



# Forest Facts

## LANDSLIDES AND DEBRIS FLOWS

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A landslide is a mass movement of rock, soil, and debris down a slope. In steep terrain, even a small mass movement can transform into a larger, especially dangerous type of landslide. These catastrophic landslides commonly are referred to as debris flows, mudslides, mudflows, debris torrents or shallow, rapidly moving landslides. Debris flows often move rapidly and can exceed 30 mph, traveling distances of several hundred feet or several miles. They often have major impacts on streams and can damage or destroy homes, roads, or other structures that are in their path.

Typically, debris flows consist of mud, boulders, water and logs traveling down steep slopes, narrow stream channels, or v-shaped canyons. Some debris flows behave similarly to flash floods, except that they contain less water and more mud and debris.

Landslides are a natural, geologic process. Although they can be damaging, landslides and debris flows are also a natural geologic process that can provide important long-term benefits to stream ecosystems. In the short-term, the fine sediment from landslides can suffocate fish eggs and emerging young fry. But long-

term, the logs and boulders that landslides deliver provide nutrients to aquatic organisms and shelter, or cover, where fish can hide.

Landslides do not just occur on rural forestlands. Because of the wet climate and rugged terrain found throughout western Oregon, landslides are common features of the landscape and many populated areas are also affected. It is not feasible to prevent all, or even a majority, of landslides in Oregon.

The Oregon Forest Practices Act rules help minimize the potential for landslides. Forest practices can alter the physical landscape and its vegetation, which can influence the stability of steep slopes. They can also affect how often landslides occur and the nature of landslide deposits in streams. The Oregon Department of Forestry regulates forest practices to manage landslide risk in order to protect the public's safety. Forest Practices Act rules for timber harvesting and constructing roads help minimize surface erosion and the potential for landslides, which provides protection for natural resources. The department's geotechnical specialists assist foresters and landowners by providing guidance and assessing the landslide hazards and risks.

Rule protections include such measures as prohibiting timber harvest, specifying how trees should be replanted or roads should be constructed, leaving trees and vegetation undisturbed along streams, and requiring that trees be harvested with a skyline cable logging system, rather than using ground-based equipment.

### **Oregon Debris Flow Warning System**

For current debris-flow alerts:

<http://www.weather.gov/alerts/or.html>

Landslides are addressed in the Forest Practices Act and Oregon Administrative Rules in several places.

Protection of public safety:

[http://arcweb.sos.state.or.us/rules/OARS\\_600/OAR\\_629/629\\_623.html](http://arcweb.sos.state.or.us/rules/OARS_600/OAR_629/629_623.html)

Protection of natural resources in relation to roads:

[http://arcweb.sos.state.or.us/rules/OARS\\_600/OAR\\_629/629\\_625.html](http://arcweb.sos.state.or.us/rules/OARS_600/OAR_629/629_625.html)

Protection of natural resources in relation to vegetation retention along streams:

[http://arcweb.sos.state.or.us/rules/OARS\\_600/OAR\\_629/629\\_640.html](http://arcweb.sos.state.or.us/rules/OARS_600/OAR_629/629_640.html)

Specific information about adhering to rules related to landslides in the Forest Practices Act, Forest Practices Technical Note 2 and Technical Note 6:

[oregon.gov/ODF/PRIVATE\\_FORESTS/docs/fp/LandslideHazNote2.pdf](http://oregon.gov/ODF/PRIVATE_FORESTS/docs/fp/LandslideHazNote2.pdf)

[oregon.gov/ODF/PRIVATE\\_FORESTS/docs/fp/LandslideTechNote6.pdf](http://oregon.gov/ODF/PRIVATE_FORESTS/docs/fp/LandslideTechNote6.pdf)

### **For more information about landslides:**

Oregon Department of Forestry Storm Impacts and Landslides of 1996: Final Report:

[oregon.gov/ODF/PRIVATE\\_FORESTS/docs/fp/StormImpactsFinal.pdf](http://oregon.gov/ODF/PRIVATE_FORESTS/docs/fp/StormImpactsFinal.pdf)

Landslides, Forestry, and Public Safety Issue Paper:

[oregon.gov/ODF/PRIVATE\\_FORESTS/docs/fp/LandslidesPublicSafety.pdf](http://oregon.gov/ODF/PRIVATE_FORESTS/docs/fp/LandslidesPublicSafety.pdf)

Oregon Revised Statute:

[www.leg.state.or.us/ors/195.html](http://www.leg.state.or.us/ors/195.html)

Oregon Department of Geology and Mineral Industries (DOGAMI):

[www.oregon.gov/DOGAMI/index.shtml](http://www.oregon.gov/DOGAMI/index.shtml)