

Medora Corporation

# Wastewater Treatment System

USMIWW-LOC264.001

**Topics:** wastewater, ammonia, energy savings, facultative, phosphorus, short-circuiting, treatment savings



One SolarBee unit circulating a wastewater pond.

**Contact:** Information is available upon request from Medora Corporation. 866-437-8076 info@medoraco.com

**Overview:** This is a municipal wastewater treatment system for the city. The system consists of a series of four ponds. Storage Pond #1 has a surface area of 1.3 acres, with a volume of 3.5 MG. Storage Pond #2 has a surface area of 4.2 acres, with a maximum depth of 12 ft, volume of about 10 MG, and an average daily flow of 0.03 MG/day. There is controlled discharge once per year in the fall. There is no grid aeration.

**Conditions / Objectives:** System needs to meet a discharge limit of 1.0 mg/L of total phosphorus. Past years, before chemical applications, phosphorus levels were reported between 2.0 and 4.0 mg/L. Primary function of the SolarBee for Pond #2 is to apply chemicals (ferric chloride) to reduce phosphorus concentrations in discharge water

**Solution:** One (1) SB4000v12 (equivalent to SB5000) SolarBee deployed in storage Pond #2, along with a 6 gal/hour chemical injection pump on shore with a hose

attached to the SolarBee. Depth of intake hose was set at 5-6 ft. Later, one (1) SB1250v12 deployed in Pond #1; unit tethered diagonally because of available shore power location.

Deployment Dates: August 2004, Upgraded: May 2005

**Results:** Customer is pleased with how the SolarBee has made applying ferric chloride for phosphorus reduction easy with minimal labor and energy costs. In May 2005, the city acquired a second SolarBee to enhance ammonia and phosphorus reductions, and eliminate short-circuiting in Pond #1. Since then, the amount of ferric chloride required has decreased, and in 2008 and 2009 phosphorus concentrations remained below 1 mg/L so ferric chloride was not needed. An additional benefit has been the observed reductions in BOD; e.g., initial BOD of 49 mg/L at the beginning was reduced to an average of 14 mg/L BOD when discharged. Operator has been happy with the units in both ponds, and how reliably they run even during frigid winters. He also expressed appreciation for the attention and professionalism of the Medora Corporation service crews.

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