

BMP 3

Streamside Management Zones

Purpose

Streamside Management Zones (SMZs) are used to maintain natural environments in streams by maintaining the integrity of the streambank, reducing the amount of sediment entering the water by minimizing soil disturbance and filtering overland flow, and in the case of perennial streams by maintaining shade on the stream.

Definitions

Streamside Management Zones (SMZs) are strips of woodland located adjacent to perennial or intermittent streams where silvicultural activities will occur. SMZs are also commonly used where lakes and ponds exist near logging areas. **Perennial streams** are streams that flow throughout the year. **Intermittent streams** flow continuously only during the wet portions of the year and in response to rain events. Both perennial SMZs and intermittent SMZs require protection of the stream bank and channel and of the adjacent strip of forest land. **Stream canopy cover** is defined as that portion of the canopy providing shade to the stream and is maintained along perennial streams. As a general rule these guidelines do not apply to watercourses that flow only in direct response to precipitation (e.g., ephemeral channels). However, protection of ephemeral channels, as determined necessary, can also benefit water quality in a comprehensive watershed management scheme. **Coldwater Aquatic Habitats (CAHs)** are identified by the Kentucky Division of Water as those bodies of water having the potential to carry trout. These waters receive greater protection than **Warmwater Aquatic Habitats (WAHs)**, which include the majority of our streams.

Specifications

SMZs are maintained to help provide a stable ecosystem adjacent to the stream and to provide shade to perennial streams to moderate and stabilize water temperature. They are also extremely valuable in providing a filtering area where runoff can be dispersed and sediment and other nonpoint source pollutants can be removed before entering the main body of water. Management for timber, wildlife habitat, recreation, and aesthetics is normally compatible with SMZ objectives as long as stream canopy cover and adequate ground cover are maintained. Silvicultural activities, including periodic harvesting, thinnings, timber stand improvement, and other practices that alter canopy cover are acceptable to maintain the vigorous growth of vegetation and to provide the necessary replacement of ground litter on the forest floor essential to adequate filtering.

General Recommendations for Timber Harvesting and Silviculture Operations

- **Concentrated flows**, such as flows from road culverts, when directed into an SMZ should be dispersed as much as possible to assure adequate infiltration.
- **Roads and the skidding of logs** should avoid the stream bed except where the geology or other physical conditions of the site (rock walls, notches, or other limiting factors) leave no other alternatives for access, or where road or skid trail placement in normally recommended locations is either impossible or will cause a higher degree of water quality degradation. If an exception due to physical site conditions is necessary,

stream channels can be used as roads or for skidding only for the minimum distance required.

- **Roads and log landings** should not be located in SMZs and should be placed as far away from streams as practical.
- **Tops or other logging debris** that can block perennial and intermittent streams should be removed or placed so they will not cause a blockage.
- **Logging equipment and vehicles** should not be operated in SMZs except at designated crossings to minimize disturbing the forest floor and to protect the banks of streams.
- **Winching** is the preferred method of removing logs from an SMZ.
- **Equipment fluids** should not be drained near streams, and logging equipment should not be parked near stream banks where direct runoff of pollutants from equipment into the stream is likely to occur.
- **Livestock** should be excluded from SMZs except for designated crossings and at watering sites. See BMP No. 11 for other livestock considerations.
- Use of **fertilizers, herbicides and other pesticides** in SMZs is generally undesirable, and they should only be applied in strict compliance with label directions for application near bodies of water. Fertilizers and pesticides should be applied in SMZs only in compliance with silviculture BMPs 7 and 8, respectively.

Streamside Management Zone Specifications

Specifications for SMZs include:

- The width and amount of stream canopy cover, and
- The distance of roads, trails, and landings from the stream or body of water.

Recommended specifications for the widths and density of stream canopy cover and the distance of roads, trails, and landings are based upon the slope percent of the ground and the type of water body. Table 3-1 provides a summary of these specifications by type of water body.

Table 3-1—Summary of Streamside Management Zone Minimum Criteria

Water Body Type	% Remaining Canopy Trees	Width of Trees (ft)	Distance to Disturbed Ground (ft)
Perennial			
WAH ¹ < 15% slope	50	25	variable based on slope % ³
WAH > 15% slope	50	55	variable based on slope % ³
CAH ²	75	60	variable based on slope % ³
Streams and sloughs in wetlands	50	50	50
Intermittent	0	0	25/5/5 ⁴

1 WAH: Warm-water aquatic habitat

2 CAH: Cold-water aquatic habitat

3 Refer to Table 3-2.

4 25/5/5: 25 feet distance on flat ground, which increases 5 feet for every 5 percent increase in slope (refer to Table 3-3).

Perennial Streams

Stream Canopy Cover

Width and Amount of Trees for WAHs (excluding wetlands)

In areas adjacent to perennial streams, lakes, and ponds, stream canopy cover should be maintained for a minimum surface distance of 25 feet on ground with less than 15 percent slope and a minimum surface distance of 55 feet on ground with slope of 15 percent or greater. At least 50 percent of the original tree overstory (canopy cover) should be retained to shade the water and maintain water temperature (Figure 3-1).

Disturbed Ground

Distance of Disturbed Ground from WAHs (excluding wetland)

Equipment operation should be avoided in a zone of at least 25 feet on each side of a perennial stream on flat ground except for designated crossings. Erosion potential from steep slopes and unstable soils can require a width greater than this, as determined by slope percent (Figure 3-1).

Management activities are acceptable in SMZs; however, equipment operation should be avoided except at designated crossings. Table 3-2 provides the minimum recommended distances for roads, trails, and landings to perennial warm and cold water aquatic habitat streams. Where minimum distances are not possible, roads, trails, and landings can be located at less than the recommended distances but should be constructed to protect water quality. Tops or other logging debris that can block perennial streams should be removed and/or placed so they will not cause a blockage.

Figure 3-1. Streamside Management Zone Criteria for Perennial Warmwater Aquatic Habitats

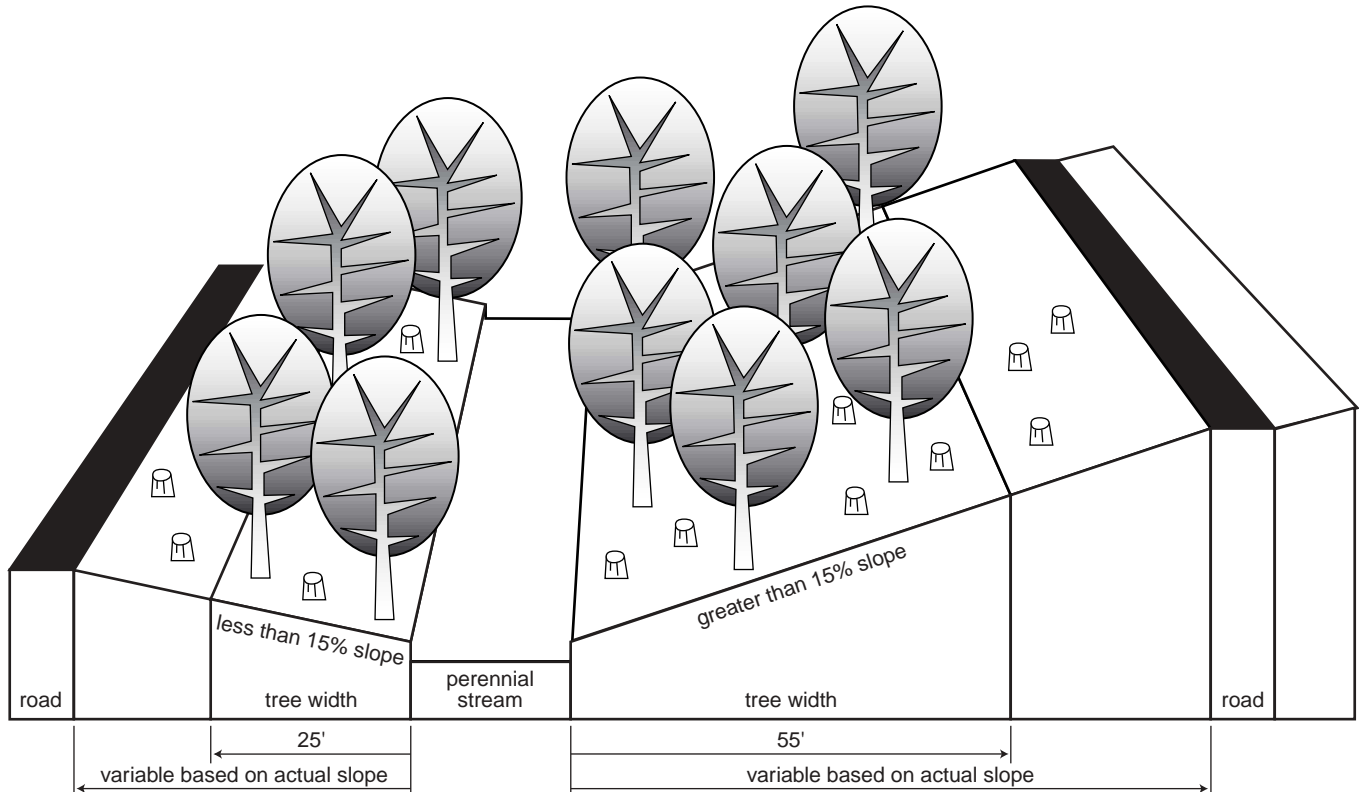


Table 3-2—Minimum Distances from Perennial Water Bodies to Roads, Trails, or Landings¹

Slope of Land (%) away from stream bank	Width of Zone (feet) away from stream bank
0	25
5	35
10	45
15	55
20	65
25	75
30	85
35	95
40	105
50	125
60	145
70	165

¹ Where minimum distances are not possible, roads, trails, and landings can be located at less than the recommended distances, but they should be constructed to protect water quality. In no case should stream beds be used as roads or for the skidding of logs except where the geology or other physical conditions of the site (rock walls, notches, or other limiting factors) leave no other alternatives for access or where road or skid trail placement in normally recommended locations is either impossible or will cause a higher degree of water quality degradation. If an exception due to physical site conditions is necessary, stream channels can be used as roads or for skidding only for the minimum distance required.

Coldwater Aquatic Habitats

Coldwater Aquatic Habitats (CAHs) (high-quality trout waters), as designated by the Kentucky Division of Water, need additional protection.

CAHs should have only individual trees or small groups of trees removed within a 60-foot wide strip on either side of the stream. A minimum of 75 percent of the original tree overstory (canopy cover) should also be left intact.

Understory vegetation immediately adjacent to CAH streams should be left intact. Refer to Appendix A for a list of designated surface CAHs.

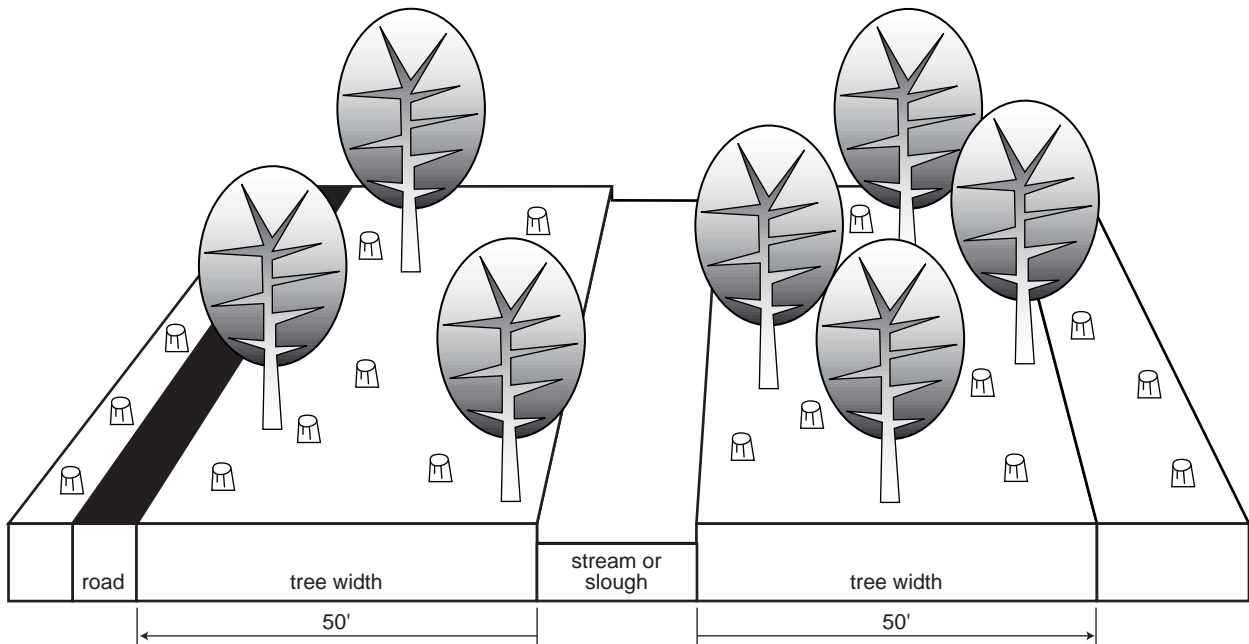
Wild Rivers

Wild Rivers are designated sections of a number of streams in Kentucky (Appendix E). Before undertaking any silvicultural activity in a corridor of a designated Wild River, the landowner or owner should contact the Wild Rivers Program of the Kentucky Division of Water.

Perennial Streams and Sloughs in Wetlands

Streams and sloughs in wetlands are provided special protection. Figure 3-2 indicates that 50 percent of the canopy trees should be maintained to a minimum distance of 50 feet regardless of slope. Roads, trails, and landings should be maintained at a minimum distance of 50 feet from streams, ponds, and sloughs in wetlands.

Figure 3-2. Streamside Management Zone Criteria for Streams and Sloughs in Wetlands



Intermittent Streams

Stream Canopy Cover

In areas adjacent to intermittent streams, complete removal of overstory trees is acceptable (Figure 3-3).

Disturbed Ground

Equipment operation should be avoided in a zone of at least 25 feet on each side of an intermittent stream except for designated crossings. Erosion potential from steep slopes and unstable soils can require a width greater than this.

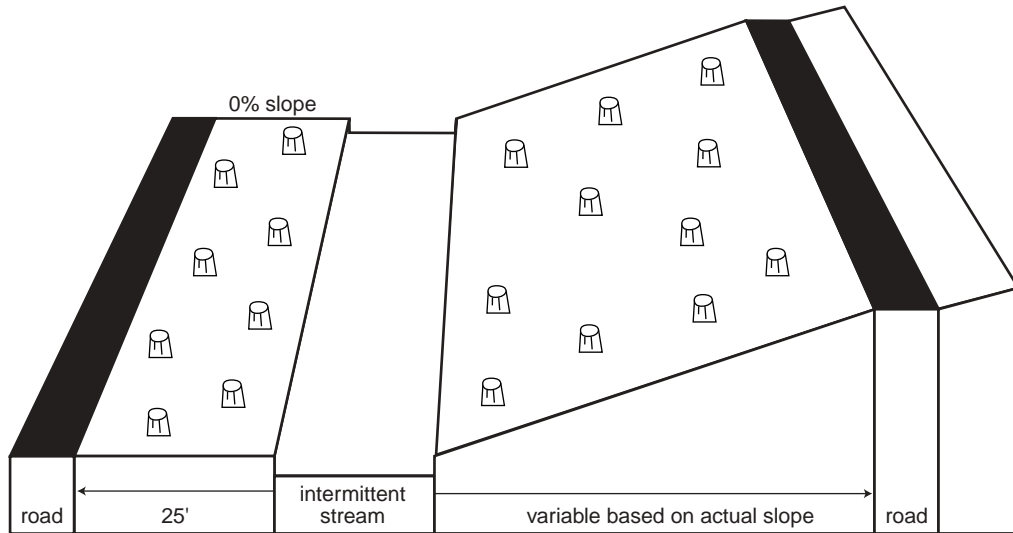
Table 3-3 provides the minimum recommended distances of roads, trails, and landings to intermittent stream channels. Where minimum distances are not possible, roads, trails, and landings can be located at less than the recommended distances, but they should be constructed to protect water quality. Mechanical site preparation should be excluded from areas adjacent to intermittent streams to maintain the duff layer and filtering capacity. Tops or other logging debris that can block the intermittent stream channel should be removed and/or placed such that they will not cause a blockage.

Table 3-3—Minimum Distances from Intermittent Streams to Roads, Trails, or Landings¹

Slope of Land (%) away from stream bank	Width of Zone (feet) away from stream bank
0	25
5	30
10	35
15	40
20	45
25	50
30	55
40 or higher	65

¹ Where minimum distances are not possible, roads, trails, and landings can be located at less than the recommended distances, but they should be constructed to protect water quality. In no case should stream beds be used as roads or for the skidding of logs except where the geology or other physical conditions of the site (rock walls, notches, or other limiting factors) leave no other alternatives for access or where road or skid trail placement in normally recommended locations is either impossible or will cause a higher degree of water quality degradation. If an exception due to physical site conditions is necessary, stream channels can be used as roads or for skidding only for the minimum distance required.

Figure 3-3. Streamside Management Zone Criteria for Intermittent Streams



Regulatory Requirements for BMP No. 3

(See Appendix A for explanations)

- Debris in floodplains: (KRS 151.250)
- All silvicultural operations: (410 KAR 5:026, 5:029, 5:030, and 5:031)
- Activities near high-quality waters and outstanding national resource waters: (401 KAR 5:029, 5:030, and 5:031)
- Activities near wild rivers: (KRS 146.200 *et seq.* and 401 KAR 4:100-140)

Summary: AWQA Minimum Requirements for BMP No. 3

The producer should:

- in no case use stream beds as roads or for the skidding of logs except where site conditions (rock walls, notches, or other limiting factors) leave no other alternatives for access or where road or skid trail placement in normally recommended locations is either impossible or will cause a higher degree of water quality degradation.
- if an exception due to physical site conditions is necessary, stream channels may be used only as roads or for skidding for the minimum distance required.
- in areas adjacent to perennial streams, lakes, and ponds, forest buffers should be maintained for a minimum surface distance of 25 to 55 feet on the ground with less than 15% slopes and a minimum surface distance of 55 to 90 feet on the ground with slope of 15% or greater. Management activities are acceptable in these areas; however, equipment operation should be avoided except at designated crossings, and at least 50% of the original tree overstory (canopy cover) should be retained to shade the water and to maintain water temperature. Where minimum distances are not possible, roads, trails, and landings can be located at less than the recommended distance but should be constructed to protect water quality. Take precaution to prevent tree debris, such as tops from harvested trees, from remaining in or being washed into perennial streams.
- in areas adjacent to intermittent streams, complete removal of overstory trees is acceptable. Equipment operation should be avoided in a zone of at least 25 feet on each side of an intermittent stream except for designated crossings. Where minimum distances are not possible, roads, trails, and landings can be located at less than the recommended distances but should be constructed to protect water quality. Mechanical site preparation should be excluded from areas adjacent to intermittent streams to maintain the duff layer and filtering capacity. Take precautions to prevent tree debris, such as tops from harvested trees, from remaining in or being washed into intermittent streams.
- Coldwater Aquatic Habitats (CAHs) (high-quality trout streams), as designated by the Kentucky Division of Water, need additional protection.
- CAHs should have a minimum of 75 percent of the original tree overstory (canopy cover) retained within the 60-foot-wide strip on either side of the stream.
- Understory vegetation immediately adjacent to CAH streams should be left undisturbed.
- Fertilizers and pesticides should only be applied in SMZs in compliance with silviculture BMPs 7 and 8, respectively.