

## Nutrient Reduction



Envirogen Technologies, Inc.'s suspended carrier reactor (SCR) process (also known as the integrated fixed-film activated sludge – IFAS – or moving bed biofilm reactor – MBBR - process) can expand your existing biological treatment plant capacity without the need for additional reactor volume.

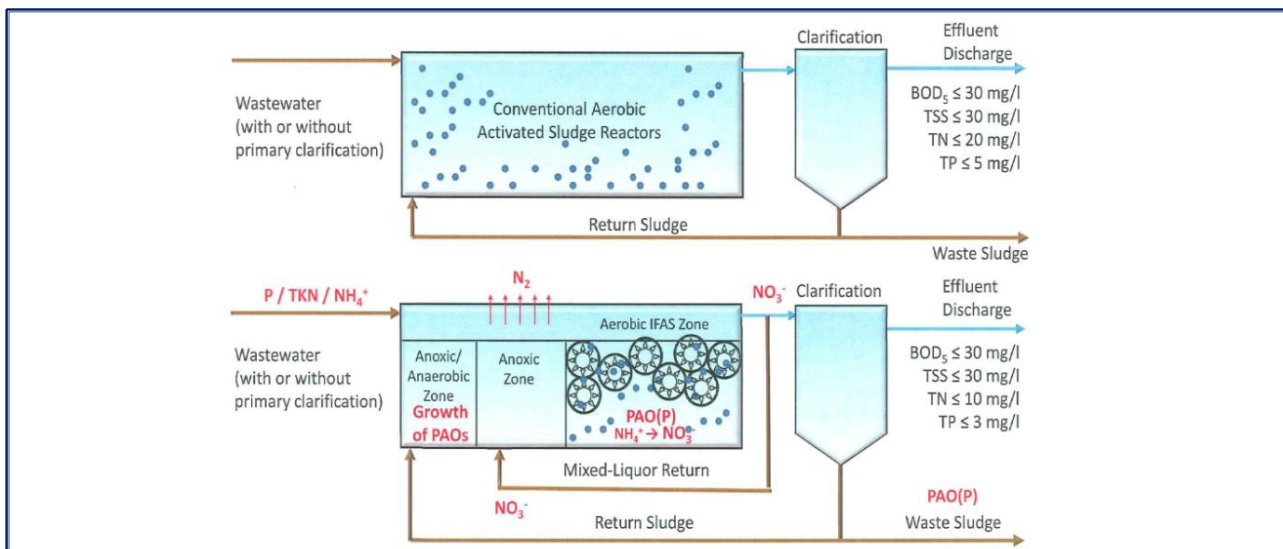
The addition of Envirogen Technologies' SCR S1 or S2 plastic media to your existing activated sludge basin enables achievement of higher treatment capacity or an increase in treatment performance by maintaining a higher biomass concentration within the basin. This supplemental biomass growth occurs in the form of a biofilm on the surface and within the interior of the buoyant plastic carrier media.

This is particularly advantageous where nitrification is required, as slow-growing nitrifying microorganisms can now be more easily maintained within the system as an attached biofilm. Therefore, the SCR process is not only attractive for upgrading an existing system to expand capacity, but also for achieving nitrogen control or improved nitrogen reduction. Screens are used to prevent the media from leaving the basin. A simple patented in-vessel device is used to control the biofilm thickness. The complete system retrofits entirely within the existing plant footprint.

The process is simple in mechanical design, requiring little in the way of instrumentation, controls addition, and no more operator attention and maintenance requirements than the conventional activated sludge system that it upgrades. It is a very attractive alternative to the financial and timeframe impact of adding new treatment trains to existing facilities or retrofitting with membranes.

### ENVIROGEN TECHNOLOGIES ADVANTAGE

- Low purchase, installation and operating costs
- Can increase capacity by as much as 100%
- Net zero impact on existing plant operating labor requirements
- Insignificant impact on instrumentation and controls requirements
- Contained in existing plant footprint; net zero impact on real estate requirements
- Operational flexibility
- Consistent effluent quality; tolerance for upset and surge conditions
- Use of patented (US 7,419,594 B2) in-vessel devices to control biofilm thickness on and in the carrier media, allowing for the use of fine bubble aeration, which reduces energy requirements



Use of SCR media in modified aeration basin allows for efficient nitrogen control. Adding a post-denitrification step can reduce total nitrogen even lower, to below 3 mg/l.

Product Details		
Product	SCR S1	SCR S2
Dimensions (approx)	13/16" OD x 5/8" Length	15/31" OD x 5/16" Length
Material	High Density Polyethylene	High Density Polyethylene
Specific Gravity	0.94-0.96	0.94-0.96
Projected Use	Moderate Biofilm Growth	Low Biofilm Growth (e.g., nitrification)
Total Surface Area	184 ft <sup>2</sup> /ft <sup>3</sup>	328 ft <sup>2</sup> /ft <sup>3</sup>
Internal Surface Area	135 ft <sup>2</sup> /ft <sup>3</sup>	254 ft <sup>2</sup> /ft <sup>3</sup>
Net Shipping Weight	8.25 lb/cu ft (approx)	10.15 lb/cu ft (approx)

Envirogen Technologies' SCR technology is covered by one or more of U.S. Patent Nos. 7,018,534 and 7,419,594 and one or more Great Britain Patent Nos. GB2421501 and GB2425305. The patented biomass control device allows for separate discharge of sheared solids via a flexible overflow weir.

