Case Study

Energy Reduction in Activated Sludge
USNCWW-LOC651.001

levels, yet the aeration could not be turned down because TSS concentrations would drop too low. As a result, the city had very high energy costs.

SolarBee Installation:  Date:  June 2009, installed one SB10000v18 unit in the North basin, with the objective of reducing runtime for the high-hp aeration system. September 2010, installed two additional SB10000v18 units in the North Basin.

Results:  With the initial solar-powered SolarBee circulation unit installed, aeration requirements were reduced 25% to 180 hp, resulting in a 60-hp savings while still maintaining the necessarily high TSS levels and keeping DO in the 1-2 mg/L range. Because of these realized economic benefits and their ongoing efforts to save energy, the City installed two additional SolarBees in the North basin in the fall of 2010, with an anticipated total energy reduction of 120 hp. This averages to around 40 hp savings per SolarBee, and should result in a 1-2 year payback for the entire project. The City is very happy with the energy and economic savings achieved with the SolarBees, as well as with the ongoing after-sale technical support and customer service they receive.

Owner:  Available by request. Contact Medora Corporation 866-437-8076 or info@medoraco.com

System Overview:  This is an activated sludge wastewater system that serves a city of approximately 16,000 residents. The North basin (see above photo) is the main reactor basin where aeration is supplied for mixing. The North basin covers 1.74 surface acres with an operating depth of 13.5 ft. The system receives about 3 MG per day, of which 80% is municipal wastewater, 10% industrial wastewater, and 10% raw water. The average detention time in the North basin is approximately 4 days.

Reported Problem Before Installation:  The North basin utilized 240 hp (horse power) of aeration to keep total suspended solids (TSS) in the 3,000 - 4,000 mg/L range, as required for this activated sludge treatment system. However, this amount of aeration also kept dissolved oxygen (DO) concentrations unnecessarily high at 6-7 mg/L, instead of more appropriate concentrations of around 1-2 mg/L. The oxygen transfer rate is almost zero at these

Photo: The North basin, where the SolarBee circulation unit is deployed and visible in the background.

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