

Membrane Bioreactors

Johns Creek Environmental Campus



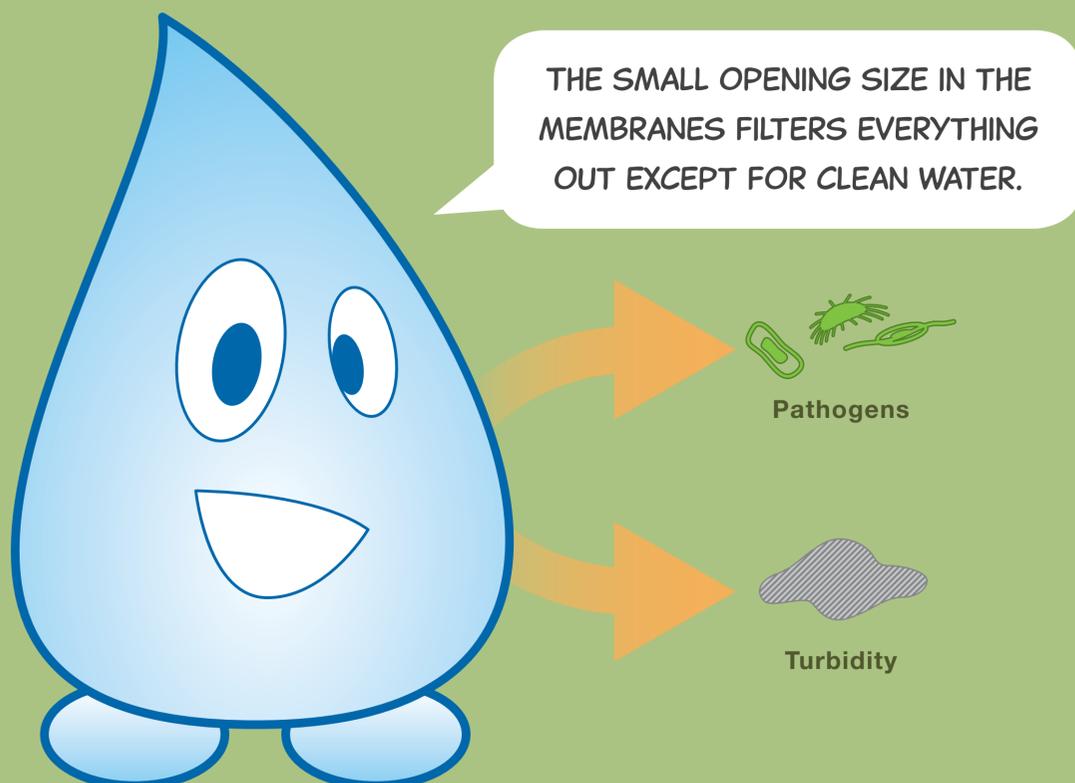
The membrane bioreactor (MBR) system at JCEC is the main treatment process used to clean the water. This process utilizes reinforced hollow-fiber ultrafiltration membranes specifically designed to meet the requirements of wastewater treatment. The activated sludge flows from the aeration basins into one of eight bioreactor tanks. In these tanks air is fed intermittently to keep the contents in suspension and to keep aerobic conditions. Water is pumped through the membranes and the microscopic pore size serves as a selective barrier that traps solids, including microorganisms and pathogens, allowing only clean water to pass. After water passes through the membrane, the resulting water is called “permeate.” The solids that remain in the basin are continuously recycled back to either the biological treatment basins as “return activated sludge” or wasted to the aerobic digesters as “waste activated sludge.”



A series of pipes supply air to each reactor and pull the filtered water from the membranes.



The membranes are arranged in cassettes submerged within the basin.



| Membrane Bioreactor Design Parameters | |
|---------------------------------------|--------------------------|
| Number of Membrane Tanks | 8 (7 duty / 1 standby) |
| Number of Cassettes per Train | 11 |
| Number of Modules per Cassette | 48 |
| Membrane Tank Volume (each tank) | 70,000 gallons |
| Net Flux Rate at Peak Day Flow | 18.0 gpd/ft ² |