

PRESS RELEASE

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FOX Engineering Associates, Inc. of Ames, Iowa, and the City of Council Bluffs, Iowa, received the 2009 American Council of Engineering Companies of Iowa (ACEC/Iowa) Honor Award for engineering excellence for the **Secondary Treatment System Improvements** at the Council Bluffs Water Pollution Control Facility.



Council Bluffs Water Pollution Control Plant aerial after IFAS construction. Photo illustrates IFAS Basins and new Aeration Basin Influent (ABI) Pump Station in the lower left hand corner as well as rehabbed final clarifiers. Photo also illustrates the Missouri River to the west of the treatment plant. General flow pattern for IFAS system is gravity flow from trickling filters to ABI Pump Station, pumped flow to IFAS Basins and gravity flow to final clarifiers and final discharge to Missouri River.

The American Council of Engineering Companies of Iowa is a state-wide association of independent consulting engineering firms. The candidate projects were judged by an independent panel of experts on the basis of the following five criteria: innovative application of technology; future value to the engineering profession; social, economic, and sustainable design considerations; complexity of the problem; achievement in meeting the needs of the client.

FOX Engineering Associates, Inc. provided all of the civil and environmental engineering for planning, design and construction administration services. They were assisted by Structural Engineers, P.C., Marshalltown, Iowa; Brewer Engineering Consultants, PLC, Ankeny, Iowa; and HGM Associates, Inc., Council Bluffs, Iowa. This engineering team, with valuable input from City staff members Hank Pangelina, Ed Jankowski, and Greg Reeder, was responsible for providing a cost-effective design capable of meeting the Project goals on a continuing basis. Construction by Eriksen Construction Co. also proceeded according to schedule with startup occurring in June 2007.

In 2004, the City needed to increase the plant's overall treatment capacity to allow sufficient capacity for industrial loadings and growth. The challenge was to develop options for secondary treatment that would consider optimizing the existing treatment facilities to increase the plant's capacity.

Several secondary treatment technologies were investigated including upgrading the existing trickling filters, the trickling filters/solids contact process, and a new "innovative" technology of trickling filters followed by Integrated Fixed-Film Activated Sludge (IFAS). IFAS is a relatively new technology that has limited experience in the United States. FOX thoroughly researched the technology and after evaluating all options, FOX and the City decided that upgrading the existing aeration basins to an IFAS system was the most beneficial option of increasing the plant's capacity.

As part of the project, a new 30 mgd pump station was installed with vertical turbine pumps to pump trickling filter effluent to the IFAS basins. Other improvements include: addition of a new energy efficient single-stage centrifugal blower, final clarifier modifications including a flocculator feed well, and piping modifications to allow more flexibility.



Photo illustrates the east IFAS Basins in operation looking south towards the Aeration Building. The green piping shows the 12-inch air piping header from the Blower Room and individual 10-inch branches to the IFAS basins. The new platforms are located to provide access to each basin and the associated air piping and control valves. The air piping was designed for easy access to air control valves and to accommodate expansion/contraction during varying operating conditions.

The project has been operational since June 2007. Throughout the planning and design phases FOX and City staff held more than seven formally organized meetings to brainstorm, review various stages of facility planning and design, and address operational concerns.

The \$4,900,000 facility improvement saved over \$1.5 million in capital costs from an earlier recommended plan and provides for lower operating costs and a more stable operation.



Photo illustrates west IFAS Basins in operation with Aeration Building and ABI Pump Station in background. Filtered effluent is pumped from the ABI Pump Station to the IFAS Basins and split evenly to all operating tanks. Photo shows green air header and individual 6-inch stainless steel drop pipes which feed air diffusers mounted beneath IFAS modules. Operators can monitor dissolved oxygen (DO) basin levels from upstream and downstream monitoring points in all four tanks and select desired DO probes for automatic blower control.

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. Keith Hobson, P.E., or Laurie Twitchell, P.E., can be reached at 800/433-3469 or KLH@foxeng.com, or LAT@foxeng.com.