

IN 1989, the Haworth Water Treatment Plant became one of the nation's first to use ozone technology as part of the water treatment process. Today, United Water is upgrading the facility to make it the largest water treatment plant in the U.S. to use high-rate dissolved air flotation (DAF) for sedimentation clarification. State-of-the-art DAF technology facilitates improved water quality, enhanced service reliability, reduced chemical and energy usage, and the protection of sensitive ecosystems.



## Fun Technical Facts

- Each day, United Water pumps up to 188 million gallons of water through 2,000 miles of water mains, enough to stretch the length of New Jersey more than 13 times.
- The wire used in the Haworth Water Treatment Plant could stretch the length of 7,920 football fields or 450 miles.
- The plant's new water tanks can hold 6 million gallons of water—enough to fill more than 300 average-sized swimming pools.
- New and modified plant buildings cover 59,000 square feet, which is enough space to hold 25 average American homes.
- The plant's process piping stretches for 52,800 feet, the distance from the center of Haworth to Palisades Park.
- The Haworth Water Treatment Plant upgrade used 18,000 cubic yards of concrete—enough to pave 45 miles of sidewalks.

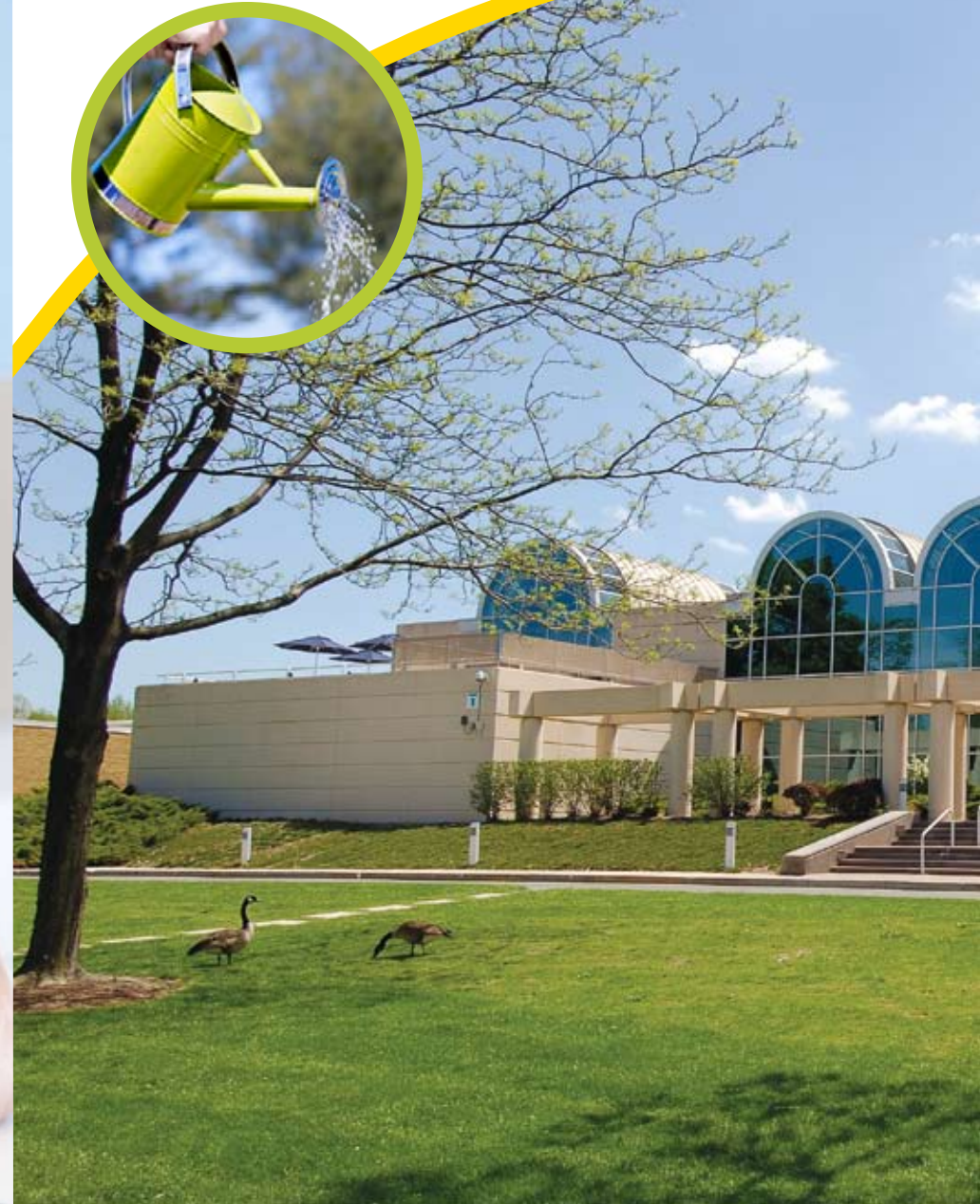
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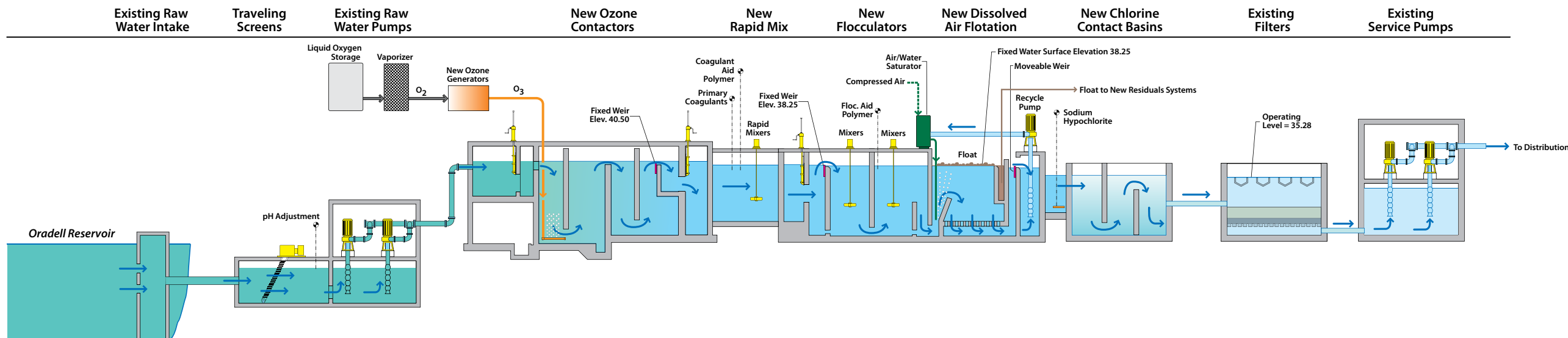
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## Haworth Water Treatment Plant THE FUTURE IS CRYSTAL CLEAR



SINCE 1869, United Water has used the creative application of new technologies to ensure the reliable delivery of drinking water to northern New Jersey. The \$100 million Haworth Water Treatment Plant upgrade—the largest and most extensive upgrade in United Water's history—continues this tradition of innovation to supply clean, safe water to more than 800,000 people.





### Delivery Approach

The facility upgrade was implemented through design-build delivery for efficient and expedited project completion. By performing multiple project components simultaneously, the team saved time and money, minimizing customer rate increases and meeting regulatory compliance milestone dates.

The project was completed in an unprecedented short period of time, due to a committed partnership between United Water, CDM, the New Jersey Department of Environmental Protection, and the Haworth Water Treatment Plant's onsite operations and project management staff.

**i** Major process treatment units of the Haworth Water Treatment Plant upgrade were completed in only 21 months—roughly half the time it would take with a conventional design and construction approach.

### A Good Neighbor

United Water worked hard to maintain quality of life for the community during all phases of the project. Throughout planning and implementation of the Haworth Water Treatment Plant upgrade, considerations were taken to minimize impacts to neighbors, including modifications to traffic routes and visual buffers in construction areas.

**i** The water treatment plant upgrade employed more than 400 carpenters, laborers, ironworkers, pipe fitters, electricians, and other construction tradespeople.

### Environmental Protection

United Water is committed to preserving the environment and protecting species living in the area. Design and construction of the new facility embraced all environmental regulations. In addition, routine meetings were conducted to ensure that project development was consistent with the company's commitment to environmental stewardship.

The plant improvements also incorporated sustainable elements, including:

- Ozone generation from liquid oxygen was selected for pre-oxidation, eliminating the need for storage and handling of dangerous chemicals onsite.
- On average, DAF achieves 90 percent removal of particles and algae from source water with one-eighth of the process tank volume needed for conventional systems.
- Materials recycling eliminated waste—power plant fly ash was used in the building's concrete; recycled steel is used for reinforcement; and energy-efficient lighting is used throughout the new facility.

**i** By using DAF instead of a traditional sedimentation clarification process, United Water conserved 12 acres of woodland.

