**NAME:**

Willows Wastewater Treatment Plant

**LOCATION:**

Willows, Calif.

**PLANT SIZE:**

2 mgd

**INFRASTRUCTURE:**

Screen, pump stations, flow equalization basin, aeration basins, secondary clarifiers, emergency holding pond, sludge lagoons, filters, chlorine contact tanks

**The new facility allows the city to meet new effluent standards and use recycled water for nearby irrigation.**

**The city had to raise rates but overall the plant was received positively, due to well executed public outreach.**

**The Willows WWTP extends across 26 acres, comprises 24 miles of mainlines and includes five lift stations.**

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**By Caitlin Cunningham**

# FROM PONDS to plant

## A California community constructs to comply

Having managed and treated its wastewater by means of an aerated pond system for many years, the city of Willows, Calif., met state regulations and permit limits without issue. Early into the new millennium, however, updates to California's effluent standards forced the community into a fine-heavy legal situation. To bring its system up to date and into compliance, the city launched a plan to construct a new tertiary conventional activated sludge facility, the 2-million-gal-per-day Willows Wastewater Treatment Plant (WWTP).

To foster seamless and state-of-the-art design, construction and technology selection, the city decided to partner with a private plant operator—a move Public Works Director (PWD) Greg Tyhurst calls "prudent." The city issued a request for proposals, and of those submitted, chose that of SouthWest Water Co.

### Plant Basics

Construction of the WWTP began in 2004. Situated on a 26-acre site, the finished facility serves Willows and a small unincorporated area northeast of its city limits—about 6,200 residents in all. The PWD-maintained municipal collection system feeding the plant comprises 24 miles of mainlines and five lift stations.

The facility's treatment process begins with preliminary treatment via an automatic screen. Screened wastewater is then pumped ahead for secondary biological treatment, comprised of extended aeration basins and clarifiers; settled solids are either returned to the aeration basins or rerouted to sludge lagoons for storage. An equalization pond is available for use during high-flow periods.

From the clarifiers, effluent is pumped to the next stage: tertiary treatment. A continuous backwash sand filter removes fine particles, sometimes with added help from polymer, and any excess flows are diverted to an emergency holding pond. Finally, the wastewater undergoes disinfection in chlorine contact tanks, where sodium hypochlorite and calcium thiosulfate provide finishing-touch treatment.

The water, which at this point meets California Title 22 standards for tertiary-treated recycled water, travels to the Glenn Colusa Irrigation District, where it is used for agricultural irrigation and wildlife habitat.

"This type of treatment in such a small space that produces an effluent that meets Title 22 compliance—which allows us to provide water for downstream use—is amazing," Tyhurst said. "In an environment that fosters the reuse of natural resources, we feel that the city of Willows is doing its part."

### Financing

Ultimately, the project price tag amounted to $10.5 million. Funding was acquired from a U.S. Department of Agriculture loan, a grant from the state Small Community Wastewater Grant Program and the state Water Recycling Funding Program. In light of the improvements, the state forgave Willows $696,000 in fines it owed, allowing these dollars to be invested in construction.

Despite a controversial rate hike, the citizens of Willows have responded favorably to the new WWTP, according to Tyhurst. The city kept the public informed about the project and its benefits via council meetings and press releases distributed to local media.

"The immediate benefits to the city were obvious, as the pressure to comply with the new permit standards was met, and the regional board has been quite happy with the entire project," Tyhurst said. "In addition, the new plant allows for some growth to the city's infrastructure."

### Recognition

The city and its residents are not the only ones taking note of Willows WWTP. The Northern Sacramento Valley Section of the California Water Environmental Assn. (CWEA) recognized SouthWest Water's California contract operations team with two related awards: 2009 Plant of the Year to Willows WWTP, and 2009 Operator of the Year to Facility Manager John Dobson. A State Water Resources Board representative had written a letter to CWEA endorsing the plant and its staff for these honors.

SouthWest Water presented Willows Mayor Heather Baker with a trophy at an April 2010 City Council meeting. The meeting also included a slideshow presentation highlighting the WWTP and its decorated operation.

"The crew [at Willows WWTP] is awesome—a great team of folks," said DeLise Keim, vice president of corporate communications for SouthWest Water. "It has been really important to John Dobson and his team to get the plant to do what it's supposed to do. They went beyond the original engineering scope and used their knowledge and expertise in the industry to tweak things: chemicals used, filters, plumbing, sample points and the permitting structure around the plant so that it has been fully compliant for at least the past full year now."

### What's to Come

Due to the current economic climate, city leaders do not anticipate growth that would require system updates at this time. Tyhurst, however, does foresee a bright, flexible wastewater future for Willows. "The beauty of this type of design," he said, "is that it allows for future expansion of the plant as needed." WWD

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