Roadside Vegetation and Disaster Mitigation

Jennifer A. Malcolm, California Department of Transportation, Headquarters, Division of Maintenance, Office of Roadsides, 1120 N Street, MS 31, Sacramento, CA 95814, jennifer_malcolm@dot.ca.gov

This discussion focuses on roadside vegetation and how disasters affect our work. Roadside vegetation managers can assist others (such as engineers) during major disasters in many ways which can lessen future noxious and invasive weed invasions and help to reestablish native plants.

This presentation shows how the 2005 winter storms devastated southern California. Many areas in California received over 300% of their normal annual rainfall from January through March of 2005. Governor Schwarzenegger declared an emergency in eight counties (Los Angeles, Ventura, Santa Barbara, Riverside, San Bernardino, Orange, San Diego and Kern) on January 15, 2005.

There are many types of failures that affect roadways and roadsides. These photographs illustrate the variety of types of failures which occur during disasters. It is important to correctly identify the specific type of failure, since money and resources are tied to such repairs. Some of the most common roadside disaster failures include:

Bridge failures - when excessive water scours out bridge supports, causing failure or collapse.

Roadbed failures occur due to excess saturation.

Culvert failures occur when water volumes greater than the culvert can handle either blowout, topple or separate. Failures normally occur at culvert entrances and detention basins when they fill up with mud and debris.

Mudslides - when water and dirt combine to overtop roadways.

Rockslides and landslides occur when saturated hillsides can no longer support their own weight, falling down onto the roadways below.

Slipouts occur when saturated hills fail below the roadways, taking the roadway with it.

Washouts - a violent form of flooding that takes the entire roadway with it.

Flooding - when runoff overtops roadways.

Roadside vegetation managers should suggest appropriate repair strategies. By acknowledging drainage patterns and nearby site features, roadside vegetation managers can suggest: appropriate seed mixes (including pioneer species, forbs, wildflowers and native grasses); planting options (such as broadcast seeding, no-till drilling, imprinting, hydroseeding, and plug planting); drainage options (such as rock-lined swales, geocells, different size and tonnage of boulders); erosion control options (including bonded fiber matrixes, erosion control blankets and stabilizing mats); and grading options (such as slope steepness, berms next to roadsides to channelize water, and slope rounding/contour grading). By helping others during a disaster, we can help to make our roadsides better in the future!