



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

Name(s) Angeline R. Wolski	Project Number S0615
Project Title Burning Questions: The Effect of Fires on Soil Infiltration Rates	
Abstract Objectives/Goals The objective of my project was to determine if wild fires, such as grass and redwood forest fires, affect soil infiltration rates. I think that water will take longest to infiltrate on the forest fire plot because of the heavy ash produced. Grass fire plots will have faster infiltrating times than the forest fire plots, but the control plots will have the fastest. As the ash wears away over time and vegetation regrows, the infiltration rates will increase. Methods/Materials Two types of fires, grass and forest, were tested for their effects on infiltration rates. Fires were tested in two situations; a real fire in Redwood National Park, and a synthetic fire (one I created under controlled conditions.) Nine plots were constructed in each environment: three forest fire plots, three grass fire plots, and three control plots. I used a double ring infiltrometer to measure infiltration rates. I also tested for water repellency on all plots and measured rainfall during the experiment. Results The forest fire plots showed the largest decrease in infiltration rates. Grass fire infiltration rates were also much slower than the control, but faster than the forest fire plots. Infiltration increased once ash was worn away and vegetation began to grow back. Rainfall decreased infiltration on grass fire and control plots, but increased infiltration on forest fire plots. However, after the rainy season, burned plots still exhibited lower infiltration rates than the control. Variability was greatest on forest fire plots. None of the plots exhibited water repellency. Conclusions/Discussion My conclusion is that wild fires decrease the soil infiltration rates. The greater intensity of the fire, the slower the infiltration rate. The infiltration rates of fire plots will be slower than the control until vegetation regrows. In my experiment, slow infiltration rates persisted for at least five months. This may lead to higher levels of run-off, flooding, and erosion after a fire.	
Summary Statement The purpose of my experiment was to determine if forest and grass fires affect soil infiltration rates.	
Help Received Mother helped drive to Redwood National Park; Used infiltrometer from US Geological Survey.	