



**CALIFORNIA STATE SCIENCE FAIR  
2007 PROJECT SUMMARY**

<b>Name(s)</b> <b>Andrea J. Grimbergen</b>	<b>Project Number</b> <b>J0710</b>
<b>Project Title</b> <b>Will Your House Sink?</b>	
<b>Objectives/Goals</b> My objective was to study soil liquefaction during an earthquake. I wanted to understand what liquefaction is and how it is affected by soil density and different water saturation levels. I also wanted to simulate how liquefaction occurs during an earthquake.	
<b>Abstract</b> <b>Methods/Materials</b> I filled a tub with sand, and added different amounts of water. For each amount of water, I followed the same steps. First, I placed a brick on the surface of the sand. Next, I dropped the tub from three inches off the ground eight times. Then I measured the amount the brick sank into the sand at each corner of the brick and averaged those four measurements. I repeated the above experiments for both loose and compacted sand. I also measured how much water could be poured into the sand before it became 100% saturated.	
<b>Results</b> I found that when simulating an earthquake the brick will sink deeper into loose sand than into packed sand, and will sink the most at 100% saturation. I also measured how much loose sand can compact and how much water sand can hold. These are important factors in determining how much liquefaction occurs.	
<b>Conclusions/Discussion</b> I concluded that the amount of water in the sand and the packing density of the sand affect liquefaction. My simulation showed that the effects of liquefaction were most dramatic at 100% saturation. To lessen the effects of liquefaction, the soil should be packed and it should be dry or partially dry.	
<b>Summary Statement</b> The objective of my project was to understand what liquefaction is and how it is affected by soil density and different water saturation levels.	
<b>Help Received</b> I learned about liquefaction at the US Geological Survey Open House. I received advice from my father on some experiments.	