



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Rachel Bickert; Kelli Van Wandelen	Project Number S0805
Project Title Kelli and Rachel's Excellent Beach Adventure, The Sequel: Sand Storms and Sapiens	
Abstract Objectives/Goals We determined the impact of the dredging on the beach east of Seabright Beach and the harbor, Twin Lakes Beach. In comparing the profiles of the two beaches, we will determine how longshore transport and dredging impact a beach. Methods/Materials The materials used are hand level, rod level and stadia rod. We go to both beaches and survey across from North to South until we reach the ocean, gathering height every two meters. We then cumulate the data and graph it. Results Our data shows that the harbor jetty blocks longshore sand transport past Seabright Beach, thus starving Twin Lakes Beach of sand. Furthermore, human dredging of sand from the harbor counteracts some of the sand starvation by adding sand to Twin Lakes Beach. Conclusions/Discussion Once dredging of the harbor started, however, Twin Lakes profile became steeper compared to Seabright. Upon initial inspection, dredging the harbor would seem to have a negative impact on the profile of Twin Lakes Beach; however, dredging appears to be essential in providing sand to nourish the beach. This prevents further erosion of the beach due to the trapping of sand and blocking of longshore transport by the upstream harbor jetty. Dredging of the Santa Cruz harbor is essential. If dredging were to stop, there would be negative impacts on many things. Twin Lakes Beach would become much narrower than its current 140 meters across. On the other hand, Seabright Beach would increase in width, because sand and sediment would build up in the harbor mouth (shoaling) and eventually around the jetty and into the harbor, increasing the size of the sandbar and Seabright Beach. The harbor would cease to exist because too much sand would be built up in the mouth and eventually throughout the harbor, stopping boat transportation. This would ultimately result in Twin Lakes Beach losing all sand and ceasing to exist. The houses on Twin Lakes Beach would lose their properly value of being beach-side homes, and would possibly be destroyed by reoccurring wave action. Also, the economy of Santa Cruz is highly dependent on the summer tourism. If these beaches were to be destroyed, fewer tourists would come to Santa Cruz, which would hurt the economy. As long as the harbor is in use, dredging is necessary to maintain it, the health of the beaches, and the city of Santa Cruz.	
Summary Statement To compare the profile of two beaches and to determine both positive and negative effects of Santa Cruz Harbor Jetty and dredge on the beaches.	
Help Received Mentor Save Swartz and Project Supervisor Jane Orbuch	