



**CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY**

Name(s) Rio E. Lauer	Project Number J1122
Project Title Reusing Greywater to Reduce Usage and Dependence on the Carmel River	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of this project is to determine whether reusing greywater can reduce usage of the Carmel River.</p> <p>Methods/Materials For testing, I collected dishwasher and used sink water from restaurants, washing machine water and shower water from houses, and washing machine water from hotels. I then used a pH pool and spa test strip to test the pH level in the different waters.</p> <p>Results The results were restaurant dishwasher water and household washing machine water could be reused for toilets, but restaurant sink water should not be reused for toilets. The results show that the hypothesis should be partially correct because the peninsula could use dishwasher water, shower water, and washing machine water from houses but not washing machine water from hotels. Instead the hotels could use shower water.</p> <p>Conclusions/Discussion The tests for this experiment failed to disprove the hypothesis, which was "if greywater systems could be used for toilets then the elimination of using potable water could potentially save enough water to eliminate the need for a desal plant. This is important because a desal plant is expensive and not good for the environment." It would be possible to reuse greywater for toilets and it would save enough water to reduce usage from the Carmel River. Many of the results matched the hypothesis except sink water because it had such a low pH level so it is not the best to reuse for toilets. I was also surprised that there is a device called the AQUUS water reclamation system that in a year, if everyone reused the water from sinks with this device, could reduce use of the Carmel River by 12 percent. Everything else was what I thought it would be.</p>	
Summary Statement My testing showed that using a greywater reuse system could reduce the amount of water pumped from the Carmel River by 12 Percent and possibly eliminate the need for a desalination plant.	
Help Received I received professional advice on statistics and areas of research for my project from Ed Waggoner of Carmel Area Wastewater District and Thomas Christiansen of Monterey Peninsula Water Management District.	