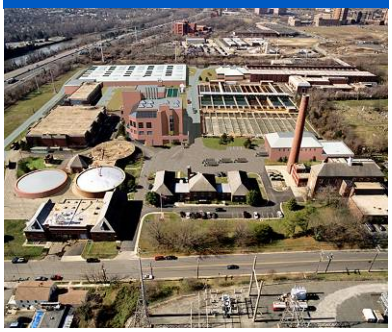

Water

Wastewater

Client

Alexandria Sanitation Authority

Location

Alexandria, VA, USA

Advanced Wastewater Treatment Facility

Project Highlights

- New solids processing building houses centrifuge thickening, centrifuge dewatering, lime mixing, cake storage, and truck-loading operations
- Waste-activated sludge pumped to the solids processing facility
- Building also houses the centralized odor-control treatment systems, centralized chemical storage and delivery systems, and primary effluent pump station

Project Description

The Alexandria Sanitation Authority's (ASA) Advanced Wastewater Treatment Facility (AWTF), located in Alexandria, Virginia, treats wastewater from the city of Alexandria and the eastern portion of Fairfax County. The plant effluent discharges into Hunting Creek, a tributary of the Potomac River. The plant, which spans 22 acres, was designed to treat an average of 54 mgd and a peak of 108 mgd. The ASA plant was not designed to control nitrogen; it requires improvements and upgrades to meet the increasingly stringent standards adopted by the Commonwealth of Virginia.

The primary goal of the ASA AWTF Upgrade Program was to have the new biological nutrient removal system constructed and operational by April 2002 as required by applicable regulations. To accomplish this goal, ASA has pursued an aggressive design and construction schedule. A project delivery analysis was conducted as part of the preliminary design to evaluate continuation of plant operations in light of necessary construction activity and regulatory deadlines.

A new solids processing building was being constructed to house centrifuge thickening, centrifuge dewatering, lime mixing, cake storage, and truck-loading operations. In addition to these solids processing functions, the building also houses the centralized odor control treatment systems, centralized chemical storage and delivery systems, and primary effluent pump station. Major equipment to be installed in this facility includes:

- Six primary effluent pumps, centrifugal, 16,700 gpm at 45 feet
- Four thickening centrifuges, horizontal solid bowl, 460 gpm
- Three dewatering centrifuges, 200 gpm
- Six biosolids silos, 2,600 cf each
- Thickening/dewatering storage and pumping systems
- Centralized chemical storage and pumping systems (ferric chloride, alum, sodium hypochlorite, sodium hydroxide, sulfuric acid)
- Two lime silos, 3,600 cf each
- Eight odor scrubbers, countercurrent, 52,000 cfm

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Additionally, two new secondary settling tanks were being constructed for a total of six tanks. The new tanks have the same basic configuration and layout as the existing ones. Return-activated sludge (RAS) are withdrawn from each tank by two new RAS pumps, which pump the activated sludge back to the biological reactor basins. Waste-activated sludge (WAS) is pumped to the solids processing facility by two WAS pumps. Major equipment to installed in this facility includes:

- Twelve return-activated sludge pumps, screw induced centrifugal, 4,122 gpm at 50 feet
- Two waste-activated sludge pumps, recessed impeller, 133 gpm at 34 feet
- Five secondary dewatering pumps, recessed impeller, 315 gpm at 40 feet