
	Bowling Green, Kentucky Stormwater Best Management Practices (BMPs) Erosion Prevention Practices (EPPs)	EPP-10
	Activity: Mulching (M)	
PLANNING CONSIDERATIONS: Design Life: 6-12 Months Acreage Needed: None Estimated Unit Cost: Low Monthly Maintenance: 60% of Installation		<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> M M M M M </div> <div style="border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"> M </div>
Target Pollutants		
<div style="display: flex; justify-content: space-around;"> Significant ♦ Partial ♦ Low or Unknown ♦ </div>		
<div style="display: flex; justify-content: space-between; font-size: small;"> Sediment ♦ Heavy Metals ♦ Nutrients ♦ Oxygen Demanding Substances ♦ Toxic Materials ♦ </div> <div style="display: flex; justify-content: space-between; font-size: small;"> Oil & Grease ♦ Bacteria & Viruses ♦ Floatable Materials ♦ Construction Waste ♦ </div>		
Description	<p>To secure temporary or permanently seeded areas, mulching is used as a stabilizer. There are several types of mulches to be utilized, some of which include organic materials, straw, wood chips, and bark or other wood fibers. This management practice has the possibility to significantly reduce sediment and partial reduction of nutrients.</p>	
Suitable Applications	<ul style="list-style-type: none"> ➤ Temporary stabilization of freshly seeded and planted areas, sometimes during periods of unsuitable vegetative growth. ➤ Temporary stabilization of areas that cannot be seeded or planted (e.g., insufficient rain, steep slope, non-growth season). ➤ Areas which have been permanently seeded to assist in retaining moisture, and to hold seeding. ➤ On areas to increase the survival of temporary and/or permanent vegetative cover. ➤ As short term, non-vegetative ground cover on steepened slopes to reduce rainfall impact, decrease the velocity of sheet flow, and settle out sediment. ➤ As ground cover around established plants, such as trees or shrubs, and on unprotected flat to minor slopes. ➤ Apply to planting areas where slopes are 2.5:1 (H:V) or less steep. Tacking agents or devices may be necessary for steeper slopes. ➤ Areas where climatic conditions require soil moisture retention aid to avoid cracking. 	
Approach	<p>The term “mulch” is commonly used to describe a variety of materials, such as:</p> <ul style="list-style-type: none"> ○ Shredded tree bark and other woody materials, to protect trees and shrubs. ○ Straw or hay, scattered across a slope or disturbed area. ○ Peat mulch, used in planting trees and shrubs. 	
<p>Table EPP-10-01 has a recommended application rate for various types of mulches.</p>		

**Approach
(cont'd)****Vegetative Fibers (Straw)**

Loose hay or straw are the most common mulch materials used in conjunction with direct seeding of soil. Straw mulch is preferable over hay mulch, which may contain weeds and other objectionable material. Straw mulch is the short-term protection most commonly used with seeding. Wheat or oat straw is recommended from the current season's crop (less than 12 months old). Average fiber length should exceed 6 in.

Straw mulch is applied immediately after seeding, whether by machine or by hand distribution. Anchor the mulch in place using a tacking agent, plastic netting, or punching into the soil mechanically. Plastic netting requires wire staples, wooden stakes, or plastic stakes. If the slopes are too steep for netting, then tacking agents should be selected on the basis of longevity and the ability to hold the fibers in place.

Anchoring

- Crimping, tracking, disking, or punching into soil
 - Small areas - Hand punch mulch 2-3 inches into the loose soil.
 - Larger areas – Use mulching tool on tractor to punch and anchor mulch 2-8 inches into the soil.
 - Tracking – Cut straw into soil by using a bulldozer with cleated tracks, placed such that the cleat marks are perpendicular to the runoff.
 - Typically used on slopes 3:1 or flatter for safe operation of equipment.
- Covering with netting or mat
 - Nettings or biodegradable paper, plastic or cotton netting can be used to cover straw mulch. The safety of animals (small birds, snakes and other wildlife) should be considered when selecting materials for this measure.
- Spraying tackifiers (Polymer or Organic)
 - Polymer tackifiers are typically applied at a rate of 40-60 lbs/acre, or per manufacturer's recommendations.
 - Organic tackifiers are typically applied at a rate of 80-120 lbs/acre, or per manufacturer's recommendations.
- Cellulose fiber mulch
 - Can be tacked at a rate of 750 lbs/acre

Shredded Vegetation

"Green" mulch is produced by recycling of vegetation trimmings such as grass, shrubs, and trees. Methods of application are generally by hand, although pneumatic methods are currently being developed. It can be used as a temporary ground cover with or without seeding. The green mulch in place with a tacking agent on steep slopes and in areas where overland sheet flow is anticipated. The quality of green mulch may vary, and there is a strong potential for establishing unwanted weeds and plants.

**Approach
(cont'd)****Wood and Bark Chips**

Wood and bark chips are suitable for landscaped areas that will not be closely mowed. Wood and bark chips may require nitrogen treatment to prevent nutrient deficiency. Bark chips do not require additional nitrogen fertilizer.

If there is a wood source near the project site, wood and bark chips can be very inexpensive. Caution must be used on steep slopes, since both wood and bark chips tend to wash down slopes exceeding 6 percent. Wood and bark chips are also used around trees and shrubs, or in ornamental or landscape gardens. A typical rate for placing wood and bark chip mulch is 6 tons per acre, at a depth of 2-3 inches.

Hydraulic Mulch

Hydraulic mulch can be made from virgin wood fibers or from recycled waste paper sources (newsprint, magazine). There are also mulches available which are a combination. In general, virgin wood fibers contain a longer fiber length than recycled paper mulch.

Hydraulic mulch is mixed in a hydraulic application machine (such as a hydroseeder or a mulch blower) and then applied as liquid slurry. The hydroseeder slurry contains recommended rates of seed and fertilizer for the site, usually specified with a tacking agent. Slurry must be constantly agitated to keep the proper application rate and achieve uniform effective coverage.

**Table EPP-10-01
Recommended Rates for Mulching Materials**

Mulch Product	Application Rate
Straw or Hay	1 ½ tons per acre
Wood Chips, Bark, Sawdust	5 - 8 tons per acre
Hydraulic mulches and soil binders	1 ½ - 2 tons per acre

Maintenance

- Must be inspected weekly and after rain for damage or deterioration.
- Inspect after episodes of high winds.
- Maintain an unbroken, temporary mulched ground cover throughout the period of construction that the soils are not being reworked. Inspect before expected rainstorms and repair any damaged ground cover and re-mulch exposed areas of bare soil.

**Inspection
Checklist**

- All disturbed areas are properly covered per plans and specifications.
- Straw mulch has been properly crimped.
- Mulch has been replaced following intense wet weather events or episodes of high winds.