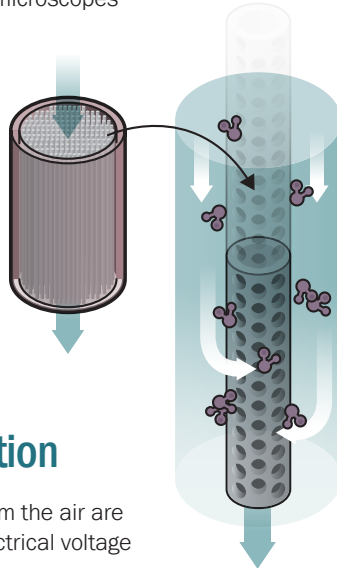


## Here are the 5 steps we are testing at the demonstration facility:

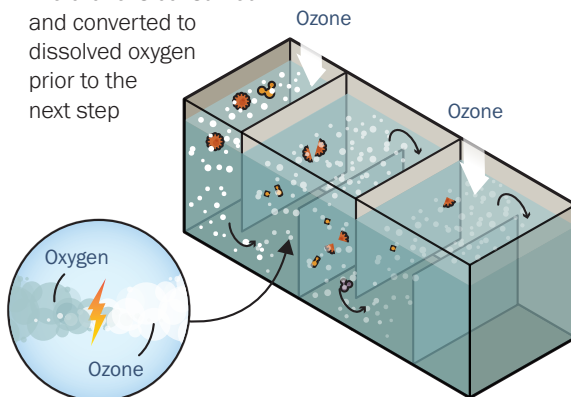
### Step 1: Membrane Filtration

- High pressure pumps pull water through the hollow fiber membranes, leaving contaminants behind
- The fibers have very fine pores that can only be seen with advanced microscopes
- Contaminants such as particles, bacteria, and protozoa are collected and filtered out while water passes through the membrane pores to the next step



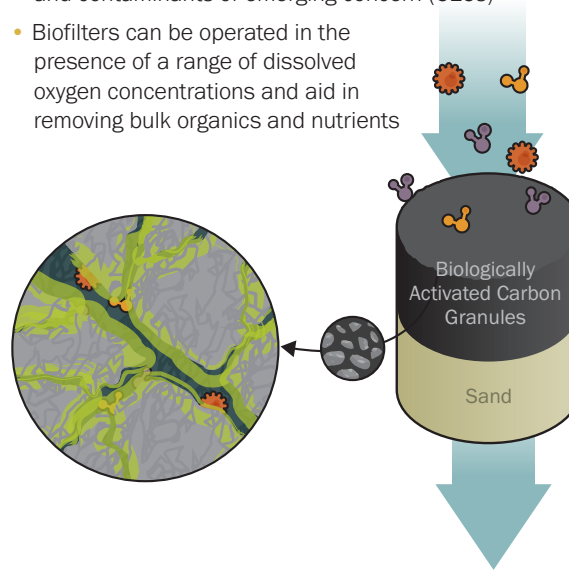
### Step 2: Ozonation

- Oxygen molecules from the air are subjected to high electrical voltage to produce ozone
- The ozone gas is infused into the water to destroy microorganisms
- The ozone is consumed and converted to dissolved oxygen prior to the next step



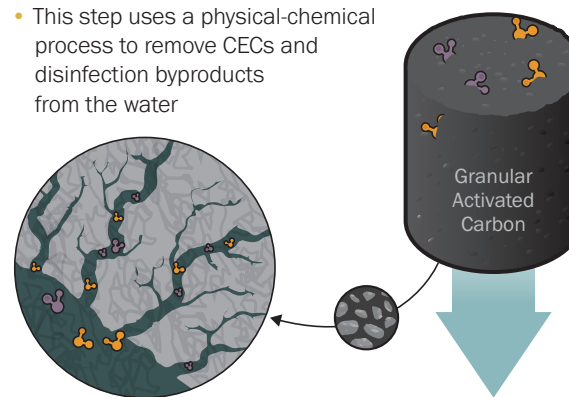
### Step 3: Biofiltration

- Water flows through a filter with millions of biologically active carbon granules covered in beneficial biology
- The living bacteria breaks down organic compounds and contaminants of emerging concern (CECs)
- Biofilters can be operated in the presence of a range of dissolved oxygen concentrations and aid in removing bulk organics and nutrients



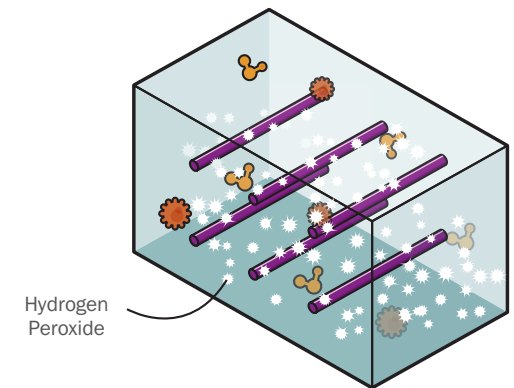
### Step 4: Granular Activated Carbon

- Water flows through a canister of carbon granules and travels around the granules
- The granules are "activated," which creates numerous small pores and lots of surface area to adsorb chemicals in the water
- This step uses a physical-chemical process to remove CECs and disinfection byproducts from the water



### Step 5: Ultraviolet Disinfection with Advanced Oxidation

- The vessels in this step are fitted with ultraviolet (UV) lamps, which produce rays similar to extremely concentrated sunlight
- A powerful disinfectant such as hydrogen peroxide is injected upstream of the UV reactor
- The hydrogen peroxide reacts with the light to form powerfully reactive molecules that destroy microconstituents in the water including pharmaceuticals and personal care products
- The UV light also destroys 99.9999 percent of protozoa, bacteria and viruses present, leaving only purified water



## The Result: Purified Water

**Safety:** Meets all federal and state drinking water standards

**Sustainability:** Provides a long-term solution for meeting our water resource needs through reuse

# Water For Our Future

Franklin is testing water purification technology for a potential full-scale project. Our goals include:



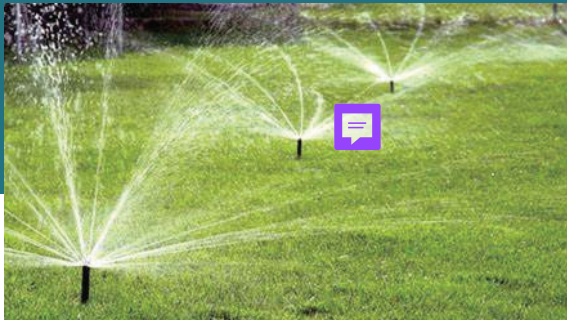
Increasing the amount of water we reclaim and reuse



Expanding recreational use and enhancing the ecological health of the Harpeth River



Supplementing water levels in our drinking water reservoir



## The Purification Process

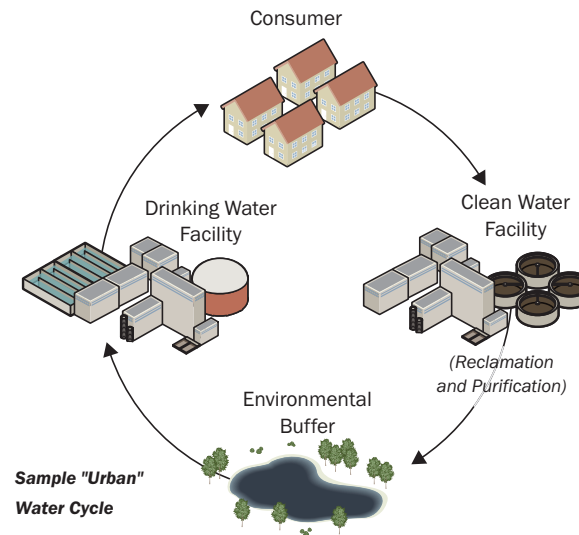
The *Franklin Water Purification Demonstration Facility* is home to a pilot study to determine the feasibility of using advanced technology to clean water so it is safe for multiple uses, including potentially supplementing the water in the Harpeth River.

Our process uses a multi-barrier approach of consecutive treatment steps which work together to produce purified water. Each barrier includes frequent and continuous water quality monitoring.

# Approach to Water Supply Development

Vast as it may seem, our world is a closed system. There is no “new” water.

In many places coast to coast, advanced technology accelerates the natural water cycle, often to address shortages in water supply.



**Franklin Water Management Department**

[franklintn.gov](http://franklintn.gov)



City of Franklin, TN



@CityOfFranklin

A Look at the  
Technology at the

# Franklin Water Purification Demonstration Facility



## Preserving Franklin's Most Vital Resources

