



CALIFORNIA SCIENCE & ENGINEERING FAIR 2018 PROJECT SUMMARY

Name(s) Christina J. Moon	Project Number J1211
Project Title Sordid Sediment	
Objectives/Goals My objective was to determine the effect of sediment on water quality in lakes and the marine organisms that inhabit it.	
Abstract Methods/Materials Sediment was collected from three local lakes. 50 grams of sediment from each lake was mixed with 300 milliliters of spring water in a container (each labeled with the lake name) to simulate rainwater run-off (independent variable). A sediment free container with 300 milliliters of spring water was also prepared (control). Fifteen adult Daphnia magna were transferred into each of the four containers (dependent variable). Over the course of 48 hours, the number of Daphnia magna in each container was counted every 8 hours and the heart rate per minute of the Daphnia magna was counted with a microscope every 16 hours. This was to keep track of the viability of Daphnia magna. For more reliable results, a second test was replicated. The water temperature and pH levels of the eight containers were also recorded every 8 hours.	
Results My results showed that the sediment-infused water had a lower reproduction rate compared to the control in both tests. Test A: 387% (control), 200%, 247%, 327%. Test B: 407% (control), 227%, 267%, 334%. The heart rate of the Daphnia magna in the sediment-infused water was much faster than the control in both tests. Test A: 178 (control), 209, 204, 199. Test B: 178 (control), 211, 206, 197. The water temperature and pH levels were almost within the same range among the eight containers throughout the 48 hours.	
Conclusions/Discussion The run-off sediment from man-made structures around the lakes was the cause of water pollution and vitality of marine organisms. The degree of pollution depended on the number/size of man-made structures, proving my hypothesis to be correct. The data showed that there were correlations between the reproduction rate and the heart rate. When the heart rate increased, the reproduction rate lowered. That means if a larger number/size of man-made structures are present, the higher the pollution would be in the lake.	
Summary Statement Lakes were polluted by run off sediment from man-made structures, and the degree of pollution depended on the toxicity level of the sediment.	
Help Received My professional contact, Dr. Kevin Raskoff answered my questions about collecting sediment and supplied a microscope and a pH tester. My dad drove me to the different lakes and bought the materials.	