

F. Wayne Hill Water Resources Center

Application: Tertiary treatment for safe discharge

Capacity: 50 MGD (189,270 m³/d)

Location: Gwinnett County, Georgia, USA

Commissioned: October 2005



By the end of 2005, Gwinnett County was the largest UF tertiary treatment facility in the world.

Introduction

Like many other municipalities in Georgia, Gwinnett County's F. Wayne Hill Water Resource Center was concerned about the impact of releasing the plant's current wastewater effluent into the environment. Although the current wastewater treatment plant (WWTP) was meeting existing discharge standards, the county decided to seek out new technology for its WWTP expansion that could also improve the quality of effluent produced.

When selecting a technology, the Department of Public Utilities of Gwinnett County consulted with Jordan Jones & Goulding, CH2M Hill, and Precision

Planning, and decided on ZeeWeed* ultrafiltration (UF) technology from ZENON Membrane Solutions, part of GE Water & Process Technologies. The system would treat secondary effluent from the existing WWTP to produce a level of quality that exceeds some drinking water standards.

The final effluent will be safely discharged to the Chattahoochee River, with the potential to be used for irrigation at local parks and golf courses. Upon approval by the State, the effluent will be released into Lake Lanier, a major source of drinking water for the greater Atlanta area.

Georgia is quickly becoming one of the country's leaders in advanced membrane water treatment systems. Local communities such as Cauley Creek, Forsyth County and Rubes Creek have each trusted ZENON to supply water reclamation technology for their plants.

With a nominal pore size of 0.04µm, ZeeWeed UF membranes are the key to effective tertiary treatment. The reinforced hollow-fiber membrane acts as a physical barrier, producing the highest quality effluent. In addition, the system's modular design allows membranes to be added as the capacity requirement increases, drastically reducing upfront development costs.

Process Overview

After the secondary effluent is pre-screened by a 500µm micro-screen, it will flow into the influent distribution channel. The level of influent in this channel determines the required number of membrane trains in operation. The water will then flow to the ZeeWeed membrane trains, where filtration is drawn through the membrane under a vacuum created by permeate pumps. The reject water will flow via gravity to the backwash return basin.



ZENON Membrane Solutions
Oakville, Ontario, Canada
+1-905-465-3030
www.gewater.com

Global Headquarters
Trevose, PA
+1-215-355-3300

Europe/Middle East/Africa
Heverlee, Belgium
+32-16-40-20-00

Asia/Pacific
Shanghai, China
+86 (0) 411-8366-6489

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