



THE REYNOLDS WATERHUB®: A CUSTOMIZED SOLUTION FOR SUSTAINABLE WATER MANAGEMENT



TOBACCOVILLE, NORTH CAROLINA REYNOLDS WATERHUB

APPLICATION:

- Cooling tower makeup
- Open chilled water makeup
- Irrigation

TECHNOLOGY:

UV, MBR, RO, Bio-Filter

CAPACITY:

200,000 GPD

COMMISSIONED:

2024



CONTEXT

As part of its ongoing efforts to improve its environmental impact in a water-scarce region, Reynolds American sought to reduce its reliance on potable water for factory utility processes at its Operations Center in Tobaccoville, North Carolina. This prompted the company to pursue a customized solution designed to meet its specific water conservation needs while maintaining facility efficiency.

SOLUTION: THE WATERHUB®

The WaterHub is an eco-engineered water reclamation and reuse system that can be fully customized to meet each client's unique needs and support their sustainability goals while maximizing performance.

This project is part of a groundbreaking business model that employs state-of-the-art filtration and disinfection technology. H₂O Innovation designed, installed, commissioned, and operates the facility at Reynolds.

Here is the process of the WaterHub:

1.

Intercepts 240,000 GPD wastewater from the sewer of the Reynolds Operations Center

2.

Treats it to North Carolina reclaimed water standards in an on-site decentralized facility, turning it into clean, high-quality water

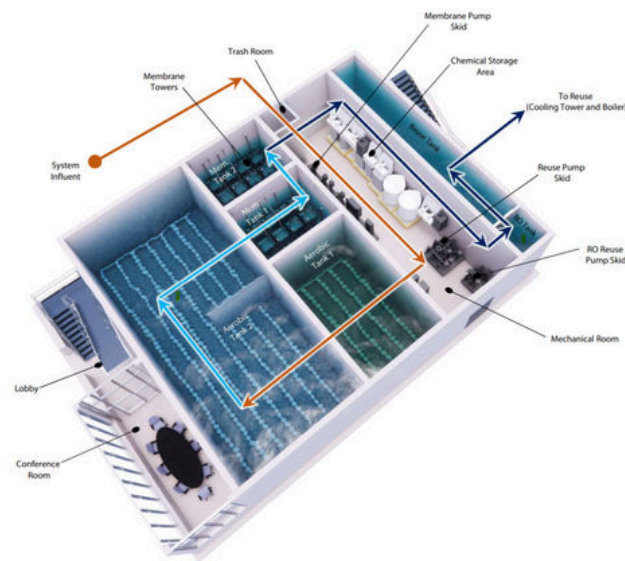
3.

Reintroduces treated effluent to facilities for utility purposes, namely for cooling tower and boiler feed makeup.

This 200,000-GPD system is esthetically pleasing with a design that complements the location. With its 5,000 ft² footprint, it is exceptionally compact. Furthermore, the WaterHub allows the facility to reduce costs and environmental impacts through a reduction in water demand and reduced wastewater generation and transportation.

THE SYSTEM

The system includes a lift station that redirects existing sanitary sewer flows to the facility, where the water is treated using a two-train membrane bioreactor (MBR) equipped with silicon carbide ceramic membranes (12 towers per train), followed by dual-stage ultraviolet (UV) and chlorine disinfection. A portion of the treated water is further processed by a two-stage reverse osmosis (RO) system consisting of two trains. The RO permeate is used as boiler feed makeup, while a blend of RO permeate and MBR effluent is stored in a reuse tank for use in the site's chillers and cooling towers. A planted bio-filter ensures odor control.



The surrounding site serves as a demonstration space for sustainable infrastructure. It features a 1,300-square-foot native garden with over 400 plants representing 24 different species to promote local biodiversity. The location also includes several sustainable technology installations. One highlight of the project is that the garden is irrigated using reclaimed water treated directly by the facility, which illustrates the circular nature of water reuse.



RESULTS

The WaterHub is expected to enable Reynolds to reduce water withdrawal by approximately 40% and decrease wastewater discharge by more than 90%. Reynolds should be able to reclaim 60 million gallons of water annually, which is equivalent to the annual water usage of 550 average U.S. homes. This underscores the project's significant environmental and sustainability impact.

Other project benefits include:

- Notable conservation of community water resources
- Significant reduction in wastewater and potable water use
- Enhancement of water infrastructure lifespan
- Reliable safeguard against drought and water supply shortages



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