CINCINNATI NATURE CENTER

Using Algae and the Sun to Treat Wastewater

Cincinnati Nature Center hosts more than 150,000 visitors a year to its 1,600 acres of forest, field, lake and stream habitats. With its primary Rowe Woods site located 20 miles east of Cincinnati, the Nature Center has no available connection to public sewers, so wastewater treatment must be performed on site. In 2009, the Nature Center was exhausting valuable time and resources on the maintenance of two failing 40-year-old wastewater treatment plants, whose capacity had long since been outgrown. They embarked on a lengthy investigation into alternatives before deciding on a new, environmentally sustainable solution that would be in line with one of their primary values: stewardship of the land.

At that time, a local environmental engineering firm had been searching for a project to implement a leading-edge wastewater technology in Ohio. So in 2011, **Cincinnati Nature Center installed Ohio's first Algaewheel® wastewater treatment system**. Algaewheel® technology uses the symbiotic relationship between the sun, algae and bacteria to convert wastewater organics into carbon dioxide. The diverse ecological balance established in the system makes it very stable and resistant to the fluctuations normally experienced with bacteria-based wastewater treatment systems. This low-energy, low-maintenance system produces water quality results much better than limits required by the Ohio EPA.

"It isn't a glorified septic system" says Jason Brownknight, Cincinnati Nature Center's Director of Conservation and Stewardship. "It will treat the water for surface discharge into a stream on a nature preserve. There is absolutely no shortcutting of water quality." Algaewheel® systems require **50 to 75 percent less energy** to operate than conventional systems, and they typically generate 95 percent less solids, eliminating the significant cost required to handle and transport solids for disposal.

The goal for the project was minimal disturbance to both the natural environment and Nature Center operations. The centralized system's 0.25-acre footprint also was designed to allow new facilities to connect directly without additional footprint requirements. In fact, an expansion of the system is expected to be completed in 2014, connecting the Algaewheel® with the Nature Center's new Center for Conservation and Stewardship at Groesbeck Lodge.

For information on Cincinnati Nature Center's Algaewheel® or other programs, please visit our website, www.cincynature.org.