knowledge were highest in topics pertaining to regulations and permitting. Engineered practices were also ranked as high knowledge topics, while vegetative practices were among the lowest knowledge area but with moderate to high interest. Overall, half or more of the respondents expressed interest in 47 of the 59 topics listed. Of key importance to trainers is to focus on areas with high interest but lower knowledge as this represents the ideal education opportunity, particularly for topics that trainers know to be of high importance for successful erosion and sediment control.

What This Means for Professionals

Each year, the Water Resources Research Institute partners with NC DENR's Land Quality Section staff to host spring and fall erosion and sediment control workshops. The biggest change to the FY12 workshops is that they have been switched to a 1-day format, and there are three fall and two spring workshops in more diverse locations around the state. This is in direct response to preferences expressed in the assessment regarding duration, travel time, regional access, registration cost (shorter workshops are cheaper to attend), and also to provide a more focused one-day agenda that allows participants to pick their training attendance based on topics of interest. Furthermore,

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landscape architects have traditionally been considered a key audience for these trainings but were underrepresented in our assessment (2.1% of respondents); thus, efforts will be made to reach out to them and further tailor trainings to meet their needs and increase engagement at these workshops.

Additional suggestions for training workshops are welcome, and can be sent to nicole_wilkinson@ncsu.edu

The full report from this needs assessment, conducted and prepared by NCSU's Center for Urban Affairs and Community Studies, can be found at <http://ncsu.edu/wrri/code/publications/currentpublications.htm>.

Registration information for the Spring 2013 WRRI/LQS workshops can be found at <http://ncsu.edu/wrri/code/events.htm>



Erosion and Sedimentation Control Planning and Design Workshop

Announcing the Spring 2013 Erosion and Sedimentation Control Planning and Design Workshops hosted by North Carolina Sedimentation Control Commission, North Carolina Department of Environment and Natural Resources Division of Energy, Mineral and Land Resources Land Quality Section, the Water Resources Research Institute of The University of North Carolina and The Infrastructure, Design, Environment and Sustainability (IDEAS) Center of UNC Charlotte:

Workshop Dates/Locations

March 6, 2013:

Cone University Center at UNC Charlotte,
RM 210, 9201 University City Blvd
Charlotte, NC 28223

Registration deadline: Wed., Feb. 20, 2013

April 5, 2013:

The Wake County Commons Building,
4011 Cary Drive, Raleigh, NC 27610

Registration deadline: Mon., March 25, 2013

For more information and to download a registration brochure please visit: <http://ncsu.edu/wrri/code/events/upcomingevents2.htm>

Description: These workshops are structured to educate and familiarize design professionals with the NC Sedimentation Pollution Control Act (SPCA), the rules implementing the Act, design standards for erosion and sedimentation control BMPs and elements that are necessary to submit an erosion control plan. This comes to directly from the source-the NC Department of Environment and Natural Resources Division of Energy, Mineral and Land Resources Land Quality Section and its partners providing you with the information you need to submit a plan and prevent pollution by sedimentation.

The workshops will focus on considerations for project layout and protection of developing watersheds. Techniques will be discussed for conveyance of runoff, sedimentation control measures and establishment of ground cover. Design software for erosion and sedimentation control measures will be demonstrated.

Who Should Attend: Professional Engineers, Landscape Architects, Environmental Consultants, Local Governments

Continuing Education: 7.5 PDHs* will be offered for professional engineers and land surveyors, and 7.5 CEUs* will be offered to landscape architects (*contingent on board approval)

*Please take a moment to read about the changes in workshop format for the Spring 2013 events: <http://ncsu.edu/wrri/code/news.htm>

Questions? Call (919) 515-2815 or email water_resources@ncsu.edu for assistance



Revisions to the Design Manual

The Sedimentation Control Commission approved revisions to the Erosion and Sedimentation Planning and Design Manual in March 2009. Revisions include sections on vegetative stabilization to include native species, skimmer dewatering calculations, streambank stabilization based upon NRCS practices, and estimating runoff (Chapters 3, 6, and 8 and Appendix 8.03). The manual is available as PDF files at:

<http://portal.ncdenr.org/web/lr/publications>

mentioned from personal communications.

The authors make a number of suggestions to avoid inadvertently trapping snakes in erosion control products, mainly to avoid using conventional RECPs that have standard plastic netting. This is a common recommendation when RECPs are used around waterbodies. They do not recommend using a smaller mesh size as these may entangle smaller or juvenile snakes. Netting that is not welded at thread intersections so the threads can move independently, such as coir or jute, was suggested as an alternative. Very large mesh netting or netless RECPs were also recommended. They also cited an unpublished study of different types of netting including NatureZone® (Conwed Global Netting Solutions, Minneapolis, Minnesota, USA) in which snakes were exposed to the netting in enclosures. Netting with elongated openings (rectangular) were found to be less likely to entangle the snakes, although the authors cautioned that larger, more thick-bodied snakes may still be at risk. Of course, using something other than RECPs is another approach, but they acknowledge that in places that might be inundated, such as stream banks, loose products such as straw or hydromulch could not be used.

There is a strong need for further study in their view since most of the information available is anecdotal. For instance, they suggest that surveys be conducted for 3-6 months after RECPs are installed to determine the actual risk of entanglement. Both surveys of installed products and controlled studies should be conducted to determine the actual risks to snakes, and they would like this information to be published and freely available in the scientific literature.

¹Barton, C., and K. Kinkead. 2005. Do erosion control and snakes mesh? *J. Soil Water Cons.* 60 (2): 33A-35A.

²Kapfer, J. M., and R. A. Paloski. 2011. On the threat to snakes of mesh deployed for erosion control and wildlife exclusion. *Herpetological Conservation and Biology* 6(1): 1-9.





Newsletter of the North Carolina
Sedimentation Control Commission
c/o NCSU Water Quality Group
Campus Box 7637
Raleigh, NC 27695-7637

Calendar of Events

3/6/13 4/5/13	Erosion & Sedimentation Control Planning & Design Workshops, (March 3, 2013, Charlotte) and (April 5, 2013, Raleigh, NC) http://ncsu.edu/wrri/code/events/upcomingevents2.htm	7/21-24/2013	2013 American Society of Agricultural and Biological Engineers (ASABE) Annual International Meeting. Kansas City, MO. http://www.asabemeetings.org
4/9/2013	Level I & II Recertification: Erosion & Sediment Control/Stormwater, New Bern, NC http://go.ncsu.edu/ESCLevel1-2	6/13/2013	Level I: Erosion & Sediment Control/Stormwater Inspector/Installer, Raleigh, NC http://go.ncsu.edu/ESCLevel1-2
4/10/2013	Level II: Erosion & Sediment Control/Stormwater Site Management, New Bern, NC http://go.ncsu.edu/ESCLevel1-2	8/6/2013	Level I & II Recertification: Erosion & Sediment Control/Stormwater, Asheville, NC http://go.ncsu.edu/ESCLevel1-2
4/11/2013	Level I: Erosion & Sediment Control/Stormwater Inspector/Installer, New Bern, NC http://go.ncsu.edu/ESCLevel1-2	8/7/2013	Level II: Erosion & Sediment Control/Stormwater Site Management, Asheville, NC http://go.ncsu.edu/ESCLevel1-2
6/11/2013	Level I & II Recertification: Erosion & Sediment Control/Stormwater, Raleigh, NC http://go.ncsu.edu/ESCLevel1-2	8/8/2013	Level I: Erosion & Sediment Control/Stormwater Inspector/Installer, Asheville, NC http://go.ncsu.edu/ESCLevel1-2
6/12/2013	Level II: Erosion & Sediment Control/Stormwater Site Management, Raleigh, NC http://go.ncsu.edu/ESCLevel1-2	10/29/2013	Level I & II Recertification: Erosion & Sediment Control/Stormwater, Raleigh, NC http://go.ncsu.edu/ESCLevel1-2
6/13/2013	Level I: Erosion & Sediment Control/Stormwater Inspector/Installer, Raleigh, NC http://go.ncsu.edu/ESCLevel1-2	10/30/2013	Level II: Erosion & Sediment Control/Stormwater Site Management, Raleigh, NC http://go.ncsu.edu/ESCLevel1-2
7/21- 24/2013	68th Annual Int'l Conference for the Soil & Water Conservation Society (SWCS): Choosing Conservation: Considering Ecology, Economics and Ethics. Reno, NV. http://www.swcs.org/13ac	10/31/2013	Level I: Erosion & Sediment Control/Stormwater Inspector/Installer, Raleigh, NC http://go.ncsu.edu/ESCLevel1-2