



Headworks Awarded One of the Largest Nitrification Projects in the U.S.

Introduction

Located in northern Arkansas along the White River, the City of Batesville has been blessed – and stressed – with residential and industrial growth. In order to keep up with growing demands, expansion of the Batesville Wastewater Treatment Plant (WWTP) was the City's only option.

A prominent local engineering firm was selected to develop a solution that would meet the challenges associated with the expansion. The plans required that the plant increase flow capacity from 4.0 MGD to 9.0 MGD and decrease ammonia nitrogen levels to less than 8 mg/L at wastewater temperatures as low as 4.7 °C. Batesville currently uses lagoons to treat influent, but space is limited on the site to add additional conventional treatment processes.

The City needed a wastewater treatment process that met the following criteria:

- Provide reliable nitrification during winter months
- Fit within existing property boundaries
- Simplify operation
- Minimize costs.

Customer: City of Batesville
Industry: Municipal

KEY FACTS

- **Design Flow:** 34,065 m³/day (9 MGD)
- **BOD₅:** Influent 79 mg/L
- **CBOD₅:** Influent 47 mg/L
Effluent limit < 10 mg/L
- **SBOD₅:** Influent 40 mg/L
- **TSS:** Influent 68 mg/L
- **TKN:** Influent 33 mg/L
Effluent limit < 15 mg/L
- **NH₃-N:** Influent 28 mg/L
Effluent limit < 8 mg/L
- **Ammonia:** Influent 28 mg/L
- **Temperature:** 4.7 – 30 °C (40.46 – 86 °F)

“This application is well suited for the many benefits associated with MBBR and we are looking forward to applying our rich knowledge and expertise to ensure the project is a success for all parties involved.”

- Michele LaNoue

President and CEO of Headworks International Inc.

Background

An MBBR (moving bed biofilm reactor) process was recommended and Headworks Inc. won the competitive bid process with the general contractor, BRB Contractors, Inc. Headworks will supply post-lagoon treatment for BOD polishing and nitrification and clarification will be achieved through dissolved air flotation (DAF).

The awarded project, totaling \$3,690,000, is one of the largest lagoon nitrification projects in the U.S. “This application is well suited for the many benefits associated with MBBR,” explained Michele LaNoue, President and CEO of Headworks Inc., “and we are looking forward to applying our rich knowledge and expertise to ensure the project is a success for all parties involved.”

Process

Two parallel treatment trains will be built, each containing two reactors. The first reactor will treat any remaining BOD along with the ammonia nitrogen from the lagoons and the second reactor will complete the nitrification process. Headworks will employ their proprietary high-surface area ActiveCell® media to minimize the footprint of the entire system.



Effluent Screens and Aeration Grid



Dissolved Air Rotation (DAF)

- Open tank separator for dissolved air assisted separation of particles from water

MBBR is a highly effective fixed film wastewater treatment process that employs thousands of virgin polyethylene biofilm carriers to support the growth of biofilm. The carriers move freely in the reactor oxidizing ammonia nitrogen in the wastewater. Oxygen is delivered to the carriers through coarse bubble aeration, which also keeps the carriers mixed and in suspension. Media is retained in each reactor via stainless steel retention screens.

