

By Neda Simeonova

NAME:

Johns Creek Environmental Campus

LOCATION:

Roswell, Ga.

PLANT SIZE:

15 million gal per day

INFRASTRUCTURE:

MBR; noise and odor abatement technologies; storm water control system, including bioswales and wet retention systems; and 9,000-gal cistern to capture rainwater for irrigation

Next-Generation Treatment

Visionary water reclamation facility integrates with surrounding community

The Johns Creek Environmental Campus (JCEC) is situated on 43 acres off Holcomb Bridge Road in the city of Roswell bordering the Chattahoochee River in Fulton County, Ga. This state-of-the-art, \$137-million, 15-million-gal-per-day membrane bioreactor (MBR) water reclamation facility sets the standard for integration of a wastewater facility into the surrounding community, eliminating the negative impacts—odor, noise, unappealing aesthetics and impacts to the receiving water—typically associated with such a facility.

Born from a vision of developing the next generation of treatment facilities, according to Kelly K. Comstock, P.E., BCEE, of Brown and Caldwell, “The JCEC has shown that integration of technology, sustainable design and public involvement can produce a facility that is welcomed by and benefits the surrounding community.”

The Vision

Prior to JCEC, the existing facility that served the area of Fulton County had reached the end of its useful life and could no longer treat water to the high quality required for continued discharge in this portion of the Chattahoochee River, which is classified as a trout stream. In order to support continued growth in the area, Fulton County realized that additional high-level treatment capacity would be necessary and decided to decommission the existing facility and develop the JCEC.

“The project was first conceived in 2002 under late Fulton County Commissioner Bob Fulton, who developed the vision for the project,” Comstock said. “The design and construction of the facility began in June 2006, and the facility was completed in November 2009.”

The Challenges

To minimize impact to the neighboring community, the facility was designed as a balanced site; thus, truck traffic to and from the site was minimal. The 400,000 cu yd of soil removed from the footprint of the facility had to be staged and then backfilled.

Furthermore, the facility followed an aggressive schedule for permitting, design, construction and start-up. In order to allow work to begin rapidly, the design was released in 14 different construction packages.

“There was extensive permitting required for the facility, including permitting from Fulton County, the city of Roswell, the state of Georgia Department of Natural Resources Environmental Protection Div., the U.S. Army Corps of Engineers and the National Park Service. The designer, design-builder and Fulton County worked closely together during the permitting process to ensure all information was compiled and public meetings were held to successfully receive all permits,” Comstock said.

The Philosophy

The project used a design-build approach to provide a single point of responsibility in the design and construction of the facility. Archer Western Constructors and Brown and Caldwell provided the design and construction. Fulton County Public Works staff contributed project oversight with minimal outside help.

“The JCEC architectural components and overall design philosophy are based on the understanding that this facility is to last 100 years,” Comstock said.

Sustainable design and new technologies were incorporated into this facility, including: 1) MBR technology that treats water to near drinking water quality, which makes for a small-footprint facility reserving more than 35 acres for public access; 2) Regional building materials used throughout the project to reduce cost, provide a green approach to construction and help the facility blend into the surrounding community; 3) Landscaping, which included planting more than 500 new trees on a previously cleared site and entrance area to the facility and included pervious pavers and low-water-use plants; 4) A storm water control system that incorporates green best management practices, including bioswales and wet retention systems, and an educational 9,000-gal cistern that captures rainwater for irrigation; 5) High-quality reuse water generated at the facility is used for irrigation, fire protection and toilet flushing in the facility; 6) Mechanical systems that have been designed for reduced power consumption by providing high-efficiency motors and variable frequency drives on larger pumping systems and high-efficiency heat pumps; and 7) An odor control system that utilizes a combination of wet scrubbers and granular activated carbon to treat all of the air coming in contact with the treatment process, ensuring that odor does not leave the site.

The Success

The JCEC project was one of the largest alternative delivery projects to take place in Fulton County. It has won 12 different industry awards, including Design Build Project of the Year for the Southeast U.S.

The JCEC is the largest MBR reclaimed water facility in the country. It addresses the critical needs of providing wastewater treatment to accommodate future growth in Johns Creek basin. Furthermore, it enhances environmental learning and quality of life: The site includes a park and interpretive nature trail system, including a cascading stream and pond system and educational facility with a lecture hall, classroom and teaching labs. **WWD**

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The Johns Creek Environmental Campus sits on 43 acres in Fulton County, Ga.



The site includes a cascading stream and pond system.



A look inside the membrane gallery.