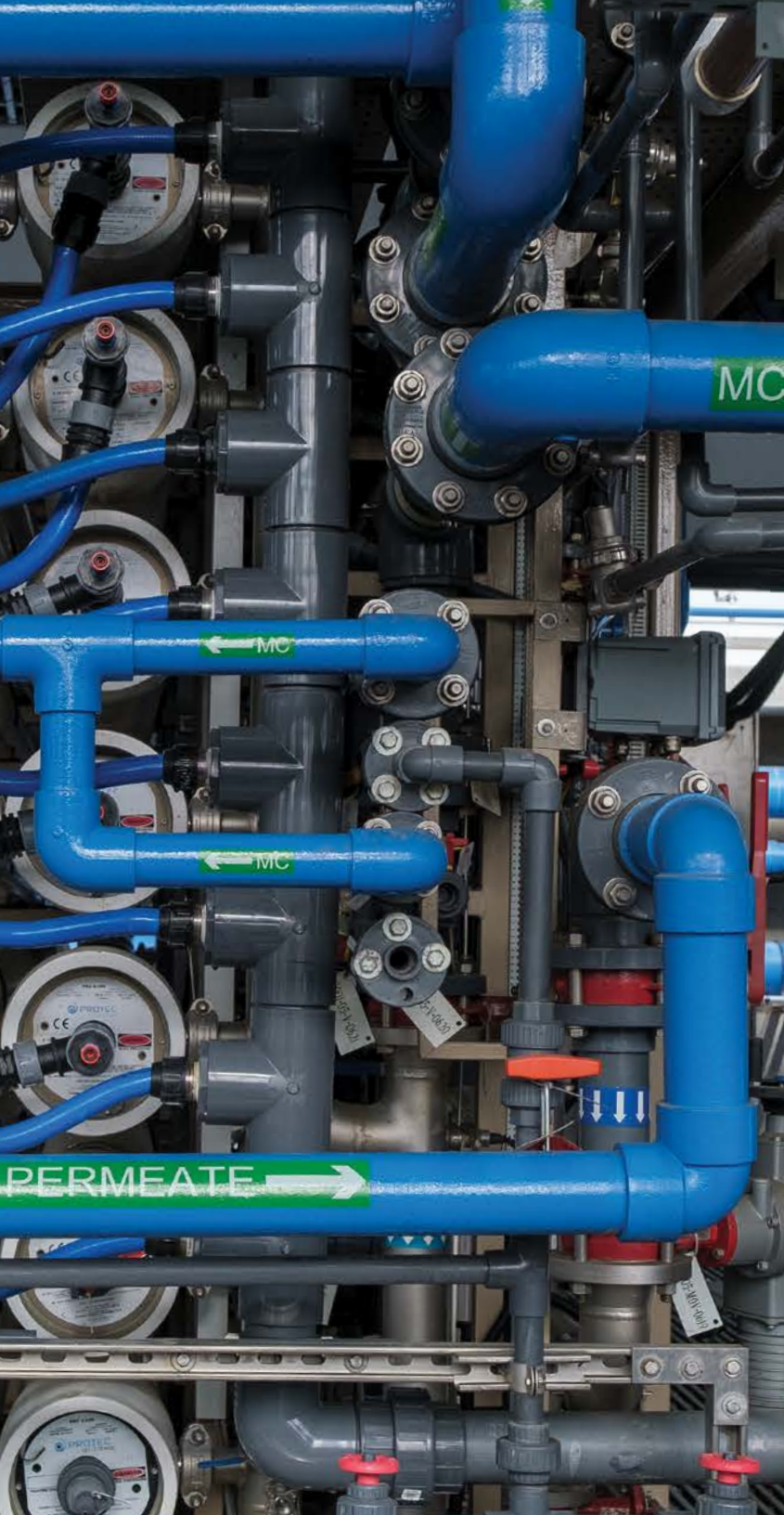


A close-up photograph of a person's hands holding a clear glass filled with water. The person is smiling, showing their teeth. The background is blurred, suggesting an indoor setting. The lighting is bright and natural.

A LOOK INSIDE

**PUREWATER**  
SOUTHERN CALIFORNIA

Demonstration Plant



# PUREWATER

SOUTHERN CALIFORNIA

OUR WATER | OUR FUTURE



Welcome to the Pure Water  
Southern California Demonstration Plant

A partnership between The Metropolitan Water District  
of Southern California and the Los Angeles County  
Sanitation Districts



THE METROPOLITAN WATER DISTRICT  
OF SOUTHERN CALIFORNIA



LOS ANGELES COUNTY  
SANITATION DISTRICTS  
*Converting Waste Into Resources*

## A LOOK INSIDE

# This demonstration plant purifies **500,000 gallons** of cleaned wastewater per day from the Sanitation Districts' Joint Water Pollution Control Plant in Carson.

Water flowing through the demonstration plant is put through a rigorous purification process to ensure it is safe for potable use. The purification process, which combines innovative and proven water treatment technologies, is tested and validated at the demonstration plant. Results from data collected are used to gain regulatory acceptance of the purification process and provides valuable information for the design needs of a full-scale purification plant.



### Preparing for a Full-scale Operation

The plant provides operational data, design insights and other relevant information for the construction of a full-scale advanced water purification facility that would be one of the largest of its kind in the world. As envisioned, a full-scale facility could produce up to 150 million gallons of purified water daily, or 155,000 acre-feet each year, enough for more than 500,000 homes. The water would be delivered through over 60 miles of new pipeline to the region's groundwater basins, industrial facilities and potentially two of Metropolitan's water treatment plants.



### Ensuring the Highest Quality Water

Scientists and engineers are extensively studying this purification process to confirm that the resulting water surpasses all health and water quality requirements for reuse. State-of-the-art online instruments, along with laboratory analyses, measure hundreds of water quality parameters at several points throughout the process. This ensures each treatment step is performing as expected and that the resulting water is purified and safe for future groundwater replenishment and consumption.

Once approved by regulators, the process could be used in water reuse projects throughout California, increasing efficiency and reducing costs.



### Using the Latest Innovation

Research on the latest water reuse topics and developments is conducted at the demonstration plant. The plant is built with the flexibility to accommodate a variety of processes and operational conditions to produce data that could further advance water reuse. The site also includes a Learning Center, which invites the public, students and technical experts to visit and learn more about this cutting-edge research.

**PUREWATER**  
SOUTHERN CALIFORNIA

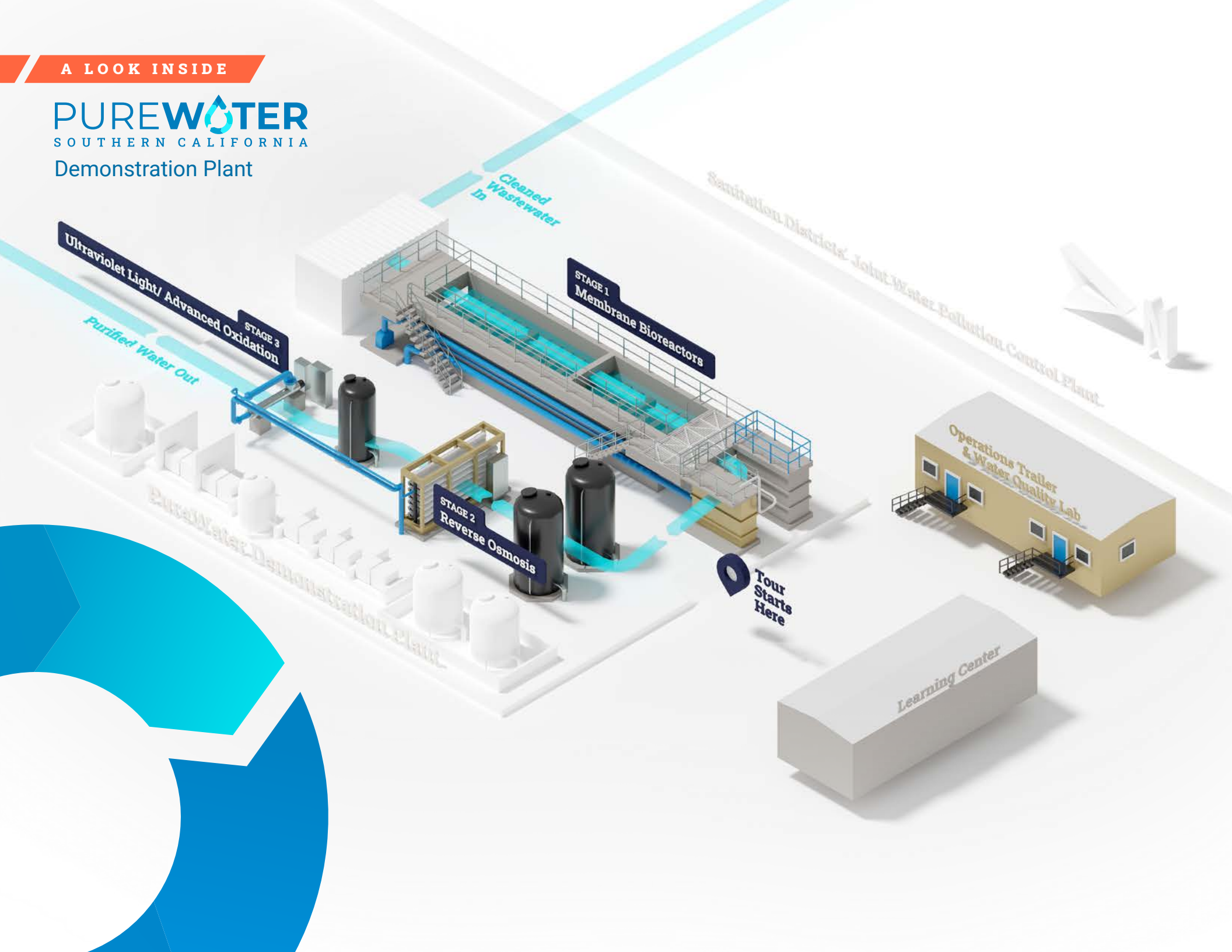
OUR WATER | OUR FUTURE



A LOOK INSIDE

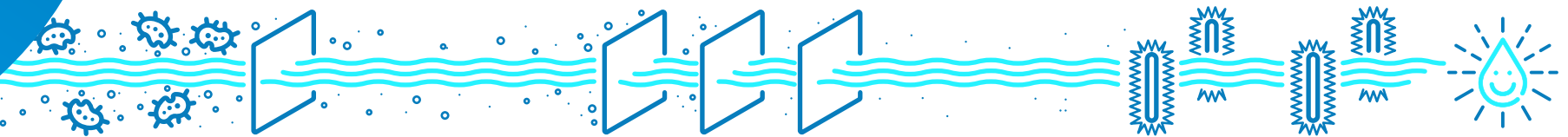
# PUREWATER

SOUTHERN CALIFORNIA  
Demonstration Plant



## Three-Stage Purification Process

The innovative three-stage purification process removes contaminants such as pharmaceuticals, pesticides, viruses, and bacteria leaving clean and purified water. The water is extensively tested and monitored throughout the process onsite and at Metropolitan's Water Quality Lab in La Verne. Since this is a test facility, the water processed through this plant is not reused.



### STAGE 1

#### Membrane Bioreactors

Membrane bioreactors use biological processes and membrane technology to clean water.

Air is added to biological process tanks to create an environment where helpful microorganisms thrive. The microorganisms remove organic material and nitrogen compounds, such as ammonia and nitrate.

The water flows into membrane tanks where thousands of straw-shaped membranes with tiny pores filter and remove microscopic materials, including microorganisms and other particles. Many are smaller than  $\frac{1}{100}$  of a grain of sand.

### STAGE 2

#### Reverse Osmosis

Reverse osmosis is often considered the core water purification process and eliminates more than 99% of all impurities. Water leaving the MBRs is pressurized with a series of pumps and applied to tightly wound membranes, which selectively allow water molecules through the membranes' pores, while blocking the passage of microscopic materials, such as bacteria, pharmaceuticals and salts.

Reverse osmosis is widely used to purify water, most commonly to remove salt in seawater desalination projects. It is also used in many bottled water processes and groundwater replenishment projects.

### STAGE 3

#### Ultraviolet Light/ Advanced Oxidation

Ultraviolet light is a powerful disinfectant used to inactivate viruses in water. When ultraviolet light is combined with a strong oxidant, either hydrogen peroxide or sodium hypochlorite, extremely reactive molecules are created. These molecules remove trace chemical compounds that may remain. The combination of the ultraviolet light and strong oxidant is referred to as the Advanced Oxidation Process. This is a final polishing step that ensures the water is safe and highly purified.

**TO LEARN MORE**

[www.mwdh2o.com/purewater](http://www.mwdh2o.com/purewater)



### DID YOU KNOW?

Membrane bioreactors are promising technology to purify water for groundwater replenishment and eventual reuse as drinking water. They are widely used for wastewater treatment and initial studies by Metropolitan and the Sanitation Districts found they may be a cost-effective first step in the purification process.



## SHARE WHAT YOU LEARNED

Help us spread the word on social media about the benefits of recycled water programs.

Use **#recycledwater** and tag **@mwdh2o**.

TO LEARN MORE  
[www.mwdh2o.com/purewater](http://www.mwdh2o.com/purewater)



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