Conserving Water Through the Filtration and Recyclation of Greywater in a Domestic System

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This project aims to produce and test a prototype aid in water conservation within a domestic, consumer context. A specialized recirculating faucet system was built using direct filtration techniques: two carbon filters and an adapted Biosand Filter. The system was tested by filtering solutions of decreasing particulate sizes through the system and comparing the contamination after filtration to the initial contamination levels. The final goal of this project is to create a system that conserves water before it leaves the consumer. The system was made to be modular for easy installment and be able to filter sediments such as soil, graphite powder, vegetable oil, and soap content. E. coli was tested to assess the microbial-filtration ability of the system. The results for microbial-filtration suggested there were E. coli remnants after filtration and new methods will need to be applied to reach the desired function of the system. This will include an activated carbon and zeolite filter. One gallon of water was successfully recycled for an extended period of time within standard flow-rates for household faucets. This system, if implemented in the average American household, would save the consumer significant amounts of money in water costs and conserve up to 50 gallons daily in the American home with the potential for further conservation within commercial environments.

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