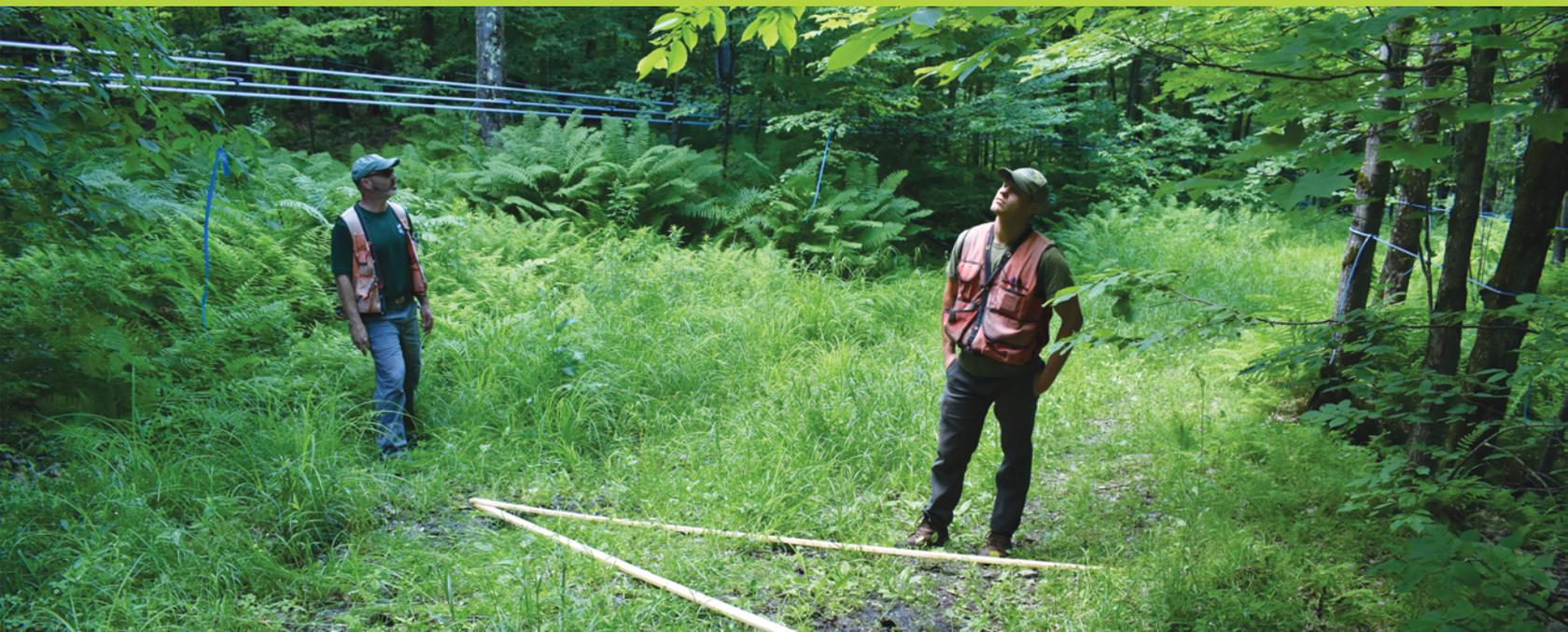


# Sugarbush Waterbars



Installed at a 30° angle to the road course, a waterbar will allow water to efficiently drain and result in minimal erosion or pooling of water. Waterbars should be built to extend across the entire road width.

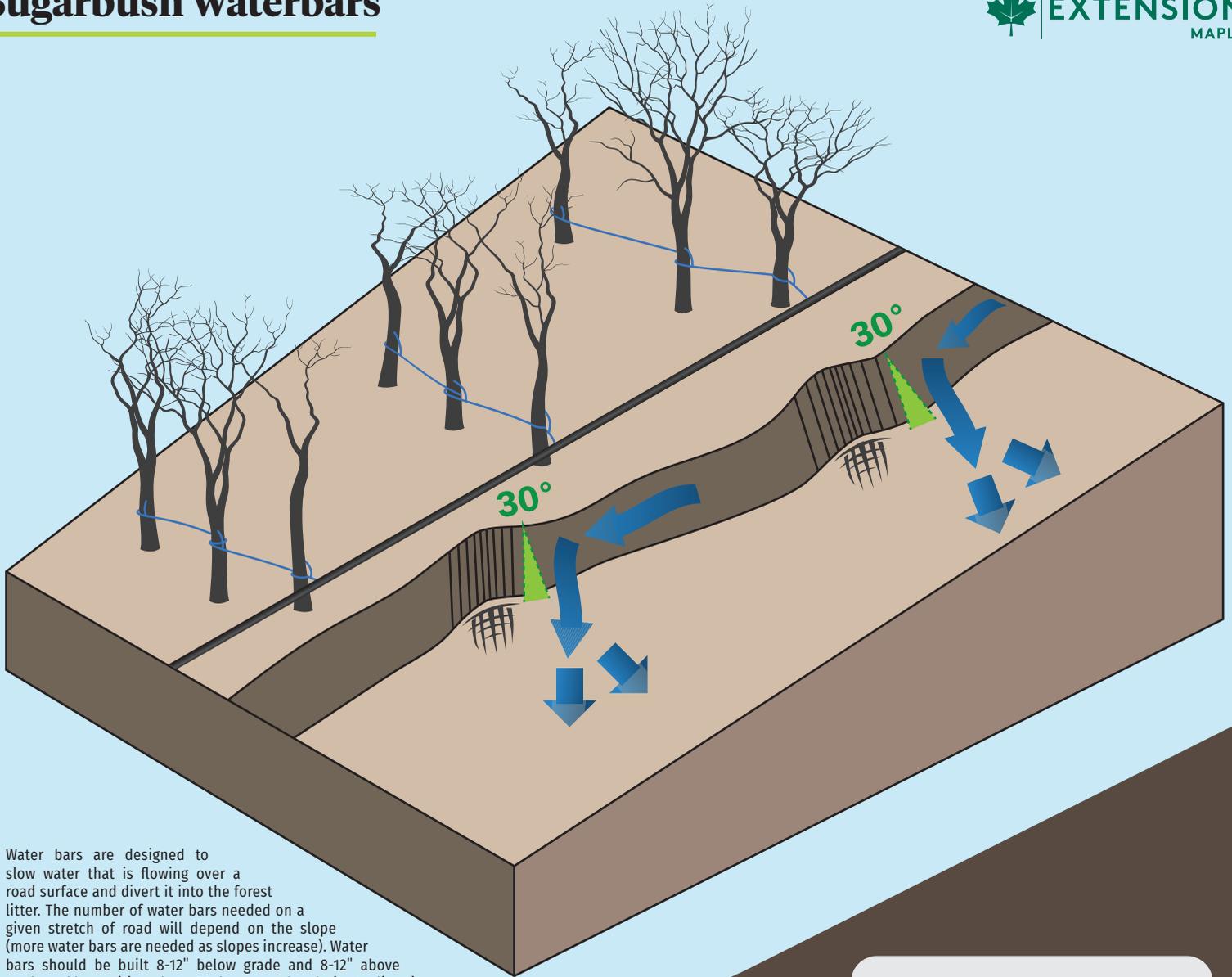
**A**ccess to a sugarbush is critical for installing and repairing sap collection equipment, tapping and managing crop trees, and responding to the effects of natural disturbances. Quality access to the sugarbush relies on a road and trail system that can handle the appropriate vehicles needed in the operation at all times of year.

Trails and roads must be designed to handle significant precipitation events without washing out. When designed and installed correctly, waterbars are a critical investment in preserving the trail and road system. Waterbars divert water from the road before it can pick up speed and erode the road surface. The cost of repairing significant road damage far exceeds the costs of installing and maintaining waterbars.

There are a few key elements to correctly installing waterbars. The slope of the road or trail will determine the spacing between water bars; the steeper the slope, the more water bars are needed. A typical waterbar will consist of a channel dug somewhere between 10–12" deep with a downhill berm of approximately equal height that completely crosses the road. Waterbars that do not cover the entire width of the trail will allow water to pass. To be effective, waterbars should be installed at a 30-degree angle to the road; do not use right-angle placement. The end of the waterbar will empty out into a runoff area and allow the water to settle. Keeping the waterbars free of leaves, silt and debris will ensure it's ready to function when needed. ●

## Sugarbush Waterbars 101

- Locate waterbars and other diversions frequently enough to prevent water from accumulating.
- Make waterbars between 10 and 12 inches deep, 12 inches high, and install them at a 30-degree angle to the trail.
- Extend the waterbar inlet and outlet 1 foot or more beyond the trail to keep the diverted water from re-entering the trail.
- Use the terrain to incorporate natural water diversions into the trail layout. A piece of ledge or natural hummock can work as a waterbar.



Water bars are designed to slow water that is flowing over a road surface and divert it into the forest litter. The number of water bars needed on a given stretch of road will depend on the slope (more water bars are needed as slopes increase). Water bars should be built 8-12" below grade and 8-12" above grade and be positioned at a 30 degree angle relative to direction of the road and extend completely across the road width.

*Water bars installed on sugarbush roads generally receive more traffic than roads used in stands managed for timber production. These roads also receive more use during times of year (late winter/early spring) when the risk of damage is greatest. Water bars can be built to withstand increased traffic by reinforcing or "hardening" them with small diameter logs or crushed stone.*

## Distance Between Drainage Structures on Skid Trails

Road Grade (% Slope)	Distance (Feet)
1	400
2	250
5	135
10	80
15	60
20	45
25	40
30	35
40	30