



# **WATER WARRIORS**



**InNow**  
Innovation Now



# WATER WARRIORS

We are a scientifically-driven company on a clean water mission. Our products are designed to address the world's wastewater crises through innovative approaches to traditional water treatment techniques, using naturally occurring biological reactions to create more efficient water treatment processes.

After all, when you know how to use nature, you get great results.

- Leading Innovation in Wastewater Treatment
- Expert Knowledge
- Cost Effective Solutions
- Turn-Key Products
- Existing Infrastructure Installation
- Long-lasting, Non-Biodegradable Materials

[www.WaterWarriorsSolutions.com](http://www.WaterWarriorsSolutions.com)

# WAVING BIOMEDIA™ (WBBR)

**Increases lagoon capacity and performance.**

**Removes BOD, COD, TKN and phosphorus simultaneously.**

Water Warriors' groundbreaking open-cell foam, featuring a high-capacity, bio-treated surface area, promotes growth of billions of beneficial bacteria while preventing washout.

Our proprietary biofilm coating accelerates natural biological activity in aerobic or anaerobic lagoons, increasing the volume potential of existing water treatment systems. The unique design extends treatment area to below the surface, enabling treatment of more water than traditional, surface-only designs.

Water Warriors' Waving Biomedia brings a new hope to lagoon systems that fail, pollute, or are nearing facility capacity.

Waving Biomedia systems reduce costs, improve performance, increase facility capacity and above all, protect human health and nature.

- Prevents washouts of beneficial bacteria
- Increases biomass concentration to 12,000+ mg/L
- Minimizes displacement of water
- Increases facility capacity
- Reduces sludge buildup
- Installs within existing footprint
- Made with non-biodegradable materials
- Accelerates biological activity to remove BOD, COD, TKN and phosphorus
- Simultaneous nitrification + denitrification



**COATED FOR BIOFILM GROWTH . . .**

Pre-coated biomedica achieves full biofilm growth within hours, not days.

**. . . . ENGINEERED FOR NITRIFICATION AND DENITRIFICATION**

Dual-purpose design creates aerobic conditions on the outside area of the biomedica to convert the ammonia to nitrate/nitrite; and, creates anoxic conditions on the inside area to convert the nitrate/nitrite to nitrogen gas.

**MICROBUBBLE AERATION . . .**

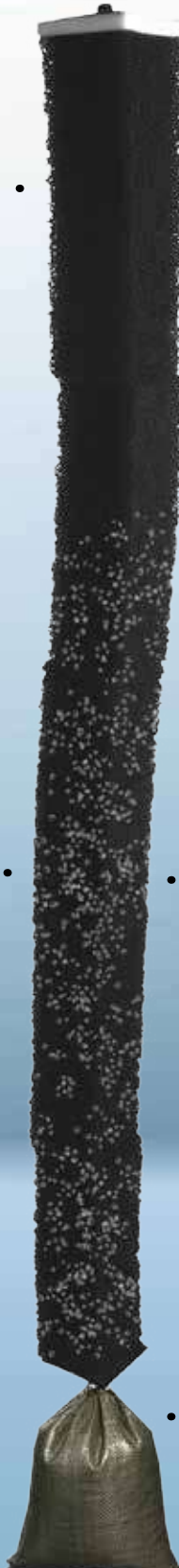
Tiny microbubbles, less than 50 microns in diameter, allow bacteria to thrive. The neutrally buoyant design allows the dissolved oxygen to remain below the surface, where it remains for an extended period of time. This creates the ideal environment to increase each lagoon's bacteria concentration by up to 700%.

**. . . . . UNIQUE ARCHITECTURE**

The open-cell foam structure interacts favorably with the water, minimizing the displacement of water. The biomedica tower is designed to move in a wave-like fashion, maximizing the volume of water treated, while minimizing surface turbulence.

**. . . . . STATIONARY DESIGN**

The biomedica stays in place using a sand weight at the bottom that secures the tower while minimizing environmental disturbance.



# SUPER BIOMEDIA™ (MBBR)

**Supercharges aeration basins, tanks and various bioreactors.  
Removes BOD, COD, TKN and phosphorus simultaneously.**

Super Biomedia improves the performance of current operating bioreactors. In activated sludge systems, it offers all the benefits of fixed-biofilm systems, without the disadvantages of fixed-media. The use of biomedia in bioreactors and activated sludge treatment of wastewater has been documented to result in a stable process which responds well to influent fluctuations, and achieved improved treatment, in a small footprint. The primary goal of the treatment process is reduction of Biological Oxygen Demand (BOD) and nutrients in the wastewater, before the wastewater is discharged into the environment.

- Accelerates biological activity to remove nutrients
- Treats water below surface with neutrally buoyant design
- Simultaneous nitrification + denitrification
- Prevents washouts of beneficial bacteria
- Minimizes displacement of water
- Reduces sludge buildup
- Installs within existing footprint
- Made with non-biodegradable materials
- Easy to contain within the bioreactor
- Resistant to organic and hydraulic shock loads
- Increases facility capacity within existing footprint





**VS**



**The following table shows a comparison of the Water Warriors Biomedia with the conventional plastic media:**

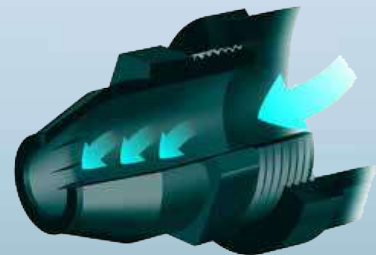
Super Biomedia™	Competition
Plastic structure with foam	Extruded plastic pieces
Size: 5 inches x 7 inches ellipsoid with foam	Less than 0.5 inch (~1 cm)
Surface area: 200 ft <sup>2</sup> /ft <sup>3</sup> ; 7 pieces/ft <sup>3</sup>	350 - 900 m <sup>2</sup> /m <sup>3</sup>
Biomedia moves due to normal aeration (fine bubble – coarse bubbles)	Coarse bubble aeration required to move the media
De-nitrification capability: very effective	Limited
Phosphorus removal: Very effective	Non-existent
Biomedia Volume %: 20-30%	40 –70%
Increase in Plant Capacity: 40 –60%	20 –30%
Improved sludge volume index (SVI): Yes	No
Reduced sludge production: Yes	Limited reduction

# MICROBUBBLE AERATION™

**Our unique MicroBubbles last up to 4 hours underwater, increasing the amount of oxygen for a fraction of the cost.**

Introducing the most efficient way to supply oxygen to the water: MicroBubbles. These tiny molecules, each less than 50 microns in diameter, allow the bacteria to thrive. The neutrally buoyant design allows the dissolved oxygen to remain below the surface, where it remains for an extended period of time. Enabling this steady oxygen supply at lower depths of water assists in reducing the sludge layer, thereby creating the ideal environment to increase bacteria concentration by up to 700%. This design does not require an external blower and reduces the clogging risk of the absorption aerator nozzles, resulting in savings on operating costs and reduced risk of down-time.

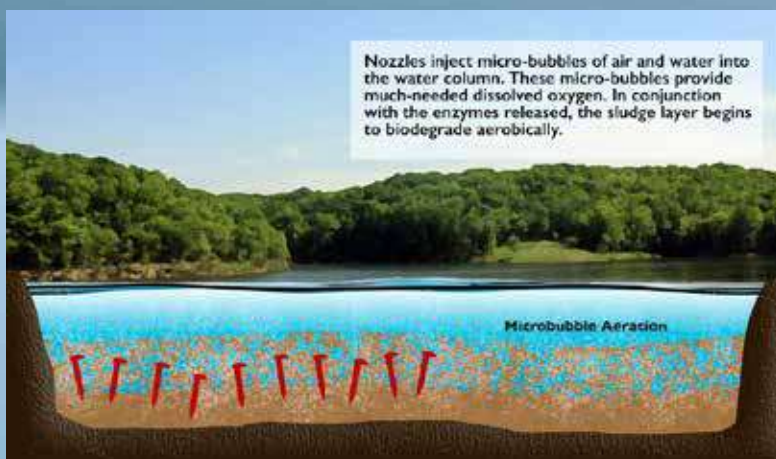
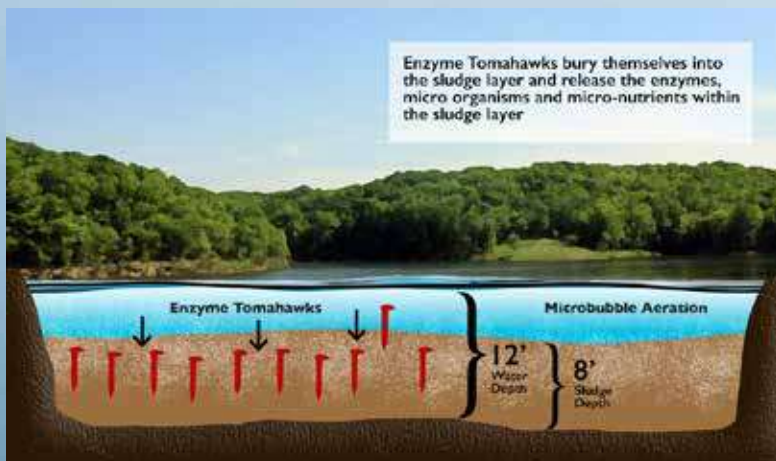
Type of Aeration System	SOTR Value
<b>Absorption Aerator</b>	<b>2.7 – 3.1</b>
Surface Aerator with draft tube	1.2 – 2.1
Surface high speed	1.2 – 2.0
Submerged turbine	1.0 – 2.0
Submerged turbine with sparger	1.2 – 1.8
Surface brush and blade	0.8 – 1.8
Fine bubble diffusers	0.5 – 1.5
Coarse bubble diffusers	0.3 – 0.8



# ENZYME TOMAHAWKS™

**Reduce sludge, increase capacity and eliminate common water issues caused by excess sludge.**

Enzyme Tomahawks are solid spikes composed of billions of microorganisms, biosurfactants, enzymes and nutrients, that accelerate biodegradation of the sludge layer at the bottom of a lagoon. Enzyme Tomahawks are simply dropped above the water level, where they will descend and penetrate the sludge layer at the bottom of the water column. Once lodged inside the sludge, the Enzyme Tomahawks slowly release their microorganisms, biosurfactants and enzymes within the sludge layer, activating the biodegradation process.





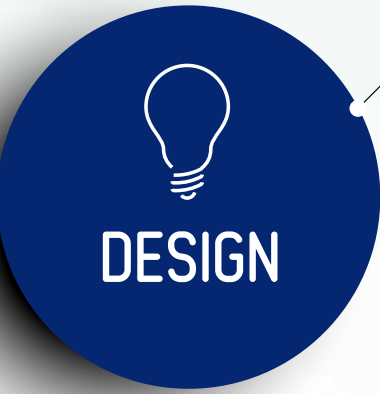
# **OUR PROGRAM WILL DETERMINE THE PROPER MIX OF PRODUCTS TO REACH YOUR WATER QUALITY GOALS.**

Water Warriors' Computer Simulation Model will provide the recommended design information to get the desired results for your water. Our process identifies, based on the application, the type and number of bioreactors needed, aeration system requirements, and remedial enzyme treatment needs (if required). We provide a comprehensive proposal to the projected water quality improvements using our products and technologies. Details on proposed modifications, benefits of the proposed modifications, budgetary costs, cost justification, scope of supply and services are provided during the proposal stage, to assist in the evaluation and decision-making process.

## **HOW TO GET STARTED:**

Complete a Water Warriors Bioreactor Quote Request. This one page form consists of standard information that is typically already being collected. For a Bioreactor Quote Request contact Steve Chamberland via email [schamberland@waterwarriorssolutions.com](mailto:schamberland@waterwarriorssolutions.com) or directly at 859-629-2236. Bioreactor Quote Sheets can also be found by visiting [www.waterwarriorssolutions.com](http://www.waterwarriorssolutions.com)





Determine the requirements for the bioreactor and aeration that solves the issues.

Collect information from quote sheet on influent and effluent parameters, temp, size etc ...



Customize solutions to meet the needs of the project.



- Biomass Analysis
- Water Analysis
- Sludge Depth Analysis
- Design Analysis
- Nutrient Analysis



Address: Plot No 62, Ground Floor, EHTP, Sector  
34, Gurugram, Haryana-122004

Contact: 0124-4035601; +91-9958360040  
info@innowindia.com; www.innowindia.com