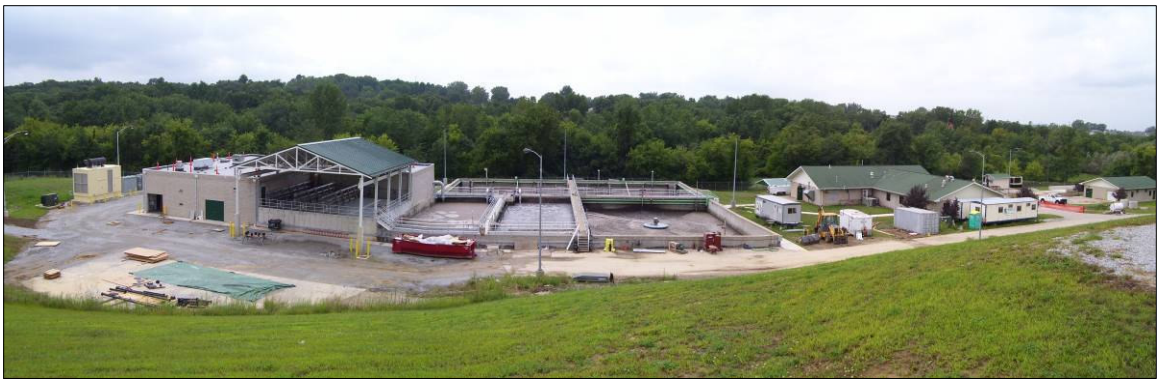


North Liberty's Membrane Bioreactor Begins Operation

North Liberty, IA August 27, 2008 Iowa's first membrane bioreactor (MBR) wastewater treatment facility, in North Liberty, Iowa, began operation in August. North Liberty is a rapidly growing community in Johnson County, near Iowa City. The rapid growth of the community made expansion of the wastewater treatment plant (WWTP) necessary. Community leaders chose the MBR technology because of it's ability to produce consistently high quality effluent.

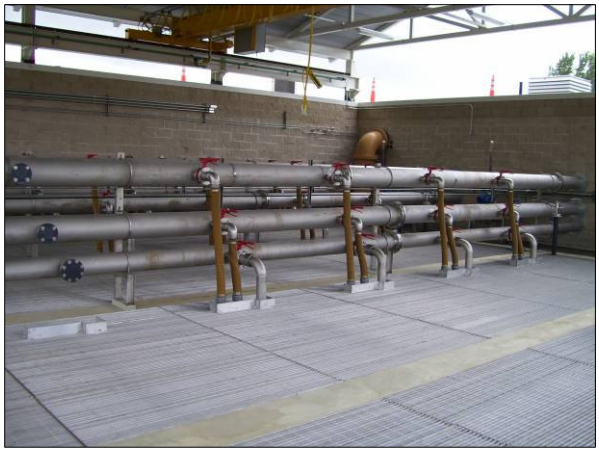
The MBR process is an advanced wastewater treatment technology that utilizes membrane filtration to produce a high quality effluent. The process utilizes hollow fiber membranes submerged in a tank. Mixed liquor is recirculated from the aeration basins to the membrane tanks. Pumps are used to create a vacuum to draw water into the membrane fiber. Millions of tiny pores on the membrane fiber allow water to pass through but retain suspended solids, bacteria, and some viruses. The result is consistently high quality water with turbidity typically less than 0.2 NTU.

The MBR incorporates thousands of synthetic, hollow fiber membrane tubes with very small pore openings (nominal 0.04 µm). The membranes are submerged in the mixed liquor in the membrane tanks, and water is drawn from the tank into the membrane fibers by a vacuum pumping system, thereby filtering out the suspended solids.

FOX Engineering completed design of the new MBR facility in early 2007. The design involved converting one existing tank into aeration basins, where the biological treatment occurs, and construction of four new membrane tanks, or

trains. A new building was also constructed to house the equipment for the membrane process, including fine screens, blowers, pumps, and chemical feed systems. The existing sequencing batch reactor process will remain in operation during construction, and then be converted into aerobic sludge digestion and storage facilities. GE / Zenon Membrane Solutions was selected as the membrane system supplier. Staab Construction Corporation was awarded the construction contract, and construction began in April 2007. After more than a year of construction, commissioning of the MBR system began in June, 2008. The MBR system began treating wastewater in August.

The MBR system has been operating very well so far, producing very clear water from the start with turbidity generally less than 0.2 NTU.



FOX Engineering is an environmental engineering firm based in Ames, Iowa. They specialize in water, wastewater, and solid waste management solutions for their diverse governmental and industrial clients. The firm's environmental projects vary in size and scope and can be found throughout the Midwest and beyond. Steve Troyer, P.E., can be reached at 800/433-3469 or sjt@foxeng.com .