



AQUA-AEROBIC SYSTEMS, INC.
A Metawater Company

SUCCESS STORIES

PLANT NAME AND LOCATION

DONALD C. TILLMAN WATER RECLAMATION PLANT - VAN NUYS, CA

DESIGN DAILY FLOW / PEAK FLOW

80 MGD (303,000 m³/day) / 160 MGD (606,000 m³/day)

AQUA-AEROBIC SOLUTION

(8) AquaDiamond® CLOTH MEDIA FILTERS (MODEL ADIF 1680), OptiFiber® PES-13 PILE CLOTH MEDIA

MAINTENANCE AND PERFORMANCE ISSUES SOLVED WITH AquaDiamond® CLOTH MEDIA FILTERS

Donald C. Tillman Water Reclamation Plant (DCTWRP), owned by the City of Los Angeles, California, began its operation in 1985. The plant's processes consist of grit removal, bar screens, primary clarifiers, aeration tanks, and secondary clarifiers, followed by sixteen (16) shallow bed traveling bridge sand filters, chlorination, and dechlorination, prior to water reclamation or discharge. The sand filters were installed between 1983 and 1990 and had been experiencing mechanical and performance problems. The problems had escalated to the point where staff was spending substantial amounts of money to maintain the filters, as well as sustain filter performance. According to Mike Bell, Operations Manager at DCTWRP, *"Our existing traveling bridge filters were costing a fortune to maintain. Media replacement for one year was \$500,000 and backwash pumps and bridge rails were \$35,000 each. In order to pass the coliform tests we had to shock chlorinate each filter at least weekly."*

Environmental engineers from the City of Los Angeles, Public Works Department and MWH Inc. began investigating other tertiary filtration technologies in order to address DCTWRP's costly maintenance and performance issues derived from the sand filters.

The engineers decided to retrofit eight (8) of the existing sand filters with AquaDiamond® cloth media filters and hired



One of DCTWRP's AquaDiamond® cloth media filters retrofitted into an existing traveling bridge filter basin.

Brutoco Engineering & Construction to expedite the retrofit project, which needed minimal civil work.

Each AquaDiamond filter for the DCTWRP is designed to handle an average flow of 12.5 MGD (47,300 m³/d) and maximum flow of 22 MGD (83,200 m³/d). Under these flow rates, the filters are required to achieve Title 22 California Department of Public Health Water Recycling Criteria.

AquaDiamond® FILTER PROCESS

In the filter basin, the cloth media is completely submerged during filtration. Solids are deposited on the outside of the cloth as the influent wastewater flows through the media. The filtered effluent is collected inside the diamond lateral and flows by gravity on to discharge. The filtration process requires no moving parts. Increased headloss due to the deposited solids automatically initiates periodic backwashing. During backwash, a pump provides suction to the backwash shoes, which make direct contact with the media, allowing solids to be vacuumed from the cloth as the platform traverses the length of the diamond laterals. The platform operates only during backwashing and solids collection. Because of the vertical orientation of the media, some solids will settle to the basin floor during normal operation. Small suction headers provide a means for collecting and discharging the settled solids. The solids collection process utilizes the backwash pump for suction.

PERFORMANCE TESTING

The design flow rates of 12.5 MGD (47,300 m³/d) average daily flow and 22 MGD (83,200 m³/d) maximum daily flow requires the AquaDiamond filters to achieve Title 22 California Department of Public Health Water Recycling Criteria in which a turbidity daily average effluent must not exceed 2 NTU, while influent filter turbidity values range from 0 – 10 NTU. The targeted performance requirements at DCTWRP are shown in the table below.

TARGET PERFORMANCE REQUIREMENTS

PARAMETER	DESIGN INFLUENT	PERFORMANCE REQUIREMENT
Turbidity (NTU)	1-10	< or = 2.0 daily avg.

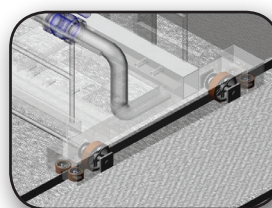
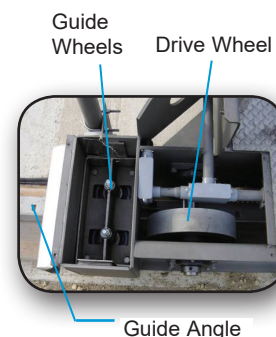
Shortly after installation, performance tests were conducted on four (4) of the AquaDiamond filters for forty-eight (48) consecutive days. Test results demonstrated the filters' ability to meet the low effluent turbidity requirements. A second test condition required the filters to process the forward flow under various solids loading conditions without bypassing, which was also achieved. Requirements of low effluent turbidity and no overflow of total suspended solids (TSS) were met during the duration of the test.

According to Operations Manager, Mike Bell, the AquaDiamond units continue to provide great results: *"The experience with the AquaDiamond filters has been excellent. We've had only minor issues with the filters that the manufacturer helped us solve quickly and efficiently. The filters are very trouble free and require very little maintenance. The performance is excellent, both in terms of turbidity and suspended solids. I would highly recommend this technology to anyone who currently uses shallow bed traveling bridge filters."*

AquaDiamond® FILTER ADVANTAGES

- Unique OptiFiber® pile cloth media
- 2-3 times the flow capacity of a traveling bridge filter with an equivalent footprint
- Reuse quality effluent
- Low backwash rate
- Small footprint
- Low head requirements
- No downtime for backwashing
- Less maintenance than sand filters
- Variable speed drive platform and backwash pump for immediate response to solids excursions
- Enhanced platform drive system for better traction and guidance
- Eliminates "crabbing" experienced with traveling bridge sand filters
- Tolerates extreme variations in loads
- New plants or retrofits
- Low life-cycle cost

The AquaDiamond filter's advanced drive and tracking system is more reliable than the traditional traveling bridge design in preventing misalignment.



The tracking system consists of:
(1) stainless steel guide angle,
(2) main drive wheels and
(2) pairs of guide wheels.