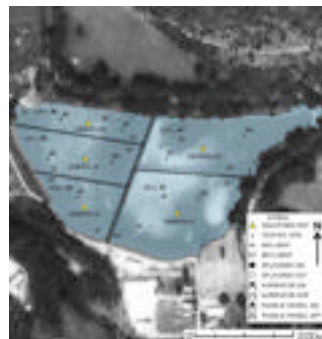


## Summarized Case Study (WW)

**Key Words:** municipal, facultative, BOD, TSS, ammonia, sludge reduction, odor control, energy savings



**Photos:** First photo shows curtain between Cells 2B & 2C, with high surface tension in Cell 2B (no SolarBee) as compared to Cell 2C. Second photo is an aerial shot showing the 5-cell treatment system.

**Reservoir or Lake Use:** Municipal wastewater treatment system, population of 3,400.

**System Overview and Reservoir:** This is a 2-pond treatment system divided into 5 cells. Cell 1A is 6 acres, 4.5 ft deep, with a 10 MG capacity; Cell 1B is 5 acres, 4.5 ft deep, with a 7 MG capacity; Cell 2A is 4 acres, 4.5 ft deep, with a 5 MG capacity; Cell 2B is 4 acres, 4.5 ft deep, with a 5 MG capacity; and Cell 2C is 2 acres, 4.5 ft deep, with a 2 MG capacity. Flow rate to system is 0.32 MGD, with 100% of the flow first going to Cell 1A, then Cell 1B, then Cell 2A, then Cell 2B, then to Cell 2C with continuous discharge to receiving stream. Total detention time is 85 days. Loading to the system is about 113 lbs BOD/acre/day, and none of the cells has grid aeration. Most critical discharge permit limits are 30 mg/L BOD, 80 mg/L TSS, 12 mg/L ammonia-nitrogen.

**Reported Problem Before SolarBee Installation:** Severe and recurring odors caused city residents to complain. Ineffective wastewater processing resulted in NPDES violations, particularly with discharge limits for BOD and TSS. Sludge accumulation was also a problem.

**SolarBee Installation\*:** Date: April 2001, installed a total of five (5) units equal to the SB2500 each equipped with a 24-hr electrical kit. The machines were installed as follows: 2 units in Cell 1A, 1 unit in Cell 1B, 1 unit in Cell 2A, no units in Cell 2B, and 1 unit in Cell 2C. In August 2003, moved SB2500 from Cell 1A to Cell 2B, and installed a SB10000 into Cell 1A. In August 2004, customer upgraded previous units to the following: 1 SB10000v12DM in Cell 1A, and 1 SB4000v12 each into Cells 1B, 2A, 2B, and 2C.

**Results:** Odors were quickly and dramatically reduced, allowing the city to host a US presidential visit. Superintendent has noted significant improvements in BOD, TSS, and ammonia discharge levels, as well as significant sludge reduction. He also noted in 2004 that the Daily Monitoring Reports submitted to the state in 2003 were the “best ever” in the history of their wastewater treatment system, with improved BOD levels and a total absence of odors. Following the 2004 upgrade to SolarBee v12 technology, effluent BOD/TSS was about 5/7 mg/L, respectively. They are also not having ammonia issues. The city is very happy with the SolarBees and their performance, and that they did not need to convert to a high-energy, aerated pond.

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\* SolarBee, Inc. (formerly a division of Pump Systems, Inc.) developed, manufactured, and installed this equipment, and adopted the name “SolarBee” for this technology in Sept, 2001.