



# ACTIVECELL<sup>®</sup>

MBBR / IFAS WASTEWATER TREATMENT



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## MBBR / IFAS WASTEWATER TREATMENT

### How Does It Work?

Headworks BIO Inc's ActiveCell process is a highly effective fixed film wastewater treatment process (MBBR/IFAS) that is designed for municipal and industrial wastewater treatment applications that need to consistently meet stringent BNR discharge requirements.

The ActiveCell process offers many advantages and can be applied to meet effluent discharge levels for:

- BOD / COD Reduction
- Nitrification
- Total Nitrogen Removal
- Phosphorus Removal

#### Where Have We Done It?

- Municipal
- Industrial
- Marine
- Food & Beverage
- Pulp & Paper

**With Headworks BIO, you get more than just plastic:**

- 15+ Years of R&D
- Installations Operating Successfully Since 1999
- 100+ Years of Experience In-House
- Customizable Solutions
- Superior Media Design

#### Media Retention Screen

Stainless steel wedge wire screens retain the cultivated biofilm / media in a process-designated reactor while allowing the treated wastewater and sloughed biofilm to flow through to the next treatment phase.

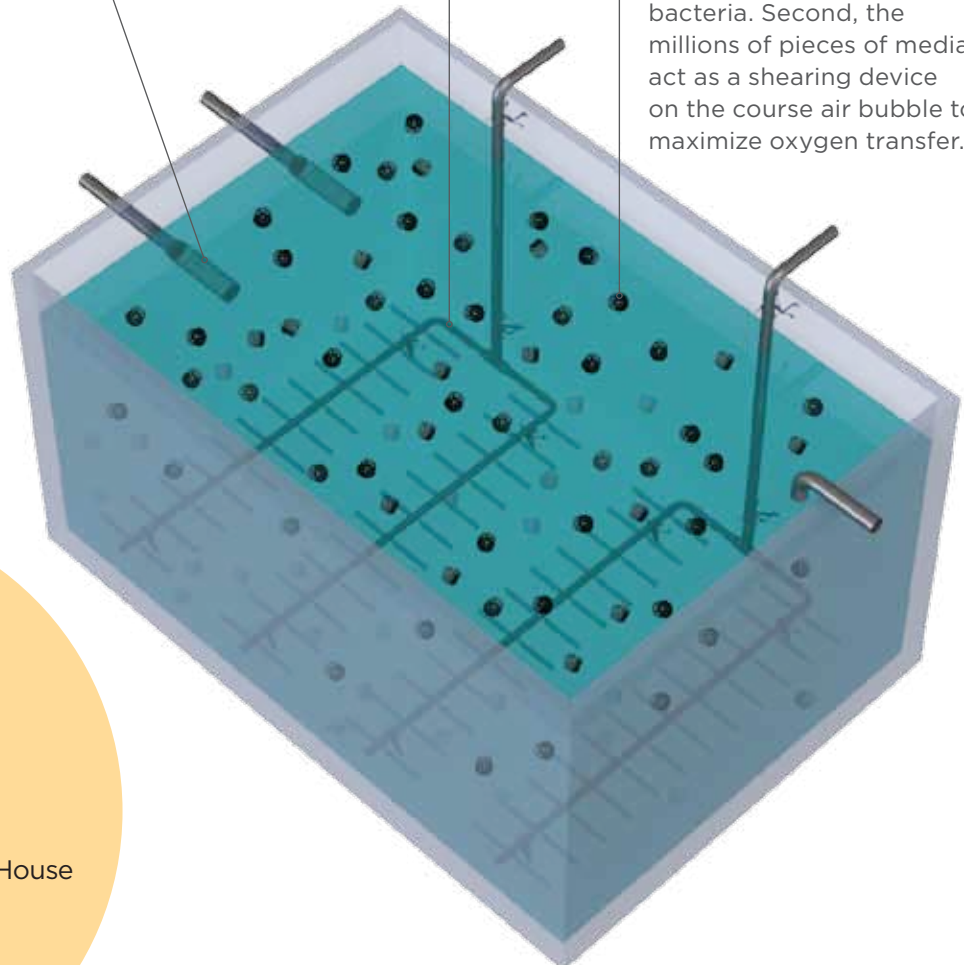


#### Aeration Grid

A stainless steel coarse bubble aeration system is employed to mix the suspended media evenly throughout the reactor while providing the mixing energy required to slough old biofilm from the internal surface area of the media and maintain the dissolved oxygen required to support the biological treatment process.

#### ActiveCell Media

Media provides two important functions: The protected internal surface area allows biofilm to attach while supporting either the heterotroph / autotroph bacteria. Second, the millions of pieces of media act as a shearing device on the coarse air bubble to maximize oxygen transfer.



## ActiveCell Advantage

With a variety of surface areas available, ActiveCell media offers the ultimate flexibility for application customization and effluent quality control.



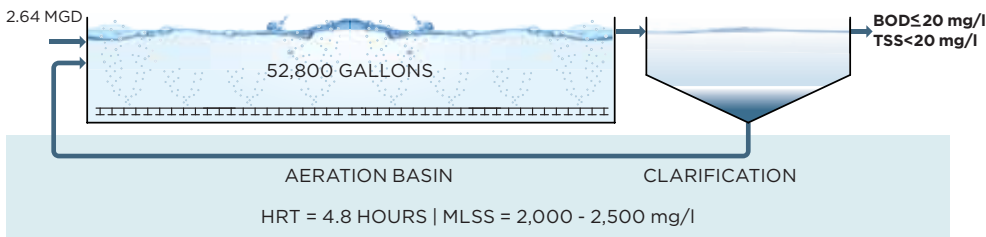
Virgin Polyethylene media is a necessary component of any moving bed biofilm reactor, but extensive knowledge and understanding of microbiology, engineering, and process design is the key to make any MBBR/IFAS installation a success.

Plastic profiles are easy to produce, but process knowledge makes it work. Partner with the process experts at Headworks BIO Inc.

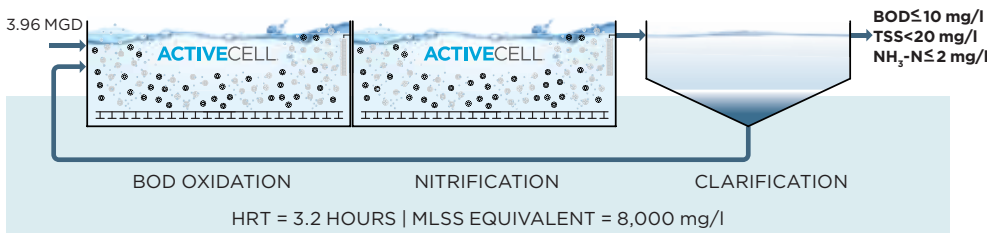
## Double Capacity & Improve Performance in the Same Footprint

The ActiveCell process is customizable, making it an ideal solution for new plants or the retrofit of existing facilities. Below is an example of how an existing 2.64 MGD BOD treatment facility can be retrofitted to meet  $\leq 2$  mg/l ammonia nitrogen within the same footprint while increasing the treatment capacity to 3.96 MGD.

### EXISTING ACTIVATED SLUDGE PLANT



### ACTIVATED SLUDGE PLANT CONVERTED TO IFAS



## ActiveCell Advantages

- Single-pass biological process (MBBR)
- Operator friendly
- Small footprint
- Low lifecycle treatment costs
- Expandable

**If your facility has operational challenges, the ActiveCell fixed-film process is for you!**

**6 MGD / 23,000 m<sup>3</sup>/day**  
Install date: 2003

“Since commencing operation eight years ago, our MBBR [ActiveCell Process] has proven to require minimal operator attention and effectively nitrifies and adapts to fluctuations in loading.”

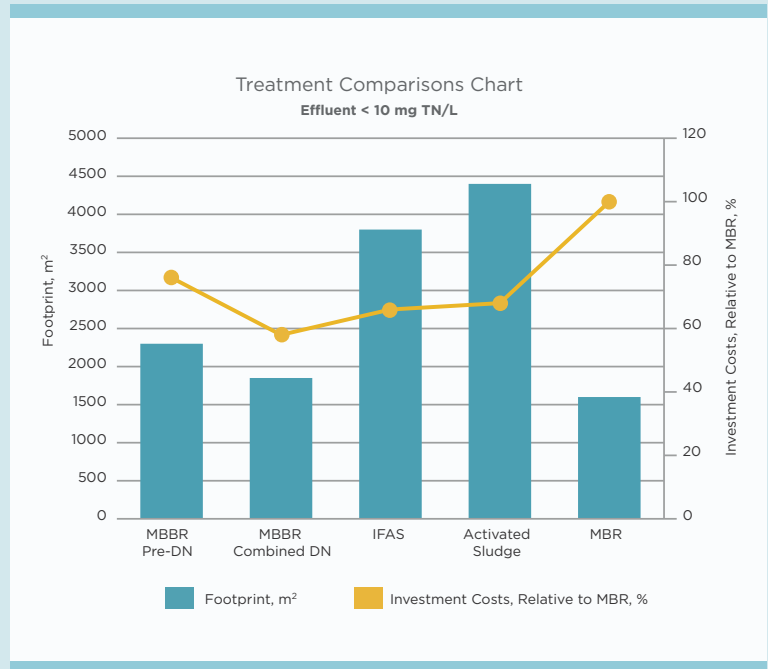
**- Andy Bradshaw**  
**Utilities Engineer for**  
**the City of Moorhead**

## Treatment Comparisons for Municipal Wastewater

Effluent < 10 mg TN/L

Defined Design Conditions: 11.4 MGD or 43,000 m<sup>3</sup>/day wet weather design flow, 15° C design temperature

Note: Calculations of the footprint for each process combination does not include pre-treatment, nor does it include any kind of sludge handling facilities. The footprints shown only include the area occupied by different process reactors and tanks, and it is assumed that these reactors and tanks are rectangular and that they share walls whenever possible.



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