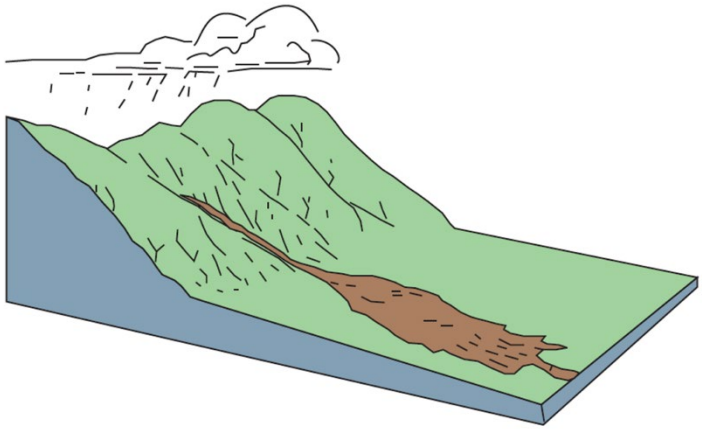
Forest Facts: Landslides

What are landslides and debris flows?

A landslide is a mass movement of rock, soil, and debris down a slope. In steep terrain, even a small mass movement can turn into a large, dangerous type of landslide when it rains. These landslides are often called debris flows, mudslides, mudflows, debris torrents or shallow, rapidly moving landslides. Debris flows can exceed 30 mph and travel hundreds of feet to several miles. They can impact streams and damage or destroy homes, roads, or other structures. (Picture: USGS)



Typically, debris flows are made of mud, boulders, water and logs that move down steep slopes, narrow stream channels, or V-shaped canyons.

While debris flows can cause damage, they are also an important natural process that helps stream ecosystems. In the short-term, the fine sediment from landslides can suffocate fish eggs and emerging young fry. But in the long-term, help comes from landslides moving logs and boulders to streams. These give nutrients to aquatic creatures, shelter for fish, and create cooler stream temperatures.

Landslides do not just occur in remote forests. Because of the wet climate and steep terrain in western Oregon, landslides can affect communities too. We can't prevent all, or even most landslides.

Oregon's forest laws help reduce landslides related to forestry work. Forestry work can change the landscape, soil and plants, which can impact slope stability. It can also affect the frequency of landslides and the types of deposits in streams. Forestry laws aim to lower landslide risk to protect the public. Logging and road building laws help reduce erosion and landslide potential. These practices protect natural resources too. In forestry work, geotechnical specialists help assess and give advice on how to reduce the landslide risks.

Forestry laws that help lower landslide risks and protect people include:

- Prohibiting logging on slopes that pose downslope public safety risk.
- Specifying how to replant trees or construct roads.
- Leaving trees and plants alone around streams that are likely to carry a landslide and on steep slopes that are likely to fail.
- Requiring that trees be moved through the air, instead of using ground equipment.

Resources

Oregon Debris Flow Warning System

- For current debris-flow alerts: http://www.weather.gov/alerts/or.html

Forest Practices Act and Administrative Rules: https://www.oregon.gov/odf/pages/lawsrules.aspx

Administrative Rule Division 623: Protection of public safety

- Forest Practices Technical Note 2
  https://www.oregon.gov/odf/Documents/workingforests/HighLandslideHazardLocationsTechNote2.pdf
- Forest Practices Technical Note 6
  https://www.oregon.gov/odf/Documents/workingforests/LandslideImpactRatingTechNote6.pdf

Administrative Rule Division 625: Protection of natural resources in relation to roads

- Forest Practices Technical Guidance: Avoiding Roads in Critical Locations
  https://www.oregon.gov/odf/documents/workingforests/fp-technical-guidance-avoiding-roads-in-critical-locations.pdf

Administrative Rule Division 630: Protection of natural resources in relation to harvesting

- Forest Practices Technical Guidance: Harvesting on Steep Slopes - Identifying Slope Retention Areas https://www.oregon.gov/odf/documents/workingforests/fp-technical-guidance-identifying-slope-retention-areas.pdf
- Factsheet – Steep Slopes Model: Designated Debris Flow Traversal Areas (DDFTAs)
  https://www.oregon.gov/odf/working/documents/steep-slopes-model-designated-debris-flow-traversal-areas.pdf

Other resources:

- Oregon Department of Forestry Storm Impacts and Landslides of 1996: Final Report:
  https://www.oregon.gov/odf/Documents/workingforests/monitoring-technical-report-04.pdf
- Landslides, Forestry, and Public Safety Issue Paper:
  https://www.oregon.gov/odf/Documents/workingforests/landslidespublicsafety.pdf
- Oregon Revised Statute:
  https://oregon.public.law/statutes/ors_195.250

Oregon Department of Geology and Mineral Industries:
https://www.oregon.gov/dogami/landslide/Pages/landslidehome.aspx