



North Carolina Forest Service

An agency of the N.C. Department of Agriculture & Consumer Services

BMP Newsletter

Best Management Practices for Water Quality & Soil Conservation



This issue's cover photo was taken along a forest road in the Piedmont. It depicts several high level road standards that help maintain all-weather access while protecting water quality. Can you name a few road standards seen here? If not, revisit this photo after reading through this newsletter issue.

What are Minimum Standard Forest Roads?

Road standards describe the quality of a road and are based upon road usage. Road gradient, curvature, cut and fill ratios, and subgrade width are examples of individual road 'standards'. A minimum standard forest road provides a desired level of utility (i.e., amount and weight of traffic) and environmental protection (i.e., complies with State and Federal rules) at the lowest cost. Decisions on the levels of road standard are affected by available funds, site features, projected current and future road use, degree of concern for environmental impact. Regardless of these factors, basic road standards should provide **runoff control, grade control, and appropriate alignment**. Whether constructing a new road or maintaining an existing one, planning and implementing effective BMPs are keys to success.

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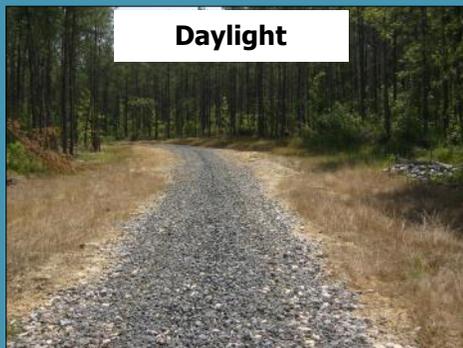


Examples of different haul roads in the Piedmont with photo A having the highest road standards, photos B and C having intermediate road standards and D having the lowest road standards.

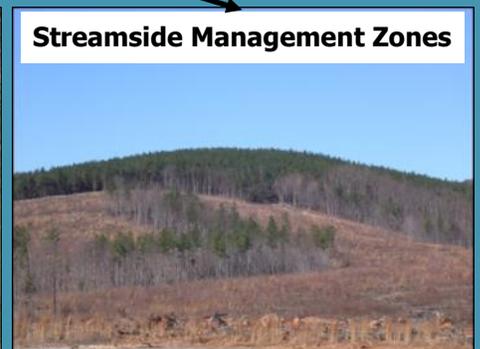
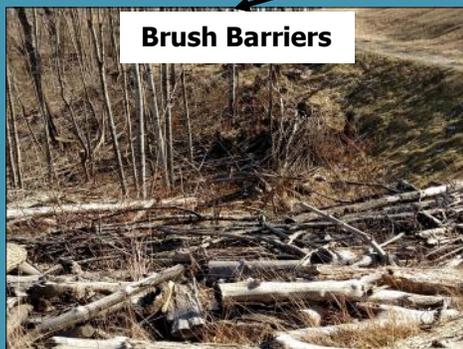
Maintaining Minimum Standard Roads

The secret to maintaining existing forest roads is often **RUNOFF CONTROL**. Existing forest roads range from poorly located ones with few to no water control structures to properly located ones with excellent water control structures. Where do your roads fall into this spectrum?

How can you improve an existing road?



Trap Erosion Off of the Road



Resources for Road Maintenance

Information & Tools

- ⇒ [NC Forestry BMP Manual](#)
- ⇒ [NCFS Forestry Preharvest Planning Tool](#)
- ⇒ [NCFS BMP Material Costs](#)

Contacts

- ⇒ [County Ranger](#)
- ⇒ [Water Quality Foresters](#)
- ⇒ [Consulting Foresters](#)

Western Region

BMP Focus: Road Maintenance

Preliminary findings from the latest BMP implementation survey suggest that road BMPs for cutbanks and fill slopes could be improved upon in the western region.

Erosion control/soil stabilization along the road surface is often the primary focus, but did you realize that cut and fill slopes can account for more than half of the total road disturbance in steep terrain?



Top: Note the attention given to the road surface: nice work, but this road still has exposed cut and fill slopes. Seed and straw for the cut and fill slopes may be an appropriate BMP for this situation.

Bottom: This gently sloping road has a slight green haze from emerging vegetation on the cut and fill slopes. Nice work!

Cut & Fill BMPs

- **Seed & Mulch**
- **Brush Barriers**
- **Geotextiles**
- **Straw Mats**

Upcoming Events

July, Aug., & Sept. Events @ Asheville, [Cradle of Forestry](#)

July 21 @ Mills River, [Forestry Water Quality Refresher Workshop](#)

July 25-27 @ Asheville, [River Course Offering](#), NCSU Stream Restoration Program

Aug. 10 @ Franklin, [Forestry Water Quality Refresher Workshop](#)

Sept. 8-17 [NC Mountain State Fair](#) @ Fletcher

Meet your Water Quality Foresters



Richard Cockerham (left) works in Districts 2 & 12.

**Cell phone:
704-616-0747**



Chris Sharpton (right) works in Districts 1 & 9.

**Cell phone:
828-774-8602**

Refer to NCFS District Map on the last page for coverage areas.

Piedmont Region

BMP Focus: Road Entrances

Preliminary findings from the latest BMP implementation survey suggest BMPs for logging road entrances could be improved upon in the Piedmont region. Mud on the road is not only a public safety issue, but can also be a water quality issue.



Forestry has a specific regulation for access road entrances ([FPG .0204](#)) to prevent sedimentation into streams. There are several BMP options to minimize the amount of dirt reaching public roads. Use rock, stone, wooden mats or other suitable materials for a distance of at least 50 feet from the public road if soil conditions require. If you begin to see excessive mud on the road, clean it up using a shovel and/or broom.

In addition to safety and water quality concerns, it is a good idea to use BMPs for road entrances to maintain a good public appearance. A clean road entrance contributes to a positive perception and demonstrates the quality of work and degree of environmental protection.



When operations are conducted under dry weather conditions and road entrances are located on higher ground with short roads, the access road may not need additional cover BMPs (left photo above). In some cases additional cover BMPs may be necessary to keep clean and accessible entrances (see bottom right photo for a good example of using mats to minimize mud on the road).

Upcoming Events

July 18-21 @ Southern Pines,
[Sustainable Forestry](#)
[Teachers Experience](#)

Sept. 26 @ Elon
 Sept. 27 @ Fayetteville
[Cape Fear River Forums](#)

Eastern Region

BMP Focus: Road Maintenance

Preliminary findings from the latest BMP implementation survey suggest maintaining roads could be improved upon for Coastal Plain operations.

Managing runoff is perhaps one of the more challenging issues for Coastal Plain forest management. Due to the flat nature of the landscape, many Coastal Plain roads are constructed to have crowned surfaces with or without ditches (pictured below on right).

Research conducted by Appelboom and others (2000) suggests road designs with continuous berms are better at reducing runoff and sediment than roads without continuous berms. Berms allow for rainfall to infiltrate over time, however traffic should be limited during wet weather.

Wet weather traffic is a reality when you realize wet conditions can last for 3 to 6 months for any given year in this region. Heavy vehicle weight during wet weather often damages road surfaces. Repeated use during wet weather without maintenance can lead to subgrade issues and concentrates water along the road surface. Ignoring maintenance schedules for frequently used roads can compound damage and be costlier to fix, both environmentally and economically.

So what are some possible options?

- Cease operations during wet-weather when possible.
- Develop a customized maintenance schedule.
- Utilize geotextiles in problem areas. This often keeps gravel from disappearing into the road bed and saves on additional stone delivery costs.
- Maintain an open daylight corridor that provides suitable drying for the road surface.
- Divert water away from the road when feasible and when it does not create a water quality issue.

Upcoming Events

July 18 @ Charlotte,
[NC Wetland Assessment Method Refresher Course](#)

Sept. 11-14 @ Hampton, VA,
[WaterJAM conference](#)

Sept. 28 @ Wilmington,
[Cape Fear River Forum](#)

Oct. 31 - Nov. 2 @
 Wilmington, [Symposium on Bottomland & Swamp Hardwood Silviculture](#)



North Carolina Forest Service

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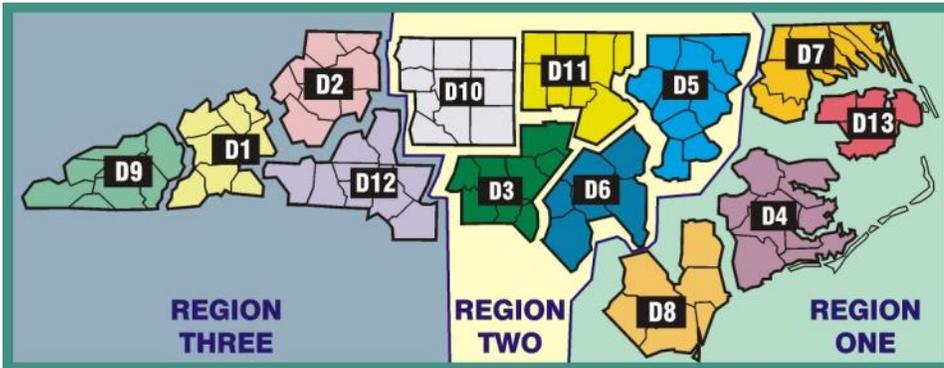
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Western Region Water Quality Foresters

Western Mountains (D9, D1):
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Foothills (D2, D12):
Richard Cockerham: 704-616-0747

Piedmont Region Water Quality Foresters

Northern Piedmont (D5, D10, D11 [North of I-40])
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Southern Piedmont (D3, D6, D10 [South of I-40])
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Eastern Region Water Quality Foresters

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Southern Coastal Plain
(D4 [-Beaufort and Pitt], D8):
Paul Mowrey: 252-286-0862



Symposium on Bottomland and Swamp Hardwood Silviculture

October 31—November 2, 2017
Wilmington, North Carolina

NC STATE

The Symposium will consist of a one-and-a-half day technical session, an evening poster session and an optional field tour on the last day. Attendees will hear from practitioners and researchers from throughout the Southeastern US who have the latest information, data and experience in bottomland forest systems.

What's Wrong With This Picture?

Still think erosion isn't a big deal in the Coastal Plain Region?! What are some problems with this haul road?

- ◇ Lack of cross-drainage culverts
- ◇ Lack of monitoring road and ditch conditions

Upstream land use change increased flashiness of the adjacent stream system. While the visible sediment did not reach the stream, it was deposited in a swampy area.



Lesson to be learned:

- Continue periodic monitoring of roads even when there are large lapses in operational activities.
- Be aware of what is happening in your watershed. If significant development is occurring upstream, additional BMPS may be needed to assure road trafficability.