



**CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY**

Name(s) Rameen M. Aryanpur	Project Number J0601
Project Title Natural Disasters	
Objectives/Goals I wanted to find out how moisture and soil type affects landslides and mudslides	
Abstract Methods/Materials In this experiment I used: 1 complete apparatus with filter, 5 gallons of silt, 5 gallons of sand, 5 gallons of dirt, 5 gallons of gravel, a measuring cup, an oven, a set of hands, a hose, 2 baking dishes. Methods: For this experiment, I placed 12 cups of the substance on a moving board inside the apparatus and shaped it into a 10 degree angle to simulate a hill. Next, I gradually moved the board up to 10 degrees, 20 degrees, 30 degrees, 40 degrees, 45 degrees, 50 degrees, and then 60 degrees. When 4 cups of the substance fell into the measuring cup, I considered that a landslide or mudslide. I did this experiment when the substances were dry, when 3 cups of water had been added to the substance, and when 8 cups of water had been added to the substance. I also did the tests 5 times with each substance under each condition.	
Results The average angle at which substances slid under dry conditions: Silt: 34 degrees. Sand: 30 degrees. Dirt: 30 degrees. Gravel: 32 degrees The average angle at which substances slid under wet conditions: Silt: 30 degrees. Sand: 34 degrees. Dirt: 37 degrees. gravel: 30 degrees. The average angle at which substances slid under very wet conditions: Silt: 12 degrees. Sand: 24 degrees. dirt: 18 degrees. Gravel: 20 degrees.	
Conclusions/Discussion My predictions for dry conditions were that gravel would be the sturdiest, then dirt, silt, and then sand. But it turned out that silt was the sturdiest, followed by gravel, and then dirt and sand were tied. I thought that under the wet conditions, the order would be the same as under wet conditions. But dirt was really the most stable, in second was sand, and then tied for last were gravel and silt. Under the very wet conditions, my predictions were that the most stable substance would again be gravel, then sand, followed by dirt and then sand. The results showed that sand was the most stable, then gravel, dirt, and finally silt. These results weren't really true to my hypothesis, although some of the predictions were. This experiment helps people understand soil stability and the importance of it while making a road. It also tells what soil is the best to use when making a road.	
Summary Statement Testing how soil type and moisture affect landslides and mudslides.	
Help Received Dad helped build apparatus. Talked with Storm Damage Coordinator at Cal Trans(Dale Couly) about money used to clean up landslides and mudslides.	