Volume 24 No 2 • July 2021 - December 2021

Newsletter of the North Carolina Sedimentation Control Commission

SEDIMENTS

State of North Carolina
Department of Environmental Quality

Division of Energy, Mineral, and Land Resources Brian Wrenn, Director

ABOUT SEDIMENTS

SEDIMENTS is a newsletter published by the North Carolina 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:

https://deq.nc.gov/SEDIMENTS

And via the WRRI Sediments listserv. To subscribe follow the directions at:

https://wrri.ncsu.edu/contact-us/listservs/

Send comments to the Sediment Education Specialist.

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2021 North Carolina Erosion and Sediment Control Workshop

Presented by:
NC Department of Environmental Quality - Land Quality Section

In partnership with:
NCSU Department of Crop & Soil Science
Southeast Chapter - International Erosion Control Association

The NC Erosion and Sedimentation Control (E&SC) Workshop, formerly known as the NC E&SC Design Workshop, was held on December 2, 2021 in Raleigh. This workshop was presented by NC DEQ – Land Quality Section in partnership with NCSU's Department of Crop & Soil Sciences and the Southeast Chapter of the International Erosion Control Association (SE-IECA). This workshop is meant to educate and familiarize design professionals, contractors, developers, and local governments with new erosion and sediment control requirements and practices. While last year's workshop was switched to a series of virtual webinars due to Covid-19; this year registrants had two options for how they could participate. The first option was to attend the workshop in-person for a combination of morning presentations and an in-the-field afternoon session. The second option allowed registrants to join the workshop virtually for the morning presentations only.

The in-person workshop option had approximately 100 people in attendance and the virtual half-day option had approximately 50 people in attendance. Feedback from the presentations have been overwhelmingly positive. Those participating virtually were happy that a virtual option was still being offered. While those who participated in-person were happy for the opportunity to once again network with colleagues in-person and had the bonus of seeing demonstrations at NCSU's Booth Field Lab in the afternoon.

The morning presentations were conducted by presenters from the NCDEQ Erosion and Sediment Control Program, Stormwater Program, and the Division of Mitigation Services; from the NC Forest Service, NCDOT, and from private engineering firms. Topics ranged from program updates and overviews to project examples and precipitation curves. The afternoon field demonstrations/presentations were conducted by NCSU staff and students. Topics and demonstrations ranged from drone use and requirements, engineered stormwater swales, grass vs. wildflowers, tillage with and without compost, use of flocculants, silt fence outlets, skimmers, porous baffle functions, different fiber check dam options, and a rainfall simulation.

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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 the 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 they remain Director. The chairman of the SCC is named by the Governor.

Chair:
Dr. Susan White
Water Resources Research Institute

Commissioners:
Ms. Susan Foster
NC Home Builders Association

Ms. Marion Deerhake
NC Environmental Management Commission

Mr. Michael Taylor
Associated General Contractors

Mr. Michael D. Willis
NC Soil and Water Conservation Commission

Mr. Benjamin Brown
NC League of Municipalities & Association of County Commissioners

Dr. Rich McLaughlin
NCSU, Dept. of Soil Science

Mr. Mark Taylor
Professional Engineers of NC

Mr. Hartwell Carson
Non-governmental Conservation

Ms. Emily Sutton
Non-governmental Conservation

Ms. LeToya Ogallo
NC Public Utilities

Mr. Robert Jason Conner
NC Mining Commission

NC Sedimentation Control Commission: August Actions

At its virtual meeting on August 17, 2021 the NC Sedimentation Control Commission (SCC) took the following actions:

Delegated Local Programs

- Town of Weddington: Voted to continue their delegation authority.
- City of High Point : Voted to continue their delegation under review for another six months.
- Henderson County: Voted to continue their delegation authority without further review.
- Macon County: Voted to continue their delegation under review for another six months.
- City of Wilson: Voted to place the program on probation with review to be brought before the SCC at their second quarterly meeting of 2022.

Town of Knightdale Ordinance Review

Provided an informal review of the Town's draft local ordinance.

NC Sedimentation Control Commission: November Actions

At its virtual meeting on November 4, 2021 the NC Sedimentation Control Commission (SCC) took the following actions:

Swearing in of Members

Mr. Mark Taylor was re-appointed to the SCC and took the oath of office at this meeting.

Modifications to Remission Guidelines for DEMLR and for Delegated Local Program

The SCC voted to shorten the deadline for remissions requests of a civil penalty from 60 days to 30 days per Session Law 2021-158 that amends sub-section (a) of General Statute 113A-64.2 of the Sedimentation Pollution Control Act of 1973

Delegated Local Programs

- City of Jacksonville: Voted to continue their delegation authority.
- Iredell County: Voted to continue delegation authority.

Model Ordinance Update

Voted to re-adopt the model ordinance thus approving the changes recommended by DEMLR staff in part due to the amendments made to the Sedimentation Pollution Control Act of 1973.

The updated model ordinance can be accessed on the Local Programs portion of the DEMLR-E&SC website:

https://deq.nc.gov/about/divisions/energy-mineral-land-resources/erosion-sediment-control/local-government-programs

NCDOT Annual Program Review

Voted to continue their delegation.

2022 SCC Meeting Dates

Tuesday, Feb. 22, 2022

Thursday, May 19, 2022

Thursday, Aug. 18 2022

Tuesday, Nov. 15, 2021

All meetings are at 10:00 am
Ground Floor Hearing Room
Archdale Building
512 N. Salisbury Street Raleigh, NC

Schedule and location of meetings is subject to change. Public notice of any changes will be given pursuant to NCGS 143-318.12

2021 North Carolina Erosion and Sediment Control Workshop

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Thank you to all of our wonderful classroom and field presenters, organizers, and to everyone who participated in this workshop. The workshop materials can now be accessed on the 2021 NC E&SC event page: https://deq.nc.gov/2021-nc-esc-workshop

If you have any topic suggestions or would like to present at future programs contact the Sediment Education Specialist. Future workshop dates will be posted to the NCDEQ E&SC homepage as they become available: http://deq.nc.gov/E&SC.










Top left photo: Aerial drone photo taken by Rob Austin of NCSU during the workshop. Middle left photo: Tom Gerow of the NCFS presenting at the morning session. Middle photo: Dr. Rich McLaughlin of NCSU demonstrating different fiber check dams. Bottom left photo: Dr. McLaughlin demonstrating flocculation systems for pumped water. Bottom middle photo: Silt saver representative, Keith Potter, demonstrating their slope drain bag and pipe stopper. Top right photo: Rob Austin of NCSU presenting on drone use and requirements. Second from the top right photo: Adam Howard of NCSU discussing silt fence outlet options. Middle right and second from the bottom right photos: Md Mahfuz Islam and Dr. Christina Kranz presenting on grass vs. wildflowers, tillage with and without compost. Bottom right photo: Emily Leupp presenting on roadside swales.

A Long History Of Erosion: Part Two

By Dr. Rich McLaughlin, NCSU, SCC

A Long History of Erosion (part one) can be found in Sediments, Volume 23, No 1.

Recent photo of Providence Canyon, Georgia. *Photo Credit: https://gastateparks.smugmug.com/Providence-Canyon-State-Park/i-HpbpmpL/A*

The previous article reviewed historical influences of humans on erosion up until the early 20th century. We can still see evidence of the erosion that occurred as a result of farming practices common in the 19th century, usually in the form of gullies which formed and may be partially forested currently. Probably the most dramatic example of this is Providence Canyon in Georgia, the so-called "Grand Canyon of the East." Up to 200 feet deep and 300 feet wide, this feature started as gully erosion in cotton fields and is now a state park, somewhat ironically preserving it as a "natural wonder." It has been estimated that 25% of the soils in the piedmont of the southern United States were essentially destroyed for agricultural use by the 1930s.

While there were some efforts to improve farming practices in some regions, this was not coordinated nationally until the formation of the Soil Erosion Service in the 1930s, later changed to Soil Conservation Service (SCS) to better reflect their intentions. These were the Dust Bowl years, which helped Congress understand the need to fund SCS. Hugh Hammond Bennett, born in Anson County, famously testified before Congress just when a dust storm arrived in Washington. He brought the legislators to the window and told them that the dust was from the Midwest, which spurred them to approve the funds he was requesting for the SCS. As part of the United States Department of Agriculture, SCS began helping farmers to reduce erosion and protect soil resources. As more responsibilities for land and water management were added by Congress, SCS eventually became the Natural Resources Conservation Service to better reflect its mission. More detail can be found on the NRCS web pages (see reference link below).

Aside from farms, there are two other human-induced sources of stream sediment that emerged in the 20th century. One is accelerated streambank erosion, which most of us have seen even if we didn't recognize it. Before our society was run by electricity, many of the streams in the piedmont and mountains were dammed to create mills for both grain and lumber processing. If you pair the high erosion rates common on the 18th and 19th century farms with dammed streams, a great deal of sediment settled behind these dams. Once water-powered mills became obsolete, these dams were usually abandoned and were mostly breached and destroyed during high flow events. Once this occurred, the streams started to cut down through all that settled sediment. Add in all the runoff from buildings and roads that send much more water into streams than they received previously, and the streams start to erode their steep banks every time there is a high flow event. It has been estimated that, if left unchecked, it would take thousands of years for streams to remove all of the sediment deposited from earlier farming practices. This process and methods to restrain it (stream restoration) are very interesting but beyond the scope of this review.

The other source of sediment besides farms and streambank erosion in our typical landscapes is land disturbance for development, including roads, buildings, and other structures. Because of the combination of exposed soil and steep slopes, the erosion rates for construction sites are typically 10-100x that of agricultural rates. Construction activity accelerated greatly during the last 100 years, and eventually the sediment coming from development activity began to be a noticeable nuisance in developing watersheds. One of the earliest publications on this was by Wolman and Schick (1967) in a number of rapidly developing watersheds in Maryland. (*continued on page 5)*

A Long History Of Erosion: Part Two

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This comprehensive study quantified the relatively uncontrolled sediment loads coming from these watersheds, measuring rates up to 220 tons per acre per year. I spent a good deal of time as a child playing in one of these streams during this period, and I can attest to the vast amount of sand and gravel choking it (and the eroding stream banks). Surveys of county engineers recognized that this was a problem. They suggested that even modest practices, some borrowed from long-established agricultural practices, could greatly reduce the impacts of development. Interestingly, the developers surveyed did not think the off-site sediment movement was a problem.

In 1970, the Maryland legislature passed the Sediment Control Law, several years ahead of the federal government. Under a grant from the new United States Environmental Protection Agency, the Maryland Department of Water Resources and Hittman Associates developed the 1972 Guidelines for Erosion and Sediment Control Planning and Implementation. This document includes many of the early practices implemented on construction sites, including sediment basin design based on capturing 0.5" of sediment for volume (1,800 ft3) and spillways that can handle 10-year storm events. In 1978, Residential Erosion and Sediment Control: Objectives, Principles & Design Considerations was published by a joint effort of the Urban Land Institute, American Society of Civil Engineers, and the National Association of Home Builders. This was likely the basis of the 1983 Maryland Standards and Specifications for Erosion and Sediment Control, which may have been the first design manual for now-common practices on construction sites, and was the basis for similar manuals in many states. North Carolina's first manual was published in 1988 and is updated periodically to incorporate new and improved practices and to drop the less effective ones.

References:

NRCS. Honoring 86 Years of NRCS – A Brief History. https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/about/history/?cid=nrcs143_021392

Wolman, M. C., and A. P. Schick. 1967. Effects of construction on fluvial sediment, urban and suburban areas of Maryland. Water Resour. Res.3 (2): 451–464. https://doi.org/10.1029/WR003i002p00451.

U.S. E.P.A. 1972. Guidelines for Erosion and Sediment Control Planning and Implementation. Environmental Protection Technology Series EPA-R2-72-015. https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=9100823N.PDF

Aerial view of the impact of construction activities in the watershed of two ponds. Photo Credit: Rich McLaughlin.

Uncontrolled sediment discharges from an abandoned construction site led to heavy sediment deposits in a stream and culvert. Photo Credit: Rich McLaughlin.

Example of extensive clearing and exposed soil which can result in very high erosion rates.
Photo Credit: Rich McLaughlin.

NC E&SC Announcements

Increase in NC DEQ's Erosion & Sediment Control Plan Review Fee

As of November 19, 2021, the E&SC application fee is $100 per acre for new or revised plans submitted on or after that date. The express fee is unchanged.

2022 Local Program Workshop - Apr. 19 & 20, 2022

The 2022 Local Program Workshop has been scheduled for Apr. 19 & 20 at the Union County Agricultural Center. This event is specifically for the local governments that have delegated E&SC programs; registration and workshop information will be sent directly to these programs.

NCFS's New "Know Your Forest, Know Your Water" Education Workbook

The NC Forest Service has published a new educational workbook correlated to the 2021 NC Course Curriculum Standards which can be downloaded from their website:

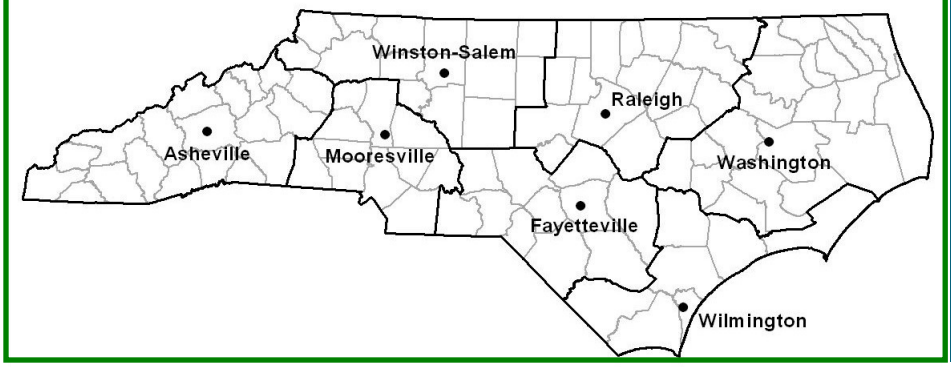
https://www.ncforestservice.gov/water_quality/pdf/Know-Your-Forest-Know-Your-Water.pdf

Who Do I Call?

If you have questions or concerns related to erosion and sedimentation control or off-site sedimentation from construction in NC contact the appropriate local program, regional office, central office or the toll-free hotline.

Local program information:
https://deq.nc.gov/about/divisions/energy-mineral-land-resources/erosion-sediment-control/local-government-programs

Toll-Free Hotline:
1-866-STOPMUD



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

Asheville Regional Office
Phone: (828) 296-4500

Regional Engineer:
Stanley Aiken

Fayetteville Regional Office
Phone: (910) 433-3300

Regional Engineer:
Tim LaBounty

Mooresville Regional Office
Phone: (704) 663-1699

Regional Engineer:
Zahid Khan

Raleigh Regional Office
Phone: (919) 791-4200

Regional Engineer:
Bill Denton

Washington Regional Office
Phone: (252) 946-6481

Regional Engineer:
Samir Dumpor

Wilmington Regional Office
Phone: (910) 796-7215

Regional Engineer:
Dan Sams

Winston-Salem Regional Office
Phone: (336) 776-9800

Regional Engineer:
Tamera Eplin

Raleigh Central Office
Archdale Building
Phone: (919) 707-9220