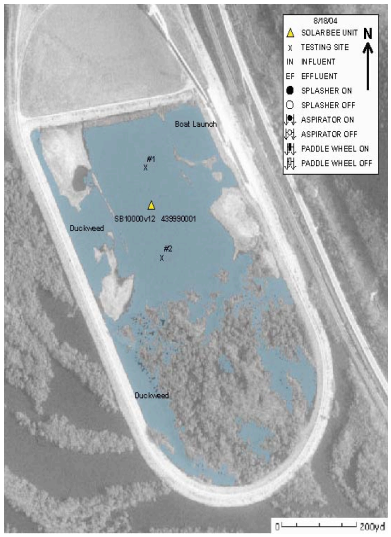
SolarBee®
Solar-Powered Reservoir Circulator
"Quality Water, Naturally"

Summarized Case Study: (FW)

Key words: cooling reservoir, dissolved oxygen, stratification, hydrogen sulfide, odors, impaired fishery, energy savings



Photos: SolarBee 10000v12 with power plant in background; second photo is an aerial shot showing location of unit in the lake.

Reservoir or Lake Use: This reservoir is on the backwaters of the Mississippi River. Area was dredged and material used for building railroad bed. The public has access from Mississippi River for recreational fishing.

System Overview and Reservoir Data: Surface area is 27 acres, with an estimated maximum depth of 20 feet and an average depth of 18 feet.

Reported Problem Before SolarBee Installation: Poor mixing and blue-green algae blooms. High hydrogen sulfide (H_2S) concentrations in the bottom waters, resulting in high dissolved oxygen (DO) demand. Existing grid type aeration has high maintenance, uses lots of energy, and mixes poorly increasing potential for fish kills.

SolarBee Installation: Date: August 18, 2004. Installed one (1) SB10000v12 in the deepest area of the reservoir. Intake hose initially set at 14-15 feet.

Results: In the fall of 2004, the intake hose was raised to about 10 feet to provide better oxygenation of upper waters and to prevent H_2S from escaping and causing odors. The owners also reported good fish activity throughout the reservoir. In January 2005, under ice conditions, they measured 17 mg/L of DO in the top few feet and 7.0 mg/L near the bottom. They had never before recorded DO this high and deep in the winter. By early March 2005, DO concentrations still remained above about 5 mg/L throughout the water column. A welcomed additional benefit was the increase in water temperatures during the winter. The SolarBee kept a much smaller area of open water than their old 25-hp aerator did, allowing for less exposed water to the sub-freezing air temperatures; water remained open about 12 feet around SolarBee during very cold conditions. As a result, water temperatures were approximately 2°C higher than what was seen in past years. Owners believe that the warmer water temperatures, combined with the high DO, provide better over-wintering habitat for fish in the Pond. The owner is very happy with the results and the savings by no longer running the aerator.

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