CITY OF OLATHE, KANSAS

Water Treatment Plant No. 2 Expansion

HIGHLIGHTS

- Design/build delivery of water treatment plant expansion to 30 mgd.
- Pilot study of four different ultrafiltration membrane suppliers with two different membrane materials and membrane arrangement.
- 30-percent design that includes two alternative building layouts to obtain competitive pricing for submerged and module membrane systems.
- Prequalification of contractors and evaluation of contractor proposals for construction of improvements.
- Innovative approach to meet peak season demand requirements on a tight schedule and at a reasonable cost.

Conversion of series operation of basins to parallel operation increased basin capacity from 17 to 38 mgd without building any new structures.

Water Treatment Plant No. 1 is a surface water treatment plant with a capacity of 4 mgd. Water Treatment Plant No. 2 treats groundwater under the influence of surface water and has a capacity of 17 mgd.

The City of Olathe maximum day water demands have significantly increased over the past eight years from 15.6 mgd in 1996 to over 27 mgd in 2003. This rapid change in demand has prompted the City to contract with Carollo to verify the City's future demand projections, examine the existing water treatment plant infrastructure, provide recommendations for a long-term plan to meet demands, and design the plant expansion.

Due to a tight schedule that required the improvements to be complete by the peak demand season in 2005, Olathe opted for project delivery via a design/build procurement method. Carollo maintained a leadership role as engineer and produced a 30-percent set of plans and specifications. The 30-percent design effort included membrane piloting for a three-month period in order to produce reasonable design criteria for four prequalified membrane manufacturers. The 30-percent design bid package included two alternative building designs so that Olathe could receive comprehensive competitive pricing on both submerged and pressure-driven membrane systems. Membrane suppliers were responsible for bidding the project based upon Carollo's net present value analysis of the results of the pilot study. In this manner, a level playing field was established upon which Olathe could evaluate the contractor's bids. Carollo delivered the 30-percent plans and specifications on time to meet the project's aggressive schedule.

Carollo assisted the City with the evaluation of proposals from four prequalified contractors. The contractors were required to prepare and submit a proposal for both a modular and submerged membrane system. The weighted proposal evaluation was based upon a number of factors, including: experience with the construction of similar installations, experience of the proposed project team, and proposed project cost.

The project includes a membrane building to house the selected modular microfiltration membrane system and allow Olathe to increase the current plant capacity by 13 mgd and provide space to take the plant from its current capacity of 17 mgd to an ultimate membrane capacity of 52 mgd. All of the required infrastructure to hydraulically process 44 mgd will be included in this expansion.