



**CALIFORNIA STATE SCIENCE FAIR  
2004 PROJECT SUMMARY**

<b>Name(s)</b> Alyssa C. Paulson	<b>Project Number</b> <b>J0921</b>
<b>Project Title</b> <b>The Effects of Runoff Pollutants on Various Aquatic Plants</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The goal of this project was to observe the reaction of various aquatic plant species to the pollutants: motor oil, car wash detergent, fertilizer, and water-based paint.</p> <p><b>Methods/Materials</b> In this project, two gallon sized aquarium tanks were used, along with Anubias Nana plants, Amazon Sword plants, Pennywort plants, and Dwarf Sagittaria plants. In every tank, there was one of each plant species. Approximately every five days, 237 mL of water was collected and mixed with 1.6 mL of a pollutant, then poured back evenly, across the surface of the water in the tank. Each tank was subjected to a different pollutant, with the exception of a control tank. Besides recording the plants' reactions to the pollutants, the water was tested for its pH, ammonia, nitrite, and hardness level as indicators of environmental health.</p> <p><b>Results</b> In the first week, there were no significant changes. By the end of the second week, in all tanks, some leaves of the Anubias Nanas were turning brown. The Pennywort exposed to "fertilizer runoff" was also browning. In the third week, the Anubias Nanas subjected to the detergent and "oil runoff" began to die, along with the Amazon Sword plant exposed to the "fertilizer runoff". After four weeks, the Amazon Sword, Pennywort, and Anubias Nana plants exposed to the "fertilizer runoff" had decomposed, as had the Anubias Nana subjected to the "detergent runoff". By five weeks, the Anubias Nana subjected to the "oil runoff" had decayed.</p> <p><b>Conclusions/Discussion</b> After 5 weeks of introducing the pollutants, the "fertilizer runoff" appeared to have the most negative impact on the four species of plants. The "detergent runoff" had slightly less impact and was similar to the "oil runoff" results. Surprisingly, the water-based "paint runoff" did not produce any visible damage to the health of the plants.</p>	
<b>Summary Statement</b> In a runoff simulation, this project tested the effects of motor oil, car wash detergent, fertilizer, and water-based paint on various aquatic plants.	
<b>Help Received</b> Thanks to my mother who took me to the stores to purchase my materials. Thanks to my science teacher who helped edit my report.	