

**Key words:** potable water, stratification, chloramine, nitrification



**Photo:** First photo is an aerial view of the reservoir with concrete cover; second photo shows electronic control boxes and solar panels mounted on the top of the tank.

**Reservoir or Lake Use:** This is an enclosed water storage reservoir for potable chloraminated water.

**System Overview and Reservoir Data:** Reservoir has a surface area of 1.32 acres with a maximum volume of 5.8 million gallons. Deepest depth is 20 feet when full, but will drop to a 12-foot operating depth periodically. Average withdrawal rate is 1.5 MGD, so average hydraulic residence time is 3.8 days. Reservoir has a submerged divider wall splitting the reservoir into 2 halves, and 136 redwood columns supporting the roof.

**Reported Problem Before SolarBee Installation:** The reservoir had a history of periodic stratification, resulting in old and variable water age. Objectives were to thoroughly mix the reservoir to prevent stratification, maintain uniform water age, and to prevent nitrification after the city converted to a chloramine-based treatment system in February 2004.

**SolarBee Installation:** Date: Jan 2003. Installed one SB10000F with a 24-hour electric kit and roof-mounted solar rack, with intake hose set at 15.5 ft. The machine was installed through a 9.5' X 9.5' hatch in the roof, assembled on the sidewall slope within the tank, and anchored to the support columns in the tank. In June 2005, the single SB10000F unit was changed out to two (2) SB1250v12 units, one deployed on either side of the baffle wall.

**Results:** SolarBee-induced circulation turns over the reservoir once every 2 days, sufficient to provide the desired benefits and meet stated objectives. Since the initial SolarBee installation, the units have maintained destratified conditions and more uniform water age within the reservoir. Following the conversion to a chloramine-based system, SolarBees have also prevented unwanted nitrification (and associated treatment costs) in the stored water. The city has been very pleased with the SolarBees' dependable performance, ongoing customer service, and the consistent water quality and economic benefits the SolarBees have provided.

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