



# CALIFORNIA STATE SCIENCE FAIR 2004 PROJECT SUMMARY

<b>Name(s)</b> <b>Shaheen Jeeawoody</b>	<b>Project Number</b> <b>J0912</b>
<b>Project Title</b> <b>Water Quality along Saratoga Creek</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> My objective was to determine the impact of stormwater pollution on the water quality in Saratoga Creek as it flows from the mountain, through urban and industrial areas, down to the Bay. I believe that the creek will become more polluted downstream.</p> <p><b>Methods/Materials</b> I collected water samples using a home-made launching device at 6 different sampling sites along the creek and on 3 different days: clear day, light rainy day and after a heavy downpour. I also collected rain water for my control. I tested all samples using the GREEN Standard Water Monitoring kit for levels of Coliform Bacteria, phosphate, nitrate, dissolved oxygen, pH, and turbidity.</p> <p><b>Results</b> The Coliform Bacteria tests were positive at all locations and on all three days; each sample contained more than 20 coliform colonies per 100 mL of water. The phosphate levels varied between 2 and 4 ppm at all sites on all the three days while the nitrate levels increased from 0 in the mountain to 10 ppm at the Bay. The dissolved oxygen levels varied between 6 and 8 ppm but decreased to 4-6 ppm after the downpour. The pH of the water samples was in the range 8-9 and lightly decreased to 7-8.5 after the downpour. The turbidity levels were low (0-20 JTU) but increased to a maximum of 60 JTU on the heavy downpour day.</p> <p><b>Conclusions/Discussion</b> According to the GREEN Standard, Saratoga Creek is doing poorly on the bacteria test. This level of contamination is due to wastes and fecal droppings of birds and animals living in the mountains or in the creek neighborhood. The high level of phosphate (accepted level: 0.3 ppm) must be coming from phosphorus occurring naturally in rocks and fertilizers washed by rain and excess watering. The nitrate levels were above the accepted level of 4 ppm. Nitrates might be coming from fertilizers, animal wastes and decomposition of organic matter. Saratoga Creek is doing well on the dissolved oxygen levels (optimal range above 5 ppm), pH (optimal range 6.5-8.5) and turbidity levels. A turbidity level of less than 40 JTU is considered good for aquatic life. As expected, the turbidity increased after a downpour due to soil erosion and heavy run-off. These findings lead me to conclude that stormwater pollution affects the water quality of Saratoga Creek. This will severely impact the delicate ecological balance of the Bay unless more drastic measures are taken to prevent and limit water pollution.</p>	
<b>Summary Statement</b> As Saratoga Creek flows downstream, its water quality decreases as a result of stormwater pollution caused by residential, commercial and industrial activities.	
<b>Help Received</b> My mother drove me to all the site locations to collect water samples and took pictures. My father helped me with the tables and charts.	