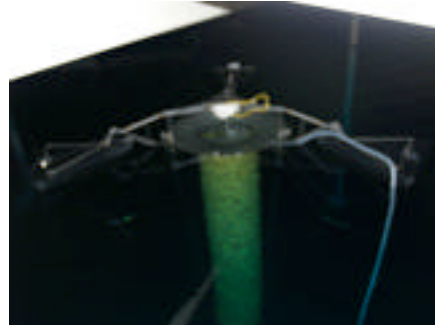


Summarized Case Study (PW)

Key Words: potable water, stratification, short-circuiting, chlorine, contact time, tracer study



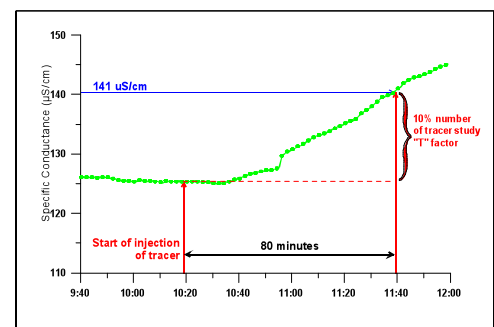
Photos: First photo shows solar panels and control box mounted on roof of the tank; the second photo shows the SolarBee circulation unit floating in the tank with the intake hose extended to the bottom.

System Overview and Reservoir: In 2005, the city constructed a new above ground reservoir, which is 120 ft in diameter and has an operating depth and capacity of 26.6 ft and 2.23 MG, respectively. The reservoir has an inflow at the base of the reservoir and an outlet on the opposite side of the tank, with no baffles. The maximum summer rate of flow through the tank is about 7,000 gpm. Chlorine is used as the disinfectant.

Reported Problems Before SolarBee Installation: Disinfection efficiency with chlorine was unacceptably low due to stratification and short-circuiting within the tank. The maximum summer rate of flow through the tank provided only about 30 minutes of contact time (CT).

SolarBee Installation: Date: October, 2006, installed one (1) SB10000v12PW in the reservoir. Goals are to provide complete mixing to prevent stratification, stagnation, and associated short-circuiting in order to enhance disinfection CT and efficiency.

Results: In January 2007, the city conducted a tracer study to evaluate how effective SolarBee circulation can be for increasing disinfection CT. The study consisted of injecting food-grade calcium chloride with a metered pump, and monitoring water temperature and specific conductance (the surrogate measure of the calcium chloride tracer) flowing into and out of the tank. The results of the study showed that the specific conductance increased from 126 uS/cm to 141 uS/cm in 80 minutes, indicating a disinfection CT of 80 minutes - or a comfortable 150% over the regulatory target value. The city is very pleased with the results, and believes that the SolarBee is "a sound investment that gives the city an additional cushion of "T" for disinfection of surface waters. The SolarBee requires very little maintenance and is a important component to provide the highest quality water to our customers in both high summer and low winter system demands."



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