CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
Max T. Wilkerson

Project Number
J0932

Project Title
Storm Drain Effluent: A Place for Children to Play?

Abstract

Objectives/Goals
During the summer, many people enjoy a trip down to the beach on a hot day. Sometimes, they find what they think to be a stream that#s perfect for their younger children to play in. What they are most likely doing is setting their children in a sewage drain run-off effluent that may be contaminated with bacteria such as E.coli and coliforms. In this project I checked for bacterial contamination at two storm drain effluent locations: Cottonwood Creek and San Elijo.

Methods/Materials
I tested each site five times each on five different days. I evaluated the water samples in a laboratory at the San Elijo Water Reclamation Plant. The water samples were mixed into test tubes containing laurel tryptose broth (LtB) and then placed in an incubator for 24 hours. The next day if any of the samples were positive, they were transferred using an inoculation loop to test tubes containing brilliant green bile broth (BGB). All of the positive LtB samples transferred to BGB were again placed in the incubator for 24 more hours. These were checked the next day to see if more LtB tubes turned positive or if any BGB tubes were positive.

Results
On four different days, water samples were taken during periods of no rain. During this time one effluent location, Cottonwood Creek, averaged >1600 total coliform colonies per 100 ml of water while San Elijo effleunt averaged only 20 total coliforms per 100 ml. On a fifth day, samples were taken during a rainstorm. Total coliform levels for all these samples were >1600 total coliform colonies per 100 ml at both sites.

Conclusions/Discussion
Even during periods of no rain, Cottonwood Creek consistently averaged greater than 1600 coliform colonies per 100 ml of water.The total coliform counts were also very high at both effluent sites during the rain storm. I would recommend that this project be repeated with more tests conducted and more sites evaluated to determine the safety of effleunt run-off for public use.

Summary Statement
I evaluated storm drain effluent water samples from two different beach locations, during periods of no rain and rain, to assess levels of bacterial contamination.

Help Received
Suzanne Mandel-Mosko at San elijo Water Reclamation Facilities allowed me to use her lab and showed me how to conduct my tests.