

# Protecting Water During Timber Harvests

*Christopher Reeves, Forestry*

Any timber harvest, even small ones, can have lasting effects on woodlands. Woodland owners with small properties may not typically implement a timber harvest because their property size does not allow for high volumes of timber that attract loggers. However, sometimes landowners may join adjacent landowners or loggers that are already in the area to implement a timber harvest. It is up to the landowner, their logger, and their forester to ensure that timber harvesting effects are positive while limiting the potentially negative effects. A major detriment to woodlands from timber harvesting is potential damage to water quality. With proper planning and consideration there are several actions woodland owners can take before and during a timber harvest to limit pollution to waterways.



**BMPs will mitigate the amount of sediment getting to streams if properly implemented.**

*Christopher Reeves, UK Forestry Extension*

## Pollution

Pollution of streams, ponds, and lakes from timber harvesting can result from sediment (mud), increased sunlight, equipment fluids, trash, and logging debris (ex. tree tops). Keeping fluids controlled, trash picked up, and logging debris out of streams is straightforward. Dealing with sediment and increased light, the most common pollutants, takes more work. Forest roads, skid trails and log decks are the major source of sediment or mud. All of these result in bare mineral soil that is exposed, leading to muddy water runoff when it rains that can easily reach waterways.

Removing trees from around streams increases the amount of light in and around the stream. The water's temperature is increased from the sunlight and the climate in

and around the stream is changed. Aquatic animals, such as fish and insects that prefer cooler waters will move out of the stream if the temperature increases. The land directly next to the stream can also be hotter and drier that can negatively impact salamanders and other animals living in the cool moist habitat next to waterways.

## Getting Professional Help

It is recommended that landowners contact the Kentucky Division of Forestry (KDF) for a Best Management Practices (BMPs) inspection during and after a timber harvest. Best management practices are a written set of recommendations to minimize the impact on water quality from timber harvesting operations. Kentucky is the only state in the South that has legislatively mandated BMPs but KDF does not inspect every single timber harvest. KDF also cannot force loggers to go above and beyond what is minimally required of the BMPs. If a woodland owner wants a logger to implement practices that go above the minimum, they should use a forester or have the specific actions spelled out in a written agreement to avoid confusion. Professional Consulting Foresters act as agents to the landowner and oversee the harvest operation, ensuring proper marketing of products and implementation of BMPs.

## Trails and Log Decks

Skid trails will need to be built to haul the trees out of the woodlands. The proper placement and retirement of these trails is critical when it comes to protecting water quality. Skid trails should be placed along contours to prevent steep climbs. Only the minimum number of trails needed to get the job done should be built. Trails that are no longer going to be used should be retired as soon as possible. Reverse grade struc-



**Exposed soil on highly erodible areas should be revegetated as soon as possible.**

*Christopher Reeves, UK Forestry Extension*



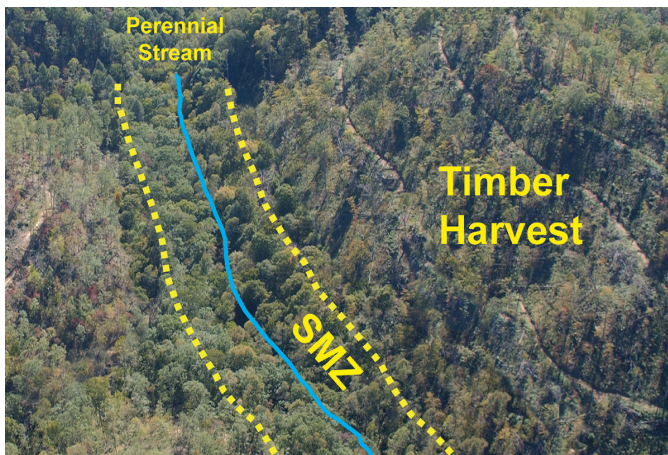
Produced in partnership  
with the Kentucky  
Division of Forestry.

tures such as waterbars or broad base dips should be installed to get water off the trails and dispersed into the intact forest floor for filtration. Steep trails and areas around streams and lakes should be revegetated with native grasses until natural forbs, shrubs, or trees can get established.

Log decks, typically called landings, are places within or near woodlands that are the central processing area of the harvest. Landings are where the logs are brought to from the woodlands, processed, and loaded on to trucks. The positioning of these landings is extremely important to protect water quality. Generally, these should not be close to streams and lakes. The large amount of exposed soil can easily allow dirt to get into a nearby stream. Landings should be revegetated along with roads as quickly as possible once operations are completed.

### Stream Management Zones

A buffer of standing trees around streams called a streamside management zone (SMZ) can help protect the water quality. SMZs do not create areas where no trees are harvested but require enough trees to be left in the canopy to maintain proper temperature regulation of the water and surrounding areas. SMZs also serve as equipment exclusion zones where equipment is not permitted to enter. Since, by definition, these SMZs are right next to waterways it makes sense to limit bulldozers and



**SMZs require trees to remain around streams to maintain stable temperatures in and around waterways.**

*Jeff Stringer, UK Forestry Extension*

### For More Information

Kentucky Division of Forestry: [forestry.ky.gov](http://forestry.ky.gov)

UK Department of Forestry: [ukforestry.org](http://ukforestry.org)

skidders activities that expose mineral soil near water.

In Kentucky, for perennial waterbodies (containing water all year round) 50% of the canopy must remain within 50 ft of the bank when the hillside is steep (greater than 15% slope) and for 25 ft from the banks on gently sloping or flat ground (less than 15% slope). Roads, trails, and landings must remain at least 100 feet from the bank when slopes are greater than 15% and 50 feet when slopes are less than 15%. If they are closer than these distances precautions must be taken to prevent or reduce muddy water runoff from reaching streams.

### Stream Crossings

Skidders or trucks passing right through streams can cause a great deal of damage to water quality. The use of elevated stream crossings is important to prevent sediment from getting into a stream. Loggers may already have culverts or bridges to use for timber harvests. Contracts should specify where the crossing will be located. Landowners should communicate and come to an agreement with the logger on where and what type of crossing should be used.

Culverts are great temporary crossings but should be sized appropriately based upon the length of time the culvert will be installed in the stream. Bridges are best because of their limited environmental impact and ease of installation and removal but they are expensive. Use the best crossing type for the situation based upon the size of the stream and the length of time the crossing will be installed.



**Elevated stream crossings prevent direct introduction of sediment into waterways.**

*Christopher Reeves, UK Forestry Extension*

Protecting woodlands and its associated streams and lakes must be a priority during a timber harvest. Proper placement and retirement of skid trails and landings are key as well as the usage of elevated stream crossings. Landowners can protect their woodlands with proper application of best management practices, a little planning, and help from foresters.

### References

Stringer and Perkins. 2001. Kentucky Forest Practices Guidelines for Water Quality Management. FOR-67. University of Kentucky Cooperative Extension Service. 112 p.