

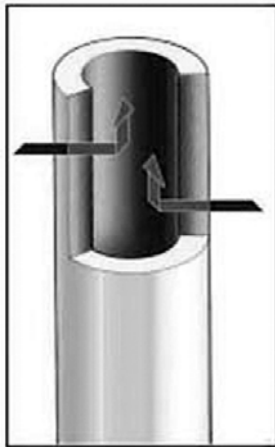
## Membrane Bioreactor – cleaner water in less space

### Wastewater treatment is essential to protect public health and the environment

In response to increased growth in our region, King County built a new regional wastewater treatment system called Brightwater. Construction started in 2006. Treatment plant start-up and operations will begin in 2011, with the entire system scheduled to be completed in 2012. Brightwater will serve portions of King and Snohomish counties and support our mission to protect public health and the environment.

The Brightwater Treatment Plant was designed to meet or exceed stringent water quality standards for effluent discharge and reclaimed water production. The plant will use an advanced treatment technology called a membrane bioreactor (MBR) system instead of the large round settling tanks used in conventional plants.

### Membrane bioreactor technology is used at Brightwater

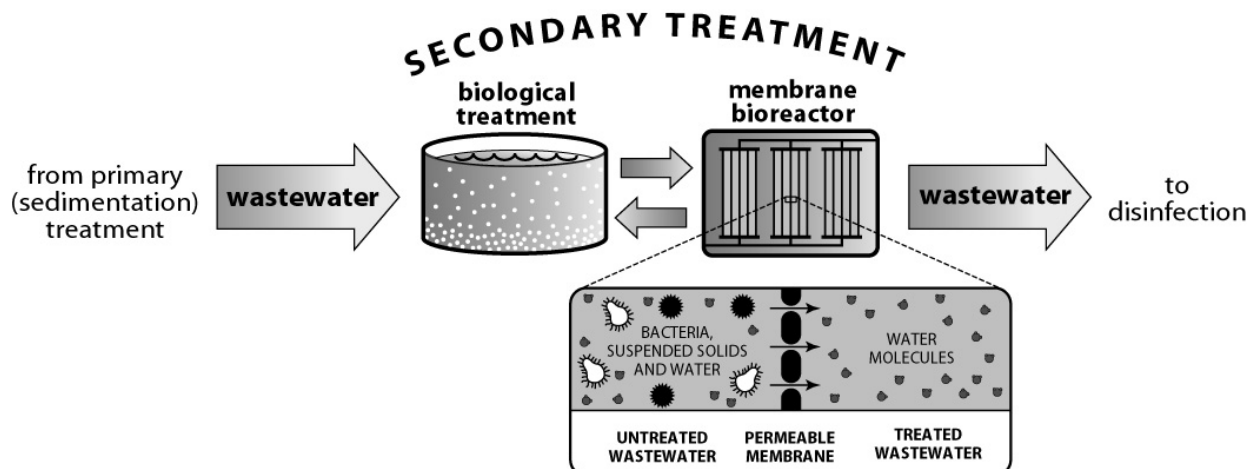


*This close-up of an individual strand shows how gentle suction pulls clean water through microscopic pores.*

Membrane bioreactors clean wastewater more effectively than traditional wastewater treatment processes. By combining standard biological wastewater treatment with membrane filters, the process produces higher quality effluent (treated wastewater). The membranes are immersed in wastewater where the MBR system draws wastewater through hollow fibers. These fibers have microscopic pores which are small enough to filter out particulate matter and even individual bacteria.

The technology results in treated wastewater that is seven to 10 times cleaner than typical secondary treated wastewater, which already meets tough environmental requirements and regulatory standards for discharges into Puget Sound.

For example, 36 million gallons of treated wastewater discharged from Brightwater using membrane technology will contain the same amount of microscopic impurities as 5 million gallons of treated wastewater from a typical secondary treatment plant.



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## Membrane Bioreactor – cleaner water in less space ..... continued

### Membranes save space and simplify odor control

Membranes filter effluent and replace secondary clarifiers, the large round settling tanks used in conventional plants. This technology takes up 40 percent less space than conventional treatment systems. This space savings will provide more room for future plant expansion, screening the plant from public view and using natural methods for handling stormwater.

The small size of membrane bioreactors also makes them easy to enclose in buildings, so that any odors are contained and treated.

### Membranes offer emerging – but tested – technology

King County has chosen membrane filters from General Electric Water & Process Technologies. Wastewater treatment plants in California, Colorado, Michigan, Georgia, Florida, Ontario and other locations around the world use this same technology. The same membranes are also used around the world to produce drinking water.

### Membranes produce reclaimed water without additional treatment

The MBR system needs less space, simplifies odor control, and produces better water quality than traditional wastewater treatment. MBRs can be used safely as a drought-proof water source for irrigation, wetland enhancement and other beneficial uses.

The MBR system can produce Class A reclaimed water, which meets strict standards from the state departments of Ecology and Health for use in non-drinking purposes, including landscaping, agricultural irrigation, heating and cooling, industrial processing, and safe discharges into freshwater.



*The treatment plant will have large membrane units called cassettes like the one shown above.*

### For more information or to be added to our mailing list, please contact us:

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