



AQUA-AEROBIC SYSTEMS, INC.

# SUCCESS STORIES

## PLANT NAME AND LOCATION

ORANGE COUNTY SOUTH WRF (NORTH PLANT), ORLANDO, FL

## DESIGN DAILY FLOW / PEAK FLOW

29.75 MGD ( m<sup>3</sup>/day) / 59.56 MGD ( m<sup>3</sup>/day)

## AQUA-AEROBIC SOLUTION

8 AquaDisk® Filters (12-disk units)

## ORANGE COUNTY SWRF UTILIZES 8 AquaDISK® FILTERS TO ASSIST IN MEETING ITS MULTI-FACETED REUSE PROGRAM

Orange County South Water Reclamation Facility (North Plant) in Orlando, Florida is one of three plants servicing unincorporated Orange County and the cities of Belle Isle and Edgewood. All the treated wastewater from the County's three facilities is reclaimed and is dedicated to many uses: to irrigate citrus groves and golf courses, create wetlands for endangered species, recharge the freshwater Aquifer, and to provide cooling water to Orlando Utility Commission's Stanton Energy Center.

Orange County SWRF began its operation in 1957 with a 1.0 MGD trickling filter treatment system and it has experienced several expansions and upgrades since in order to accommodate the community's growth and increasingly stringent effluent requirements. The upgrades included the addition of an extended aeration process, sludge processing systems, more aeration tanks, a three-pass, modified stepfeed process and four large clarifiers with return activated sludge systems. In October 2003, (3) of the plant's existing traveling bridge sand filter basins, supplied by another manufacturer, were retrofitted using (8) 12-disk package steel AquaDisk cloth media filters. The filters provided a 60% increase in average hydraulic capacity on the basis of flow per square foot of filtration area. The cloth media filters precede chlorine contact tanks in the plant's treatment scheme.



Orange County's North Plant AquaDisk® Filters.

The AquaDisk cloth media filters offer the plant additional loading capacity with a smaller footprint. This is a key feature of the unique pile cloth filter media, which allows higher hydraulic and solids loading rates than conventional granular media, resulting in up to 75% less land requirement. The operators at Orange County SWRF have been pleased with the cloth media filters' performance and say, "*the filters have handled flows in excess of design while maintaining effluent quality and have shown to be much easier to maintain than the sand filters they replaced.*"

## AquaDisk® FILTER PROCESS

Clarified effluent from activated sludge system enters the filter and flows by gravity through the cloth media of the stationary hollow disks. The filtrate exits through the hollow shaft which supports the individual disks and flows to the effluent channel and on to the chlorine contact tanks. As solids accumulate on the surface of the media, the water level surrounding the disks rises. Once a predetermined level is reached, the disks rotate and the media surface is automatically vacuum backwashed clean. Heavier solids settle to the bottom of the tank and are then pumped to a digester or to the plant headworks.

## DESIGN CHARACTERISTICS

The (8) AquaDisk filters at Orange County SWRF are currently designed to treat an average daily flow of 29.75 MGD with a peak flow of 59.56 MGD. The filters will accommodate Orange County SWRF's future design capacity expansion from the current 30.5 MGD to 43.0 MGD. The filter units reduce TSS to required reuse quality levels of 5 mg/l and pre-filter the effluent before it goes through chlorine treatment in order to provide 100% reuse of the plant's effluent. The AquaDisk filters have performed since the January 2003 start-up reducing influent TSS from 4.6 mg/l to an effluent average of 1.7 mg/l before it is conveyed to the chlorine contact tanks. Influent TSS from as high as 38 mg/l has been reduced to an effluent of 1.0 mg/l.

## CLOTH MEDIA FILTER ADVANTAGES

- Consistent, high quality effluent
- Lower backwash rates
- Tolerates extreme variations in loads
- Reuse quality effluent
- Continuous filtration during backwash
- Minimal operator attention
- Minimal maintenance
- Small footprint
- Eliminates sand media and underdrains



Orange County's North Plant AquaDisk® Filters utilize pile cloth media.

## DESIGN PROCESS FLOW FOR NORTH PLANT

