CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)
Sidharth Bommakanti

Project Number
S1005

Project Title
Wellness Water: Implementation of a Dual-Filtration System to Clarify Domestic Water Sources in Rural Ccommunities

Abstract

Objectives/Goals
My main goal was to Implement a sustainable, low-cost dual-filtration system to clarify contaminated domestic water sources in rural communities.

Methods/Materials
I created a slow sand filter bed after getting permission from the Panchayat. Upon completion, I commenced wetland construction. I conducted focus groups to collect data from community members who represent the entire spectrum of socioeconomic backgrounds. I created a high school water quality curriculum to integrate into the existing curriculum. All water quality measurements in the field were conducted using the DR890 handheld water quality test kit. Colorimetric assays were used to reveal the presence of nutrients, turbidity levels, pH, and oxygen content. Initial design plans to create a 1250 m3 wetland containing Canna Indicus, knotweed, and other plants in order to remove nitrates and phosphates that are being created. These plants were chosen specifically after much research for their sustainability and ability to coexist without outcompeting one another. The selected plants will be working synergistically with other plants that will modify the redox conditions of the existing soil substrate to allow the wetland to polish water at higher rates. An education plan was to integrate water science and wetland functions into the existing curriculum.

Results
The sand filter bed created minor reductions in key contaminants. Pre and post test results indicate an increase in knowledge and understanding in topics related to water sanitation and environmental contaminants. Members of the community have successfully showed an interest in the program and have with my assistance created the Water Quality Committee. Partnerships have been established with the Panchayat, the CDD Society, Journeyman Internation Inc, and the Kowtaram High School.

Conclusions/Discussion
Pilot presentation of high school water sanitation curriculum received overwhelming support from the local government and high school administration. The dual filtration system is both a low cost and sustainable water purification method. Full length curriculum in Kowtaram's local high school will be taught in grades 9-12. Implementation of wetland system and monitoring of water quality after dual filtration is in place.

Summary Statement
My project is an attempt to find a way to clarify domestic water sources throughout the world

Help Received
Mrs. Pereira helped with supplies