



ActiveCell[®] Biological Treatment System Treats Wastewater for Reuse Application

Background

The island nation of Jamaica required additional power generation capabilities in order to satisfy peak demands and prepare for future base capacity requirements. Generation of the incremental 125 MW required large quantities of clean water, a scarce and precious commodity in Jamaica.

ActiveCell[®] Solution

The ActiveCell moving bed biofilm reactor (MBBR) process was selected to treat municipal wastewater and produce a water stream suitable for reuse at the power generation plant. MBBR technology employs thousands of polyethylene biofilm carriers operating in a mixed motion within an aerated treatment basin. Each individual piece of media increases productivity through providing protected surface area to support the growth of bacteria within its cells. It is this high density population of bacteria that achieves high-rate biodegradation within the system, while also offering process reliability and ease of operation.

Headworks BIO Inc. proposed a three-stage biological treatment process for reduction of nitrate concentrations, followed by a positive flotation mechanism for phosphate and suspended solids removal.

Customer: Jamaica Public Service Company
Industry: Municipal

KEY FACTS

- **Wastewater Flow:** 6,813 m³ /day (1.8 MGD)
- **BOD₅:** Design influent < 45 mg/L
Effluent < 10 mg/L
- **Ammonia:** Design influent < 15 mg/L
Effluent < 2 mg/L
- **TSS:** Design influent < 70 mg/L
Effluent < 20 mg/L
- **Alkalinity:** > 120 mg/L
- **pH:** 7.5 – 8.0
- **Temperature:** ambient

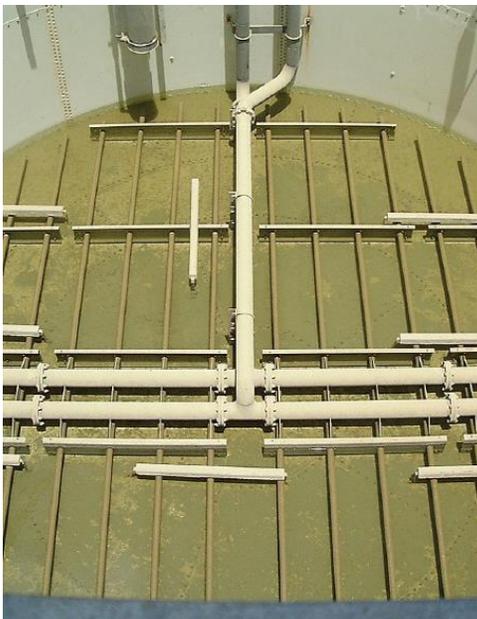
Outcome

The new treatment plant will accept 1.8 MGD (6,813 m³/day) of municipal effluent from the Bogue wastewater treatment plant located a few miles away.

The complete system consists of three ActiveCell bioreactors in series designed for BOD₅ and Nitrification to less than 10 mg/L and < 2 mg/L respectively. Next, the treated effluent is fed to a dissolved air flotation (DAF) system for removal of suspended solids.



Three-stage ActiveCell bioreactors to treat a wastewater flow of 1.8 MGD, resulting in reduced BOD, ammonia and TSS levels.



Installation of fixed grid aeration system anchored to the floor inside the tank.



Air blast



Retention screens for biomediation