

Control of Forest Road Sediment Export

Issue: Recently, more emphasis has been placed on sediment movement from the road prism. Sediment, which leaves the road prism, travels downslope and although the forest floor captures much of the sediment these sediments are eventually delivered to forest streams. The filtering capacity of the forest floor decreases with time as sediment plumes move downslope. Controlling the amount of sediment leaving the forest road prism has the greatest potential for mitigating non-point source pollution of forest water. A critical issue for ecosystem management within federal and non-federal lands is sediment export to the nation's waterways. Sustainable ecosystem management requires research on road runoff sediments and the resulting influence on water quality within forested ecosystem. The forest floor has shown a great capacity to filter sediment-laden runoff, but alternative approaches to control sediment export are required for sustainability.



Study Description: Innovative alternative techniques, adapted from techniques applied to large-scale sediment control systems, have been developed and implemented to control road sediment export.



A long-term study was initiated to evaluate alternative techniques (sediment basins, sediment fences, rip-rap, and vegetation) effectiveness in filtering road runoff before entering the forest stand. Automated stormwater samplers continuously monitor road runoff to determine the effect of sediment control techniques on runoff concentrations. Sediment deposition and vegetation establishment are periodically measured and used as additional response variables.

Status: Sediment control techniques were installed in turn-out ditches of an access road on the Tuskegee National Forest during the fall of 1997. Three years of sediment deposition, runoff concentration, and percent cover data has been collected on the sediment control techniques. Significant findings have been reported in three publications and presentations at international conferences. Additional manuscripts are currently under review for publication. Finally, a proposal for additional study sites to evaluate a conceptual sediment basin design is under development.

Benefits:

- *Comparison of road sediment control techniques effectiveness*
- *Scientific information on sediment transport through control structures*
- *Recommendations for new designs for sediment control from forest roads*
- *Pilot study which has stimulated additional sediment control research*

Cooperators: National Forest of Alabama – Tuskegee National Forest

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