

Summarized Case Study (RW)

Key Words: RW reservoir, blue-green algae, taste and odor, hypolimnetic oxygenation, manganese, hydrogen sulfide, dissolved oxygen, impaired fishery



Photos: First photo shows the SolarBee being installed in the reservoir; second photo shows unit in the lake; third photo is an aerial shot showing the location of the SolarBee by the dam in the lower reservoir.

Reservoir or Lake Use: Raw water reservoir for a nearby city.

System Overview and Reservoir: The reservoir has a total surface area of 60 acres, a maximum depth of 80 ft and an average depth of 65 ft. The reservoir is separated for management purposes into two parts: the upper reservoir and lower reservoir. Water intake to the treatment plant is from near the dam in the lower reservoir.

Reported Problem Before SolarBee Installation: There had been significant taste and odor problems during the summer associated with the accumulation of manganese (Mn) and hydrogen sulfide (H₂S) in anoxic sediments and bottom waters. The reservoir also had a long history of taste and odor problems associated with blue-green algae blooms, and copper sulfate was applied extensively until the 1990s. The lake's fishery, including native cutthroat trout, was not healthy. Surface and bottom water flushing helped somewhat, but at the expense of releasing valuable water downstream. Water releases ended in 1999 as drought conditions worsened, and the reservoir's water quality deteriorated significantly.

SolarBee Installation: Date: July 2004, installed one (1) SB10000v12 near the dam in the lower reservoir. The unit's down hose was set at 45 ft below the water surface, keeping it 10 ft below the intake.

Results: The water quality steadily improved following the installation of the SolarBee, and has remained good ever since. The city's DPU reports that algal blooms are gone, there has been no need to apply copper sulfate in the area around the intake to the treatment plant, and there have been no treatment or taste and odor problems. In addition, water clarity (Secchi depth visibility) has reached about 30 ft, the fish are "fat and lively", and the reservoir is much healthier than before. The city's DPU presented these results at both the 2005 Water Quality Technology Conference and in an article in the May 2006 issue of Opflow (American Water Works Association). They are very happy to have consistently good water quality without having to release water, particularly during recent drought years.

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