



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Evan L. Bornemann	Project Number J0701
Project Title Air Bubble Breakwater	
Abstract Objectives/Goals All harbors have a stone breakwater to stop waves, thus preventing costly erosion. But these breakwaters are difficult and expensive to construct. My project tests whether air bubbles can be used as a sufficient breakwater, to effectively diminish the height of waves. Methods/Materials I built a tank about eight feet long and filled it with water. The side was made of Plexiglas for accurate wave measurement. I hooked an air compressor to the tank to release the air bubbles at the bottom of the tank. The bubbles were released at intervals of 20, 40, 60, and 80 PSI. I measured the height of ten waves before and after the wave reached the air bubbles. Results The results were as follows: at 20 PSI, wave height was decreased .9 cm on average. At 40 PSI, wave height was decreased by 2.1 cm on average. At 60 PSI, wave height was decreased by 2.6 cm, and at 80 PSI, wave height was decreased by 3.1 cm. Conclusions/Discussion Because the wave height was decreased by 62% at 80 PSI, I came to the conclusion that air bubbles can be used as a sufficient breakwater.	
Summary Statement My project tests whether air bubbles can diminish wave height in order to perform as a breakwater.	
Help Received My Dad helped me with the design and construction of the tank I used to perform the tests.	