



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY**

Name(s) Caroline G. Worman	Project Number J1220
Project Title Analyzing Escondido Creek Water Quality	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My goals were to analyze the water quality of Escondido Creek at different sites to identify the effects of the seven-mile flood control channel versus the natural environment. I hypothesized that the concrete channel has an adverse effect the water quality. I believed that the creek water quality would be poorest at the channel effluent in Escondido. I also hypothesized that as the creek water ran through the natural environment, the water might be filtered and cleaner than at the concrete channel.</p> <p>Methods/Materials I obtained water quality testing kits and materials from La Motte and Hach chemical companies. I conducted 130 water chemical tests and 42 water bacterial tests, using 10 different water samples acquired over three months. I tested for pH, alkalinity, ammonia, hardness, nitrate, nitrite, phosphate, chlorine, turbidity, dissolved oxygen, biochemical oxygen demand, coliform colonies, non-coliform colonies, E. Coli and mold. I also recorded environmental observations I saw around the test sites.</p> <p>Results I found that the seven mile flood control channel was harmful to the water quality, and the natural environment was able to filter some of the damage done by the channel. About 10 miles downstream from the channel, water quality improved, but was still below state standards. Along the entire creek the dissolved oxygen levels were low, suggesting the creek could not support a diverse ecosystem. Bacterial tests showed many plates contained TNTC coliform colonies per 100 mL. As a whole, the creek chemical and bacterial levels do not meet the state standards for water quality.</p> <p>Conclusions/Discussion The flood control channel that encloses the Escondido Creek seems to have an adverse effect on water quality. Returning the creek bed to its natural environment is likely to improve the quality of the water of the Escondido Creek. Plans to fix the problem of the concrete channel are already in progress and must be balanced with the need to control flooding.</p>	
Summary Statement The purpose of this project was to test the water quality of Escondido Creek and assess the effects of the seven mile flood control channel.	
Help Received My parents provided transportation to each of the sites as well as to my school lab. My science teacher, Mrs. Hunker, provided me with equipment and test materials and also supervised me while testing. I performed all water quality tests and obtained all samples independently.	