



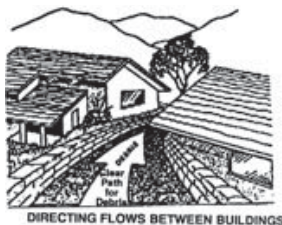
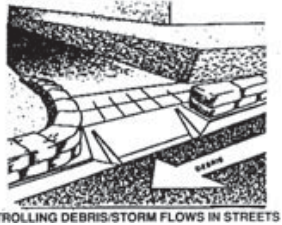
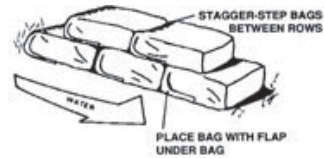
How to Use Sandbags

Filling

Filling sandbags is best done with two people. Fill half full with sand if available or local soil.

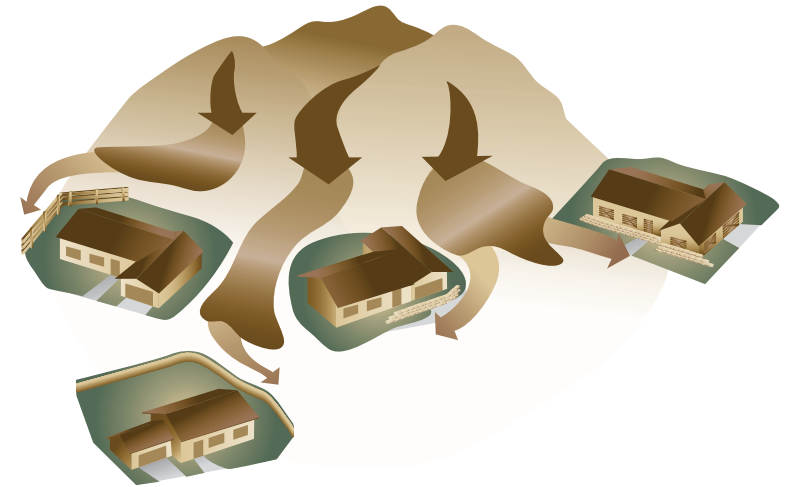
Stacking

Fold top of sandbag down and rest the bag on its top on the stack. Top should be facing upstream. Stamp the bag into place. Complete each layer before starting the next layer. Stagger the layers. Stack no more than three layers high unless they are against a building or stacked pyramid-style.



PREVENT SOIL EROSION ON YOUR PROPERTY

A HOMEOWNER'S GUIDE TO EROSION CONTROL



Don't Forget to Plan for Erosion Control ALL YEAR ROUND

Preventing runoff during the spring and summer is equally as important as preventing erosion. A major source of dry season pollution of lakes and streams near urban areas is runoff from landscape watering. This water carries oil and gasoline residue from roadways, fertilizers, pesticides, and other undesirable material as it flows away from our homes and drains into streams and lakes.

Irrigating on slopes can be tricky. Emitters are preferred but require monthly inspections to detect clogging. The freeze/thaw cycle at higher elevations can also damage tubing. Bubbler require less maintenance than drip emitters and may be highly effective. New plants should have earthen dams or watering basins around them to capture the water they receive.

DO'S AND DON'TS

Do:

- Try to direct debris flows away from your property to a recognized drainage device or to the street.
- Clear a path for debris.
- Place protective measures to divert debris, not dam it.
- Board up windows facing the flow
- Work with your neighbors.

Don't:

- Under-estimate the power of debris flows.
- Walk or drive across swiftly flowing water.
- Wait until storms arrive to make a plan.
- Try to confine the flows more than is necessary.
- Direct flow to neighbor's property.

Soil erosion can happen slowly, gradually washing away top soil, or it can happen quickly in heavy rain events. In either scenario, the land is stripped bare of valuable natural resources.

In an effort to help landowners protect their property, professional NRCS Conservationists developed erosion control practices for areas where trees have been removed.

In this Homeowner's Guide to Erosion Control, you will find common NRCS practices that can be implemented to protect your property and prevent mudslides. Expanded fact sheets are also available at:

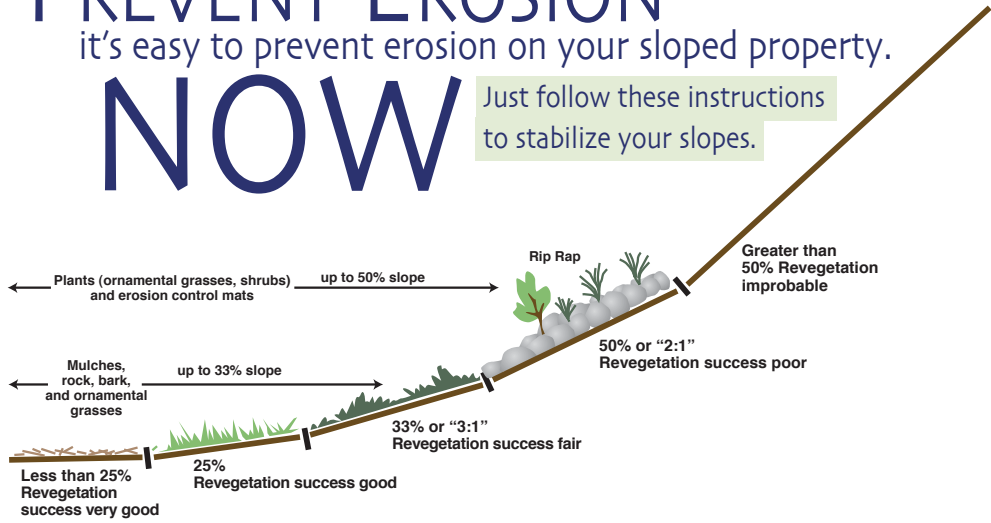
www.ca.nrcs.usda.gov/programs/ewp

PREVENT EROSION

it's easy to prevent erosion on your sloped property.

NOW

Just follow these instructions to stabilize your slopes.

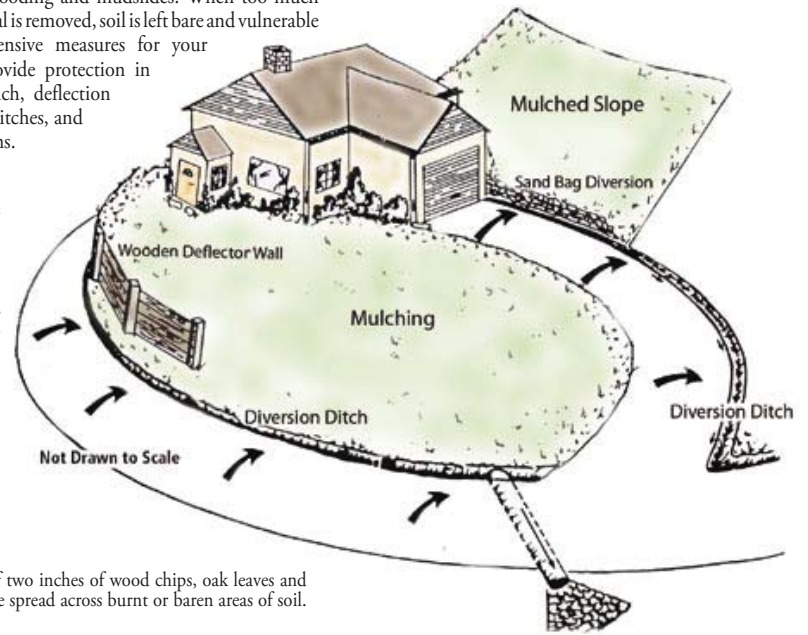


Battling MUDSLIDES & FLOODS

If you have removed vegetation, dead or dying trees from your property, you need to take defensive measures to protect against flooding and mudslides. When too much protective material is removed, soil is left bare and vulnerable to erosion. Defensive measures for your property can provide protection in the form of mulch, deflection walls, diversion ditches, and sandbag diversions.

Materials

The materials needed are readily available and inexpensive and can be installed with normal household tools: sandbags, sand, lumber and plywood.



WHAT KIND OF SLOPES DO YOU HAVE?

TAKE A LOOK AT YOUR SLOPES. HOW STEEP THEY ARE WILL TELL YOU WHAT WILL WORK.

Moderate slopes (less than 33%) have a good chance of success at controlling runoff using plant materials and mulch.

Cover bare soils with mulch of bark chips, pine needles, wood chips, and even stones or river rock. Up to two inches of bark, wood chips or pine needles will not create a fire hazard.

When landscaping, select plants for slope stabilization and use bubblers or drip emitters for irrigation. When watering season starts again, watch the length of time you water and the amount of water delivered. Make sure the plants get only what will soak in.

Slopes between 33% and 50% require special care.

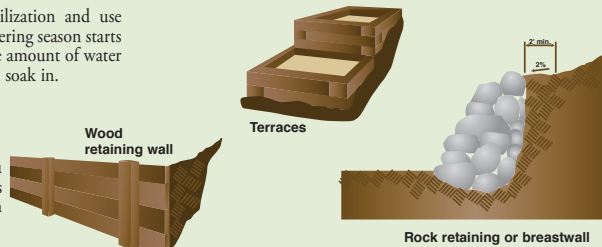
Plant on slopes that are this steep, but be aware you may need to use an erosion control blanket, mats of coconut fiber, or jute netting to hold slopes in place until plants can become established.

Once established, the roots of the plants will knit together to hold soils in place. Their limbs, leaves and branches

will diffuse the force of rain and wind. These steep slopes require irrigation systems that will not create runoff.

Slopes over 50% will require structures or special techniques for stabilization.

Techniques for steep slopes include wood retaining walls, interlocking concrete blocks, rock retaining walls, riprap (loose rock) areas, and terracing. If you choose wood, make sure the wood is treated with a wood preservative to prevent rotting. Terraces and wood retaining walls require approval by government agencies; please contact your local Building and Safety office.



Mulching

A mulch consisting of two inches of wood chips, oak leaves and pine needles should be spread across burnt or barren areas of soil. This will:

- help to protect and keep soil in place
- increase water penetration
- keep soil cool and maintain moisture
- increase organic content of soil (you may want to add nitrogen if mulch is applied around existing vegetation, since the break down of mulch utilizes some nitrogen)

Paved driveways are often an important factor in controlling erosion.

Paving prevents erosion resulting from snow removal, vehicle traffic in and out of your driveway and soils unable to absorb moisture because they have been compacted by vehicle weight. Small ditches or swales that capture runoff and return precipitation to your landscape should border your driveway. Semi-permeable coverings such as gravel can also be effective if slopes are not too steep.

Choose plants for slope stabilization.

Contact your local NRCS office for a list of plants and trees suitable for your area.

Protecting windows and doors

In areas where mudslides are possible use plywood to board up windows and doors. Overlap windows, vents or doors at least three inches on each side. Secure plywood with four or more nails, screws or bolts.

Wooden deflector walls

Use lumber for walls. Drive stakes to at least half their length into the ground for proper anchorage. Place deflectors on solid, level soil to prevent erosion. Earth packed behind the deflector will make it stronger. Contact your local NRCS office for more information.

Diversion ditches

Dig a small ditch close to the upper edge of the property to slow water movement. Provide for the ditch to drain into a drainage device, street pavement or a well-vegetated area.