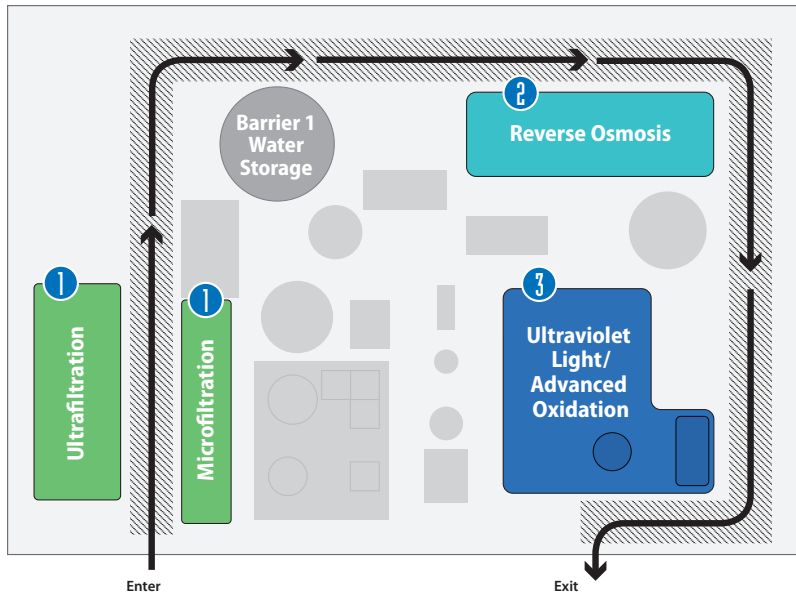


# Innovation for Future Water Supply

The Advanced Water Purification Facility is the focal point of the City of San Diego's Water Purification Demonstration Project (Demonstration Project). This project is vital to San Diego's future and is a critical step towards developing a local, sustainable and reliable water supply. This state-of-the-art facility, located at the North City Water Reclamation Plant, is using the most advanced technologies to purify one million gallons of recycled water per day.



## The Purification Process

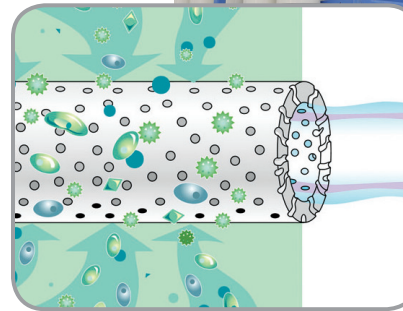
The City of San Diego currently uses recycled water for irrigation and industrial purposes. The Demonstration Project is a pilot study to determine the feasibility of further purifying recycled water to supplement local drinking water supplies through reservoir augmentation. The project will determine if the purified water meets water quality, safety and regulatory requirements. The purification process uses the multi-barrier approach of consecutive treatment steps, which work together to remove or destroy unwanted materials. Each barrier includes frequent and continuous water quality monitoring. Safeguards are built into the

process to ensure that an anomaly at any given treatment step would not compromise public health. Here is a look at the process:

### Membrane Filtration — Barrier 1

The first step in the water purification process is membrane filtration. Two types of membrane filtration systems are being tested—microfiltration and ultrafiltration—to determine which is most effective. This treatment step uses a series of membrane filtration canisters that remove contaminants in the already-treated recycled water.

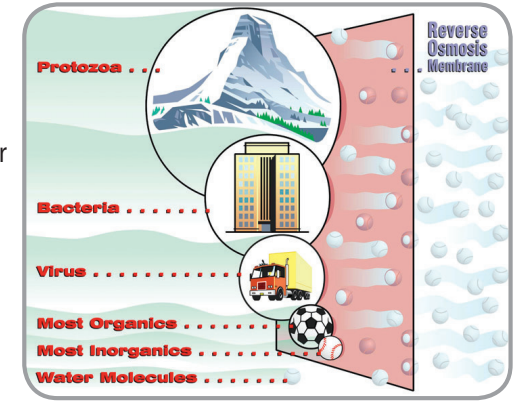
Inside the membrane filtration canisters are hollow fibers that block unwanted materials like suspended solids, bacteria and protozoa from passing through. The filters are extremely efficient and are tested daily to confirm their consistent removal of contaminants. After undergoing membrane filtration, the clouded appearance of the recycled water is converted into a clear solution that contains dissolved organic material and salts.



### Reverse Osmosis — Barrier 2

Reverse osmosis is the second and most essential step in the purification process. Water is forced under high pressure through membranes that remove salt and microorganisms, including viruses and bacteria.

Reverse osmosis purifies the water to a level similar to distilled water quality. This process is used by the bottled water industry.



### Ultraviolet Disinfection/Advanced Oxidation — Barrier 3

Step three of the purification process is advanced oxidation through the use of ultraviolet (UV) light and hydrogen peroxide. Inside the vessel shown to the right is a high intensity light, similar to extremely concentrated sunlight, that provides disinfection.

Hydrogen peroxide is added and reacts with the light to form powerfully reactive molecules like those used by nature to clear pollutants from the atmosphere. These molecules provide further disinfection and destroy any remaining contaminants in the water by breaking them down into harmless compounds.



San Diego is among many innovative cities exploring water purification technology to purify wastewater for use as drinking water.