



# BioPORTS™

## BOD/AMMONIA/ NITRATE REMOVAL

| Criteria   | BioPorts |
|--|----------|
| <b>Effluent Quality</b>                                      |          |
| <b>Total Ammonia-Nitrogen (TAN)</b>                          | <1 mg/L  |
| <b>cBOD<sub>5</sub></b>                                      | <5 mg/L  |
| <b>Total Nitrogen</b>  |          |
| <b>TSS*</b>  | <5 mg/L  |
| <b>Advantages</b>  |          |
| <b>Small footprint</b> fits in limited available real estate |          |
| <b>Simple O&amp;M</b> needs no specific biological expertise |          |
| <b>Welcomes variable influent</b> loading and flows          |          |
| <b>Applications</b>  |          |
| High <b>soluble organic</b> loading (BOD roughing)           |          |
| Cool-climate <b>post-lagoon</b> nitrification                |          |
| <b>IFAS</b> (integrated fixed-film activated sludge)         |          |
| <b>Municipal or industrial</b> nitrification or BOD removal  |          |

\* With included solids removal.

## Problem

Your wastewater treatment plant can no longer handle its loading, and there isn't the physical space to expand. Perhaps a local industry is sending high-strength wastewater your way, or I&I and/or CSO result in highly-variable flows; whatever the cause, the plant isn't up to the task and could fail its regulatory limits.

## The Nexom Answer

The BioPorts™ Moving Bed Biofilm Reactor (MBBR) or Integrated Fixed-Film Activated Sludge (IFAS) beats BOD and ammonia limits where space is tight and influent is unpredictable. Here's why:

- **Compact:** High-rate biological kinetics and limited tankage needs allow BioPorts to fit in a small footprint.
- **Easily operated:** No special biological education required for operators, and HDPE media never needs replacing.
- **Handles variable flows or loads:** BioPorts allows biology to rapidly scale up, handling loads and flows at 10-15x normal levels.

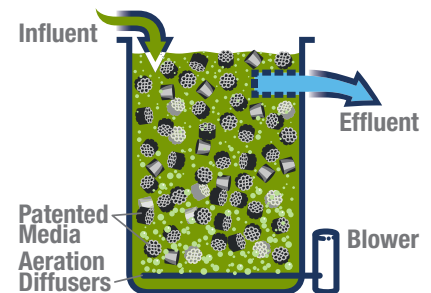
## How BioPorts works

In a BioPorts MBBR or IFAS, nitrifiers or BOD-consuming bacteria grow as fixed films on submerged HDPE carriers. These carriers independently circulate through aerated basins, ensuring excellent oxygen and loading transfer to the biomass.

## Designed to be better

BioPorts patented media optimizes surface area at 281 ft<sup>2</sup>/ft<sup>3</sup>. The carriers' dimensions are carefully balanced to enable both coarse media retention screening and effective media motion.

Also, only Nexom offers **Screen Scour™**, which disperses media collecting on effluent screens, a particularly indispensable function in anoxic denitrification basins.



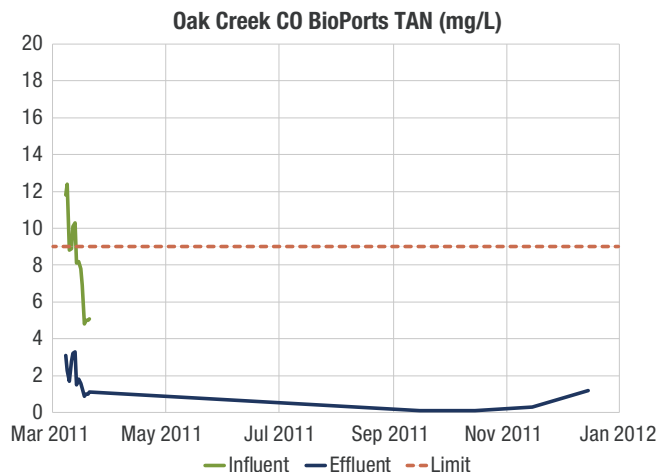
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## Post-Lagoon Nitrification at Oak Creek

When regulators imposed a winter ammonia limit of 9 mg/L, it became clear Oak Creek, CO's 0.25 MGD lagoon-based wastewater treatment system needed an upgrade that could meet this limit in <5°C water temperatures.

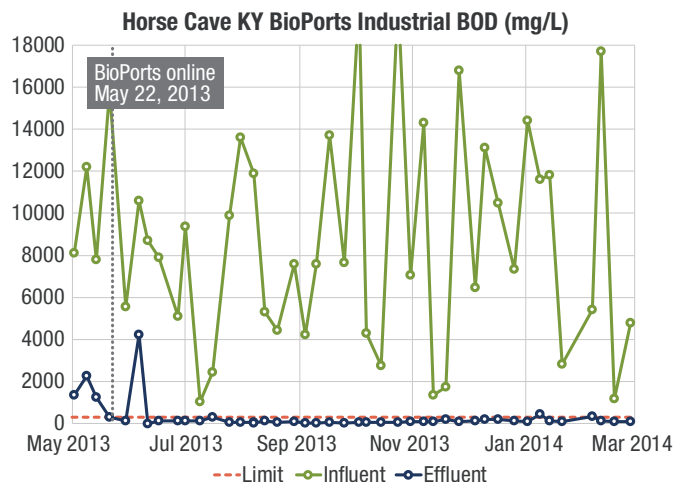
Given the valley's lack of space for expansion, Oak Creek upgraded its plant with a BioPorts MBBR in 2009. Pictured on the reverse of this page at top, it follows aerated lagoons and was constructed in-ground inside a control and equipment room. Effluent feeds into a settling pond for clarification, followed by disinfection, and subsequently discharged with ammonia levels well below Oak Creek's regulatory permit.



## Industrial-Strength BOD Roughing

At Horse Cave, KY, a byproduct of the local salad dressing industry is high-strength wastewater with BOD levels well over 20,000 mg/L, which threatened to overload the city's plant.

So when the city imposed a 300 mg/L (5-day average) limit on the industrial flow to the municipal plant, the company installed BioPorts treatment (pictured at right) for roughing the influent BOD to more acceptable levels. Since the biomass was fully established mere weeks after the system came online, it has averaged 98.46% removal with average effluent BOD of only 127 mg/L.



## Nexom knows biological treatment

The Nexom team has specialized in biological treatment for 20 years, covering 500+ projects across the U.S. and Canada. Our engineers are the leading experts in a range of technologies and invented SAGR cold lagoon nitrification.

Nexom brings this experience and the patented processes it has developed to the world of MBBRs with BioPorts. With dozens of sites across North America already using the technology, BioPorts is the go-to technology for BOD, ammonia, and more!

## UPGRADING WITH BIOPORTS IS EASY AND EFFECTIVE

1

We walk you through exactly what project details we need. Call 888-426-8180 or email [info@nexom.com](mailto:info@nexom.com).

2

We supply design-ready drawings, proprietary technologies, and responsive support.

3

You never worry about your BOD, Ammonia or Total Nitrogen limits again.