fection and destroy any remaining contaminants in the water by breaking them down into harmless compounds.

Granular Activated Carbon

Only a fraction of the hydrogen peroxide is consumed during Advanced Oxidation, so the remaining hydrogen peroxide needs to be removed from the purified water. Granular Activated Carbon (GAC), the last step in the pilot-testing purification process, removes any remaining hydrogen peroxide from the UV-treated water. GAC can also act as a barrier for any remaining microorganisms and other contaminants.

A full-scale Advanced Water Purification Facility will include two subsequent steps:

- Adjusting the water's pH levels to match El Paso's current water quality to minimize the potential for any pipe corrosion in the distribution system
- Disinfecting the water with free chlorine to provide a final barrier for any pathogens remaining in the water and a disinfectant residual for the distribution system

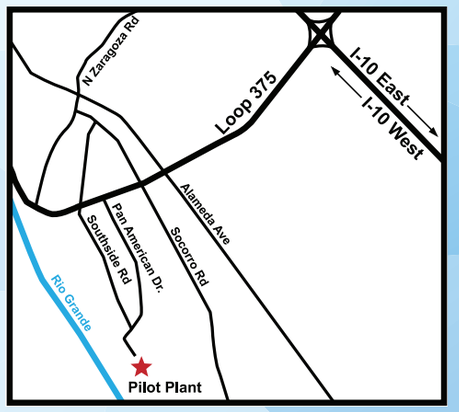
Looking Ahead

The Texas Commission on Environmental Quality (TCEQ) will review and comment on the pilot facility design, the test data, and the full-scale facility design before construction can begin. All facility equipment must perform to specifications and produce water that meets drinking water standards before the facility goes online. Once the facility is fully operating, it will produce 5-10 million gallons of purified water per day. EPWU expects to begin delivery of advanced purified water by 2019-2020.

Information

For more information about the Advanced Water Purification Pilot Facility visit epwu.org/water/purified_water.html.

To schedule a purified water presentation or a tour of the Pilot Facility, please contact Dena at (915) 594-5680 or dmedina@epwu.org.



Advanced Water Purification Pilot Facility

A Sustainable Water Future for El Paso

EL PASO WATER UTILITIES PUBLIC SERVICE BOARD

Advanced Water Purification Pilot Facility
at the
Bustamante Wastewater Treatment Plant
10001 Southside Road
El Paso, TX 79927

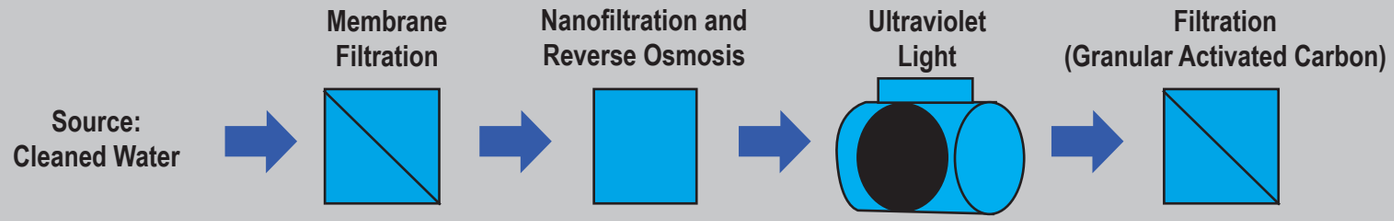
EL PASO WATER UTILITIES PUBLIC SERVICE BOARD
epwu.org

Advanced Water Purification Process

El Paso Water Utilities (EPWU) balances water resources – river water, water from underground aquifers, and cleaned water from wastewater plants – to meet El Paso's water needs. For decades, EPWU has accelerated the natural water cycle by cleaning used water at its four wastewater plants. The cleaned water – known as reclaimed water – is used for irrigation and industrial processes and aquifer recharge.

How Does it Work?

The Pilot Facility uses a rigorous purification process, also known as a multi-barrier process. Each barrier includes frequent and continuous water quality monitoring to ensure the water quality standards. Here is a look at the process that is being tested:



The Challenge

As drought conditions continue, El Paso's river water allocations remain low. EPWU pumps more water from the aquifers, but they are not replenished quickly. EPWU is considering all options for future water supplies. Advanced Water Purification is a drought-proof sustainable solution.

The Solution

The Advanced Water Purification Pilot Facility is vital to El Paso's future and a critical step towards developing a safe and reliable, drought-proof and sustainable water supply. This state-of-the-art facility, located at the Bustamante Wastewater Treatment Plant, is a pilot study to determine the feasibility of further purifying reclaimed water to supplement local drinking water supplies. The project will test several processes to ensure the purified water meets water quality, safety, and regulatory requirements.

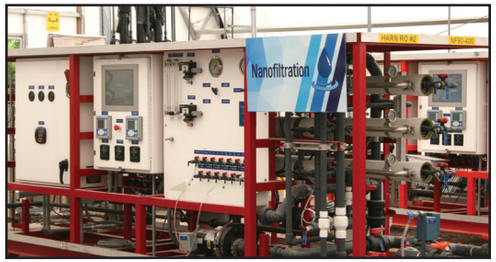
Pre-Purification

Reclaimed water from the Bustamante Wastewater Treatment Plant will go through an additional barrier before entering the pilot facility for purification. Denitrification filters will remove nitrate and nitrite from the reclaimed water to assure source water quality and consistency. Consistent water quality is essential for nanofiltration membranes that are being tested in the purification process.

Membrane Filtration

Two types of membrane filtration are being tested – microfiltration and ultrafiltration – to determine which is most effective for a full-scale plant. In this initial filtration stage, water is pumped through tubes made of membranes. Each membrane is composed of hollow fibers, perforated with holes 1/300th the width of human hair. As the water is drawn through the tubes, solids, bacteria, protozoa, and some viruses are removed from the water. Only water, salts, and other small molecules can pass through the membrane pores.

Nanofiltration and Reverse Osmosis



In the next step, water is forced under high pressure through non-porous semi-permeable membranes that remove dissolved salts, metals, dissolved organic molecules and other materials, many of which are more than 50,000 times smaller than the smallest bacteria or virus. This is the same process used by some bottled water companies, baby food manufacturers and for kidney dialysis.

Ultraviolet Light with Advanced Oxidation

Step three of the purification process is two processes working together: Ultraviolet (UV) Light and Advanced Oxidation. Inside the vessel shown is a high intensity light that provides disinfection. Hydrogen peroxide is added and reacts with the light to form powerfully reactive molecules. These molecules provide further disin-