University of Kentucky
College of Agriculture, Food and Environment
Cooperative Extension Service

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Small Woods, Big Opportunities Series

This series serves as an introduction to issues and practices common to small family forest owners.

Maintaining Clean Water in Your Woodlands

Christopher Reeves, Forestry

Kentucky's woodlands provide ample benefits to us through the generation of wood products, hunting opportunities, recreation, and aesthetic beauty. But providing clean water might be the most important benefit that woodlands provide. Intact woodlands provide a natural filter that can produce clean water. Some local towns, such as Berea, rely completely on forested watersheds to provide their cities with reliable clean drinking water as do some huge cities (San Francisco, CA). Maintenance and protection of clean water is a vital attribute of any woodland.

Plan, Plan, Plan

Your woodlands likely are functioning already to maintain or improve high quality clean water. However, any activity that disturbs the forest floor or soil has the potential to pollute streams or lakes. When constructing an access road in your woodlands, a haul road for a truck to haul out freshly cut logs, or a new recreation trail for your ATV, planning is a must. Laying out exactly where new roads and trails will be placed should take place well in advance. Planning will minimize the amount of ground disturbed and overall trail length. Roads and trails should be constructed as flat as possible and follow natural contours to avoid steep grades. Switchbacks are preferred over going straight up a hill, even though more road will have to be built. Scouting the trails before can also help avoid road building stumbling blocks such as large boulders or rock outcrops and wet areas such as springs, seeps, or wetlands.

Proper planning on the placement of forest roads will reduce the chances of polluting nearby waterbodies.

Christopher Reeves, UK Forestry Extension

A safe road must be built well away from steep drops and clifflines. Consult with neighbors to ensure everyone knows where the property boundaries are located, which will protect woodland owners from any potential ownership issues. You don't want to cut down a tree to build your new road to find out it was on your neighbor's property and is their favorite tree to place a deer stand.

Timber Harvests

The biggest potential threats to maintaining clean water from your woodlands are the roads built for a timber harvest. Research has shown that the act of cutting down trees is not the main concern during timber harvests. Mother Nature quickly stabilizes the soil with new tree seedlings, shrubs, grasses, and other small plants as the roots of removed trees decay or sprout and support new trees. The biggest potential mud generator is exposed soil from the construction of roads, trails, and landings. These areas are completely exposed as plants and the duff layer, consisting of naturally decaying leaves and wood, are removed. When rain or water flows come in contact with bare soil, erosion occurs and leads to sediment pollution. This sediment is harmful to aquatic habitat and increases the costs for drinking water purification at the treatment plant.

Best management practices (BMPs) are recommendations that should be implemented to maintain water quality during and after timber harvests. A streamside management zone (SMZs) should be created near streams that is off limits to machinery to limit the amount of bare soil generated right next to water. These zones of undisturbed soils and duff layers also act as natural filters for upslope water that might contain sediment. BMPs recommend that roads and trails should be constructed at the lowest density possible to still get the harvest done. Once completed, reverse grade structures should be installed on roads and trails to get water off the trail and into the undisturbed soil for filtering and disbursement. The type and frequency of these structures can

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vary from water bars and broad base dips to out sloped trails and silt fences. Consult a forester or the references listed below for further information.

Lakes and ponds should merit special attention such as extended SMZs.

Reneé Williams, UK Forestry Extension

Sinkholes or caves also merit special consideration. These unique geologic features are frequent in karst areas and should be safeguarded with SMZs and diverting water away because of their direct connection to underground aquifers. Once operations are completed, disturbed areas should be revegetated with temporary cover such as grasses. If you cannot revegetate the whole area, focus on the highly erodible areas of landings, roads with greater than 15 percent slope, and stream crossings.

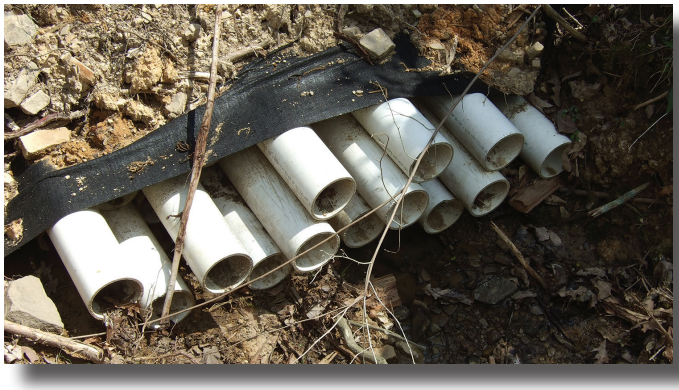
Stream Crossings

A stream crossing can be a direct conduit for the pollution of clean water. The potential for mud entering a stream exists whether it's a skidder during a timber harvest, an ATV riding on a trail, or a horse through the back country. As it pertains to stream crossings, the old adage holds true: Something is better than nothing. The use of stream crossings can mitigate water pollution. Temporary structures for timber harvests may be cheap (hollow logs) or expensive (bridge) but can protect water quality during the harvest and can be removed once activities are completed. A simple bridge made out of local logs can be constructed for ATV crossings. For horseback riding, a culvert can be installed as long as it is properly sized for storm flows and can be frequently checked to ensure clogging will not occur. Consult a forester or listed references to determine what type of stream crossing will work best for your activity.

Stream crossings will significantly reduce mud from entering your streams.

Christopher Reeves, UK Forestry Extension

With proper planning and extra vigilance during ground disturbing activities, such as timber harvesting and new trail construction, your woodlands can continue to provide clean and fresh water.



Pipe bundles are one option to use for temporary storm crossings.

Christopher Reeves, UK Forestry Extension

For More Information

Kentucky Division of Forestry:
http://forestry.ky.gov

National Trails Training Partnership:
http://www.americantrails.org/nttp/

Kentucky Best Management Practices for Timber Harvesting:
http://tinyurl.com/KYBMPs

References

So You Want To Build an ATV Trail. 2005. Wisconsin Department of Natural Resources. PUB-CF-017. 27 p.

Field Guide to Best Management Practices for Timber Harvesting. University of Kentucky College of Agriculture Cooperative Extension Service. FOR-69. 66 p.

Protecting Water During Timber Harvests. University of Kentucky College of Agriculture Cooperative Extension Service. FORFS 17-12.

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