

# A HOMEOWNER'S GUIDE TO LANDSLIDES AND EROSION

## INTRODUCTION

The same topographic conditions that provide Mukilteo with wonderful views of Puget Sound and the mountains beyond also present potential hazards to residential property owners. Approximately 60 percent of the single-family residential property in Mukilteo contains steep slopes that are regulated under the Municipal Code. These steep slopes have the potential for landsliding and erosion that can cause problems not only the owners of the property where the landslides or erosion originate, but also for above, below or adjacent property owners.



## LANDSLIDE FEATURES

Landslides may be distinguished by the features described below:

### **Hummocky Ground**

The displaced soil debris at the base of a landslide may have a hummocky/bumpy appearance on an otherwise uniform slope or may be manifested as mounds on level ground at the base of the slope. Hummock is a general geological term referring to a small knoll or mound above ground.



### **Scarp**

A very steep slope at the top of the landslide. Scarps are frequently located above level or nearly level benches and may expose clayey soils.

### **Bench**

A level or nearly level area below the scarp. Benches are down set stepped blocks and may occur in multiples, creating a terrace-like effect.

### **Tension Cracks**

Linear ground cracks located above the scarp. Tension cracks may be indicative of impending movement.

### **Water Seepage**

Groundwater seepage is a common feature of many landslides, frequently in cases where water-bearing granular soils are underlain by less permeable soils containing silt and clay.

### **Bowed / Leaning Trees**

Bowed or leaning trees are frequently an indicator of soil creep or larger scale earth movement.





### **Cracked Walls and Foundations**

Cracks in walls, foundations, and hard surfaces (pavement, patios, etc.) may be indicative of earth movement, as may leaning retaining walls.

## **LANDSLIDE CAUSES**

Landslides may be caused by one or more of the following conditions:

### **Poor Construction Practice**

Improper excavation at the base of a slope can remove support for the soils above, leading to landslides. Likewise, introducing an excessive load at the top of a slope can cause landslides.

### **Water**

Whether originating as rain, snow, leakage from a pipe, or from excess irrigation, water can have a very negative impact on the stability of a slope. Excess water is the culprit in many landslides.

### **Natural Weathering**

Soils weather and become weaker over time, especially when exposed. The weakening increases the likelihood that soils on a steep slope will move.

### **Landscaping Practices**

Removing the vegetation, including trees, from a slope or bluff can cause erosion or landsliding by altering drainage and killing roots that help hold soil in place. Disposing of landscaping debris (branches, grass clippings, etc.) can cause erosion and landslides by overloading weak underlying soils.



## **BEST MANAGEMENT PRACTICES**

There are many things that a property owner can do to help avoid serious landslide or erosion problems:

### **Be Diligent**

Inspect plumbing and surface water drains for leakage or problems. If deficiencies are found, repair them promptly. Keep an eye out for tension cracks in the ground or unusual cracks in buildings or hardscape surfaces.

### **Landscaping**

Resist the urge to dispose of landscaping waste on steep slopes (it is very convenient but can cause BIG problems). Maintaining appropriate groundcover on steep slopes can help reduce the potential for erosion. Consult with knowledgeable professionals before removing vegetation from steep slopes.



### **Drainage, Drainage, Drainage!**

Do not discharge water over a steep slope as this can cause both erosion and landslides.

### **Grading**

Avoid placing fill soil on or near steep slopes or excavating at the base of a steep slope as these practices can initiate landslides in some cases.

### **WHAT CAN A PROPERTY OWNER DO TO LEARN MORE ABOUT STEEP SLOPES?**

The City of Mukilteo regulates land use on and adjacent to steep slopes via Chapter 17.52A of the Municipal Code. It is important to realize that construction, vegetation management, and implementing drainage changes on or adjacent to steep slopes must be reviewed and permitted by the City. Chapter 17.52A of the Municipal Code can be viewed via the City's web site: [www.ci.mukilteo.wa.us](http://www.ci.mukilteo.wa.us)

### **Contact City Staff**

If you have plans for working on or near a steep slope, contact City staff members regarding applicable regulations and requirements BEFORE you begin or to report inappropriate activity, you may contact the Planning Department at Mukilteo City Hall: 425-263-8000 or by E-mail at [Permittech@ci.mukilteo.wa.us](mailto:Permittech@ci.mukilteo.wa.us)

### **Review Your Insurance Policies**

Did you know that most homeowner insurance policies do NOT cover earth movement that occurs due to natural circumstances?

### **Consult Professionals**

Geotechnical engineers and engineering geologists can help you determine ways to reduce the risks of landsliding and erosion.

### **Educate Yourself!**

Contact the Washington State Department of Ecology for very informative property owner guides that address steep slope management.

Prepared as a public service by the City of Mukilteo.



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