Sound Native Plants
ECOLOGICAL RESTORATION SPECIALISTS

# INDICATORS OF POTENTIALLY UNSTABLE SLOPES

(360) 352-4122 • www.soundnativeplants.com • PO Box 7505, Olympia WA 98507 • Fax (360) 867-0007

## Water triggers many slides

Here in western Washington, at least during the winter, we have water and lots of it! Landslides may occur for many reasons, but in our area, most slope failures are triggered by winter storms. Problems may arise when seeps (naturally occurring springs) or stormwater systems concentrate flow onto small areas, and when the site is de-vegetated (vegetation actively dewaters the soil and root systems stabilize soil). Stormwater also causes surface soils to erode, which can lead to larger-scale failures over time. Because water is the primary cause of erosion in our area, this information sheet focuses on hydrophilic (water-loving) vegetation and the effects of moving water on soil.

## Scan slopes for water-loving vegetation

Common plant species that indicate wet soils include: salmonberry (*Rubus spectabilis*), most species of willow (*Salix* spp.), horsetails (*Equisetum* spp.), algae (many different species) and spreading buttercups (*Ranunculus* spp.). None of these species alone necessarily indicate cause for concern. However, if willow, alder or other hydrophilic species grow on slopes in lateral bands, this indicates that seeps are likely in those areas. Also look for roots dangling from overhanging vegetation, where the underlying soil may have eroded away.

## Look at the tree trunks

Tree trunk shape can indicate underlying soil movement. The following are signs for concern: trees with straight trunks leaning down-slope, toppled trees, severely-curved trunks with the upper trunks leaning, and dead "jackstrawed" trees (many trees leaning over haphazardly in all directions). Trees with gently curved bases and vertical upper trunks probably indicate slow, naturally occurring soil creep and are not usually a cause for concern.

## Examine the soil

Look for cracks in surface soils at the top of the slope running parallel to the slope, or spongy depressions near the edge. Watch for rills or gullies created by concentrated flow over the soil surface. In extreme cases, pedestals or terraces of remaining vegetation will be surrounded by soil erosion gullies. Also, look for fresh slides of soil or bare area of soil. Soil sloughing, or concentrations of soil at the base of the slope, indicates active soil movement and frequently requires immediate action. Beware of dense, continuous population of plants (usually English ivy) that can mask underlying problems. Look carefully between plants at the soil surface to determine if erosion is a concern for the site. Buried stumps or trunks of trees may indicate soil has slid at some time in the past.

If stream-channel scouring is occurring, plumes of sediment may be visible in the stream. Also, look for exposed roots and bare areas of soil on the sides of the stream channel along with chunks of soil deposited in the stream.

## What to do if you see signs of erosion

Contact both an environmental consultant and a hydrogeologist to schedule a site visit. Most jurisdictions maintain a list of consultants on file. Walk properties at least once per rainy season to observe signs of erosion. Also check sites following extremely heavy rains or changes in adjacent land use (development can severely alter stormwater infiltration).



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