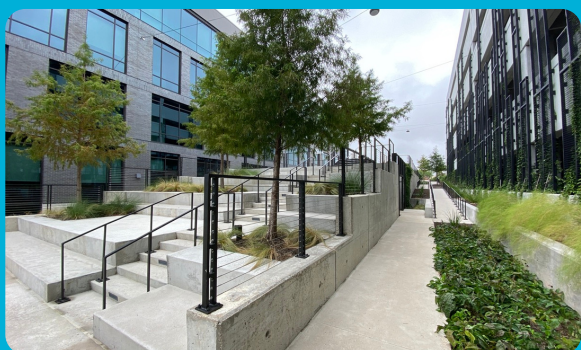




WATERHUB® at PDC

Since 2020, the Austin Planning and Development Center (PDC) is serving as the new home for more than 400 City of Austin employees. Located adjacent to the Austin Community College – Highland Campus, it is housing various municipal departments, including: Planning and Zoning, Development Services, Austin Fire, and Austin Water.



Location

Austin, Texas

Client

City of Austin

Footprint

800 ft²

Project Type

Building-Scale
Wastewater
Reclamation & Reuse
for Toilet Flushing

Hydraulic capacity

5,000 Gallons per day

Commercial Operation

Summer 2020

Development Team

Tech. Integrator:

Sustainable Water Equip.

Supply: H2O Innovation

Design Engineer: Aqua-

Nova Engineering

Builder: Ryan Companies

Operator: Austin Water

Architect: Gensler

MEP: EEA Consulting

Engineers

ABOUT H₂O INNOVATION

H₂O Innovation is a pioneering designer and manufacturer of membrane systems, specializing in water, wastewater, and water reuse treatment for municipal and industrial customers.

At 264,000 ft², the new office complex is created to accommodate a large volume of daily visitors. The design is intended to improve guest and worker experience through inviting outdoor spaces, increased natural light, rooftop decks, and attractive public spaces. This includes a demonstration wastewater treatment and reuse system – a hallmark of Austin Water's effort to promote sustainable water management in commercial building across the City.

The WaterHub treatment system, by H₂O Innovation, is intercepting building wastewater and treat it for interior reuse as toilet flushing. In a separate process, rooftop rainwater is captured and reused for irrigation around the building. Excess rooftop rainwater is diverted to the WaterHub to supplement water reuse for toilet flushing. The WaterHub decreases building potable water use by approximately 60%.

TECHNOLOGY & DESIGN

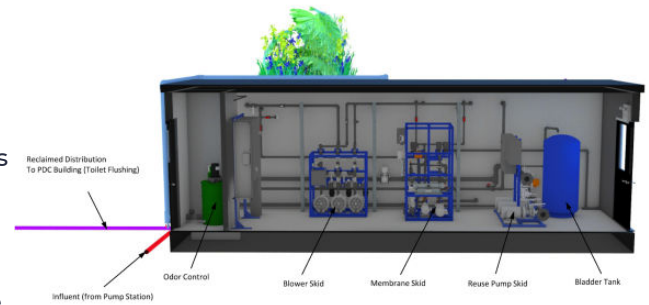
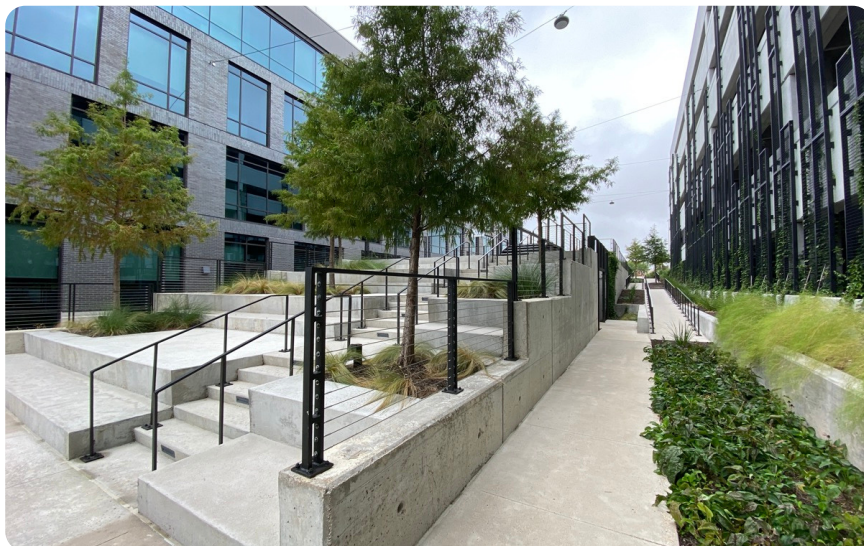
The WaterHub at PDC is a building-scale (5,000 GPD) wastewater treatment and reuse system. The eco-engineered package plant features a hydroponic-membrane bioreactor (MBR) process design, with a pre-anoxic membrane aerated bioreactor (MABR) for a reduced energy use. Before reuse, MBR permeate is disinfected by both ultraviolet (UV) and chlorine. Reclaimed water is stored in a 4,800-gallon storage tank before it is distributed for reuse. The system meets stringent Texas Type 1 Reclaimed Water Standards.

The prefabricated system is constructed of stainless steel and shipped to site ready for installation. Treatment reactors and a mechanical room are integrated directly beneath a pedestrian walkway. With a complete odor control system, visitors will walk directly above wastewater reactors and adjacent to hydroponic landscaping serving as part of the treatment process.

Hydroponic Treatment Integrated into Pedestrian Walkway



PDC Building Exterior



PROJECT OVERVIEW

TREATMENT APPROACH

- Fixed-Film, Hydroponic System
- Membrane Aeration
- Submerged Membrane Filtration

PROCESS DESIGN

- <2mm Passive Primary Screen
- Pre-Anoxic and MABR Stages
- Aerobic Hydroponic Reactor
- Membrane Bioreactor (MBR)
 - Single Train
 - Toray Hollow Fiber
 - 1,940 ft² Membrane Area
- Disinfection: (UV & Chlorine)
- 4,800 Gal. Reuse Storage Tank

RAINWATER

- Excess Rooftop Rainwater captured and treated to supplement toilet flushing

EFFLUENT DESIGN

- TCEQ Type 1 Reclaimed Water
- Biological Oxygen Demand (BOD):
 - < 5 mg/L
- Total Suspended Solids (TSS):
 - < 5 mg/L
- Fecal Coliform:
 - 20 CFU/100mL
- Enterococci:
 - 4 CFU/100mL
- Turbidity:
 - < 3 NTU