

Semi-Portable Water Treatment System

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Introduction

In order to have access to drinking water, hikers and campers need to bring a portable filtering system with them or bring in clean water from outside. But there are no typical systems in remote locations for cleaning water to supply to multiple groups of people.

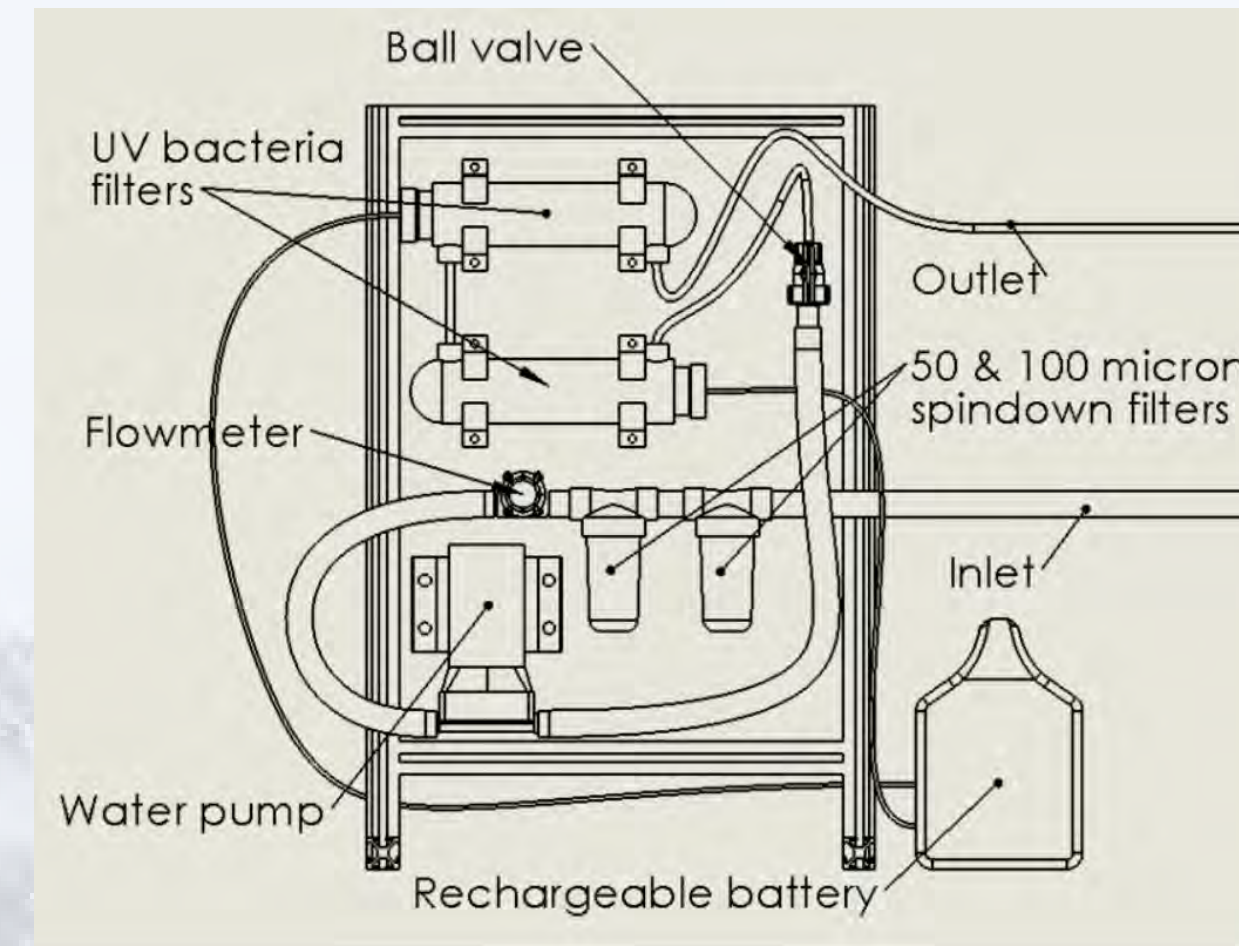
This project is intended to bridge the gap between immobile home systems and small filtration systems designed to clean water for few people. By being semi-portable, it can be transported to a reservoir frequently passed by outdoor enthusiasts and serve to provide drinking water.

Objectives

Construct a water treatment system that effectively cleans water for drinking that:

- 1) Runs on renewable energy
- 2) Cleans water to EPA standards
- 3) Takes in water from outdoor reservoir
- 4) Outputs at least 50 gallons per day

System



Components



Mesh Filters

50- and 100-micron spindown filters in series work to eliminate particles in the water

UV

6W UV to eliminate bacteria



Pump

5 GPM self-priming pump to pressurize system



Battery/Solar Panels

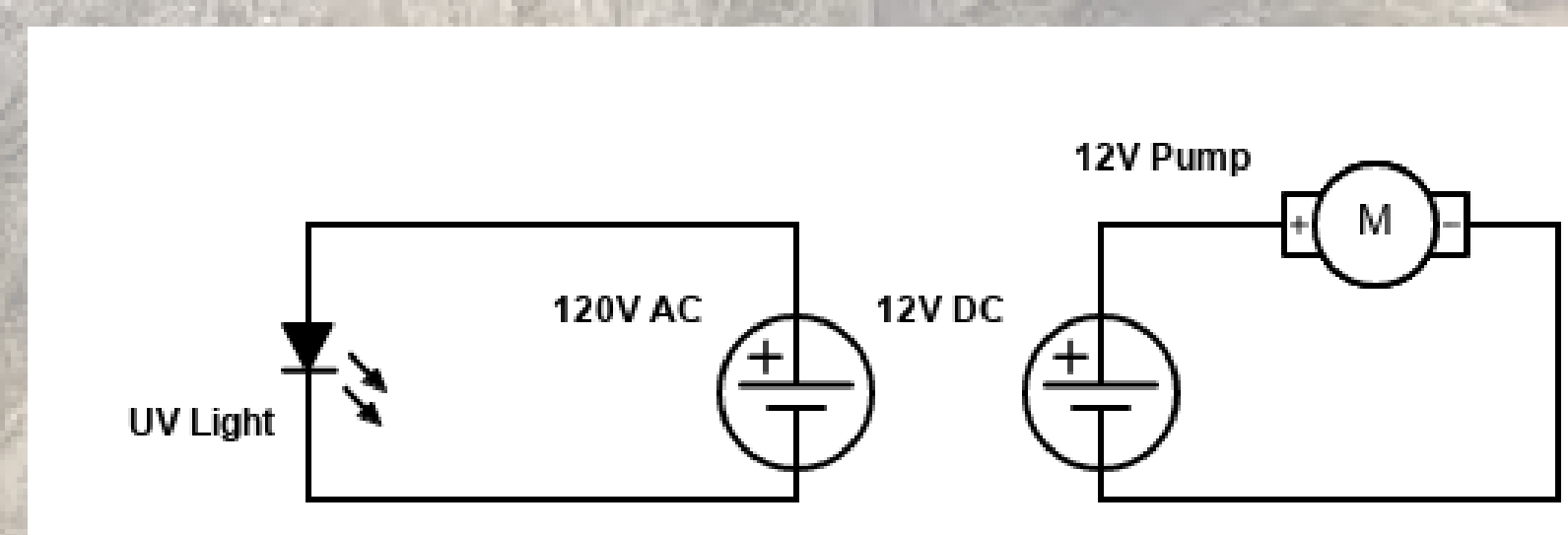
240 Wh battery and accompanying 60W solar panel to power system

Input Tank

50-gallon collapsible barrel that acts as substitute for connection to reservoir



Electrical



All components are powered by rechargeable battery. UV light is connected to 120AC output, and pump and is connected to 12V DC outlet.

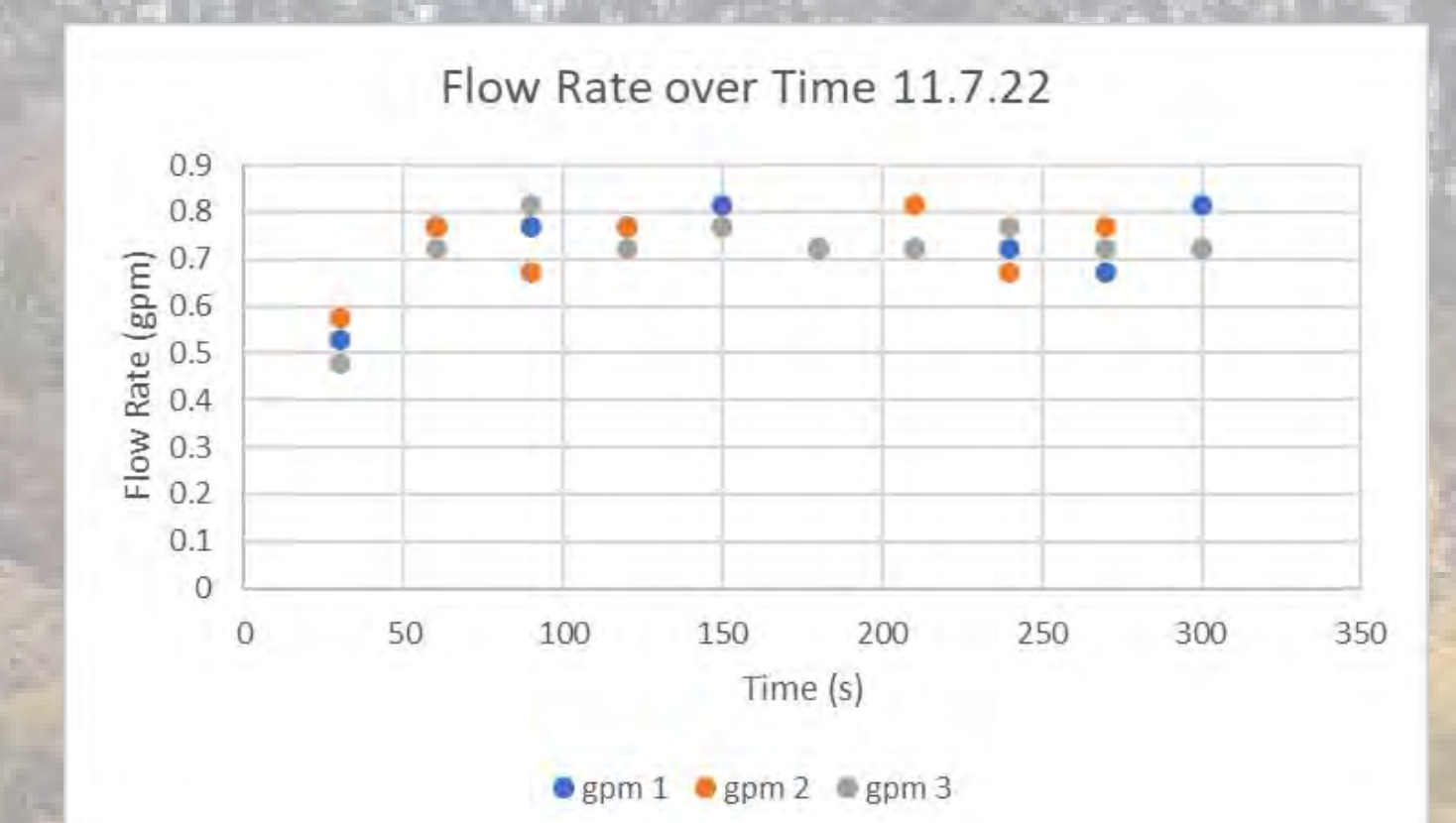


Results

This system is still in its prototype phase but has met its energy and output goals.

Flow Rate

Output flow rate over time from different runs



Future Work

Going forward, the water input from the reservoir and water dispensing of the system would be further defined. Furthermore, a structure surrounding the components of the system would protect it from the elements and allow for easier portability. Testing would need to be conducted with a direct connection to a reservoir.