



**CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY**

Name(s) Sierra C. Ford	Project Number S1306
Project Title Fecal Coliform: Surprising Levels in a Reservoir	
Objectives/Goals To compare fecal coliform bacteria levels in a reservoir with levels at sites upstream and downstream and to determine why such differences in the fecal coliform levels occur.	
Abstract Methods/Materials Methods: COLLECT WATER SAMPLE(S). CLEAN & DISINFECT WORKSPACE. PREPARE STERIFIL APPARATUS. CHECK THAT INCUBATOR READS 44.5° (DEGREES) CELSIUS. PREPARE PETRI DISHES WITH MFC MEDIA. FILTER WATER SAMPLE(S) USING THE VACUUM APPARATUS. INCUBATE AT 44.5° C FOR 22-24 HOURS. COUNT FECAL COLIFORM COLONIES. RECORD THE NUMBER OF FECAL COLIFORM COLONIES PER 100 ML. QUALITY CONTROL-OPTIONAL 1. Run a positive control using E. coli. 2. Run a negative control using Streptococcus. CLEAN-UP Materials: Sterile sample bags; Sterifil apparatus; Vacuum system; Sterile pipettes; Sterile buffer; Forceps; Petri Dishes ; Millipore Type HA 0.45 micron packet; Sharpie pen ; MFC medium; Ethyl alcohol; Bunsen burner; Incubator ; Disinfectant; Anti-bacterial soap; Autoclave; Foil. Optional: E. coli broth-positive control; Streptococcus-negative control; Sterile distilled water.	
Results My data showed that there were higher levels of fecal coliform bacteria found in the reservoir as compared to the inflow creek. The levels of fecal coliform I found further downstream from the reservoir were not stable, as I hypothesized, but rather declining as the distance from the reservoir increased.	
Conclusions/Discussion Understandably, there was no bacteria found in the inflow creek; this water flows out of the ground in an underground aquifer. The testing site I was using further downstream from the reservoir had very low levels of fecal coliform bacteria as compared to the levels found in the reservoir. I found that the fecal coliform bacteria levels were high at the direct outflow. I also found that there are other creeks that are diluting the direct reservoir outflow water. These other creeks are lowering the number of fecal coliform bacteria colonies found per 100 ml sample. The absence of bacteria tested in the other water sources that are diluting the main stream proves within reasonable doubt that the bacteria are being carried from the reservoir. The only source for the bacteria is from the feces of the animals. I would conclude that the higher fecal coliform bacteria levels in the reservoir are caused by an increase in the number of birds and mammals in the area.	
Summary Statement Fecal coliform bacteria levels in a reservoir are higher than levels both up-stream and further down-stream.	
Help Received Used lab equipment at San Lorenzo Valley High School under Ms. Jane Orbuch.	