Solar Powered UV-c Treatment for Fecal Coliform and Enterococcus Bacteria in Storm Water Overflow

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After a heavy rainfall, beaches are closed and swimming is prohibited. Sewers fill to capacity and are unable to handle the combined sanitary and storm water; thereby causing water to overflow directly into local bodies of water. The purpose of this study is to determine whether solar powered UV light is an effective disinfectant in treating bacteria in a storm drain prior to the discharge into receiving water used by the public for recreational purposes. The study is also to determine weather solar power would be an effective power method for the UV light, making the entire setup completely sustainable. Treating the pollutants caused by sewage overflow can dramatically help sustain recreational waters. In order to conduct the experiment in a public sewer, special permission from governing agencies would have been required; therefore I built a storm water sewer simulator. Water from the Hutchinson River was obtained with a bucket and poured into the simulator. The samples were originally run through the simulator not activated by solar power or the float switch, to collect the data. After the UV-light was determined a successful treatment method, the light was connected to a float switch and a solar panel with a battery for storage of power.

Awards Won:

Second Award of $2,000