



CITY OF ORLANDO

City Council

- Bill Frederick – Mayor
- Glenda Hood – District 1
- Mary Johnson – District 2
- Jeff Clark – District 3
- Pat Schwartz – District 4
- Nap Ford – District 5
- Mable Butler – District 6

Chief Administrative Officer
L. A. Hester

Director of Public Works
Robert Haven, P.E.

Director of Project Management
Keith Rice, P.E.

Consulting Engineers
Boyle Engineering Corporation

Total Project Cost:
EPA Grant Funding:

ORANGE COUNTY

Board of County Commissioners

- Lou Treadway – Chairman, District 5
- Vera Carter – District 1
- Tom Dorman – District 2
- Hal Marston – District 3
- Linda Chapin – District 4

County Administrator
Tom Sewell

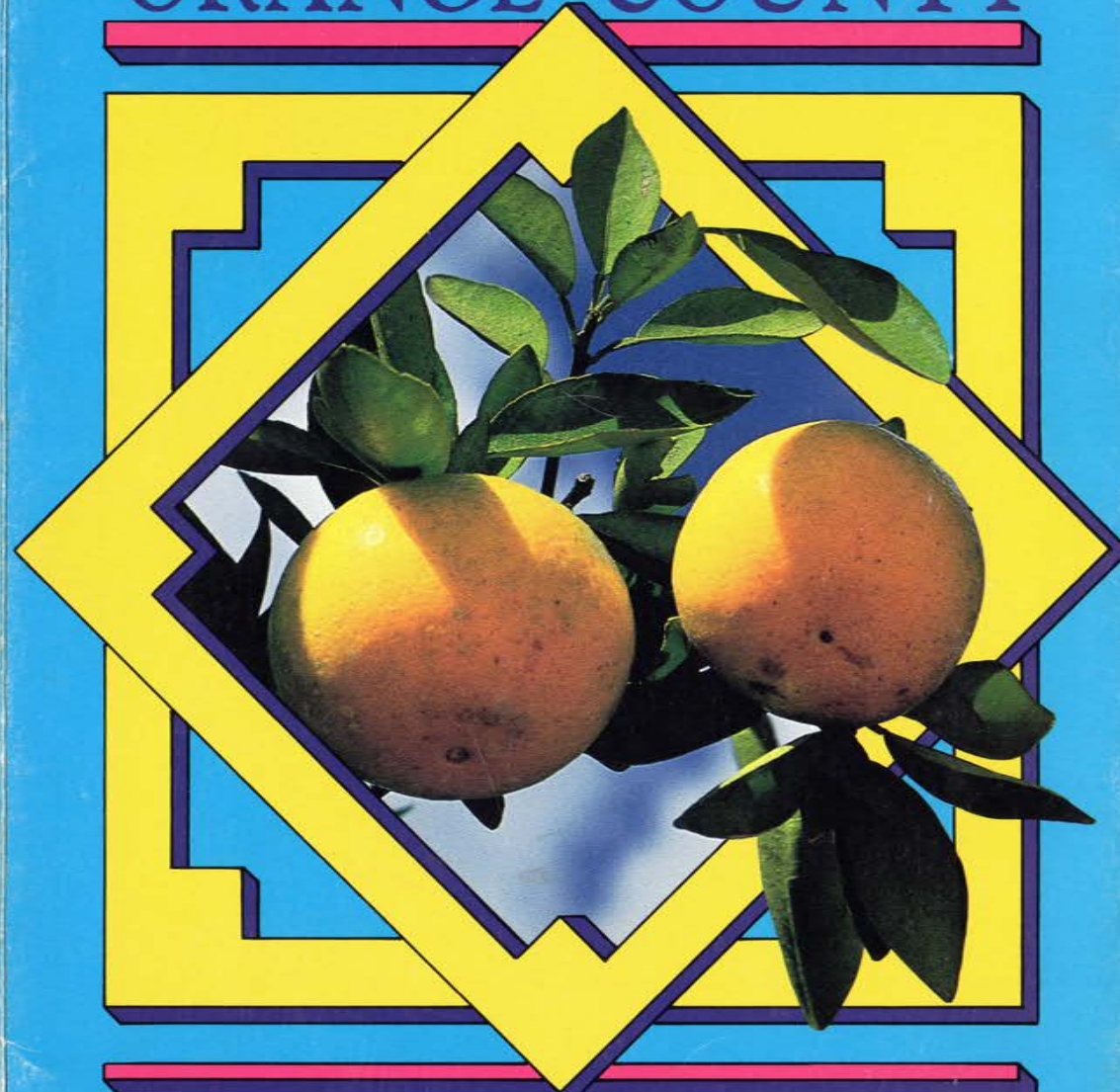
Director of Public Utilities
Alan B. Ispass, P.E.

Chief Engineer
Gabe Delneky, P.E.

Consulting Engineers
Camp Dresser & McKee Inc.

\$172,455,013
\$101,354,090

CITY OF ORLANDO AND ORANGE COUNTY

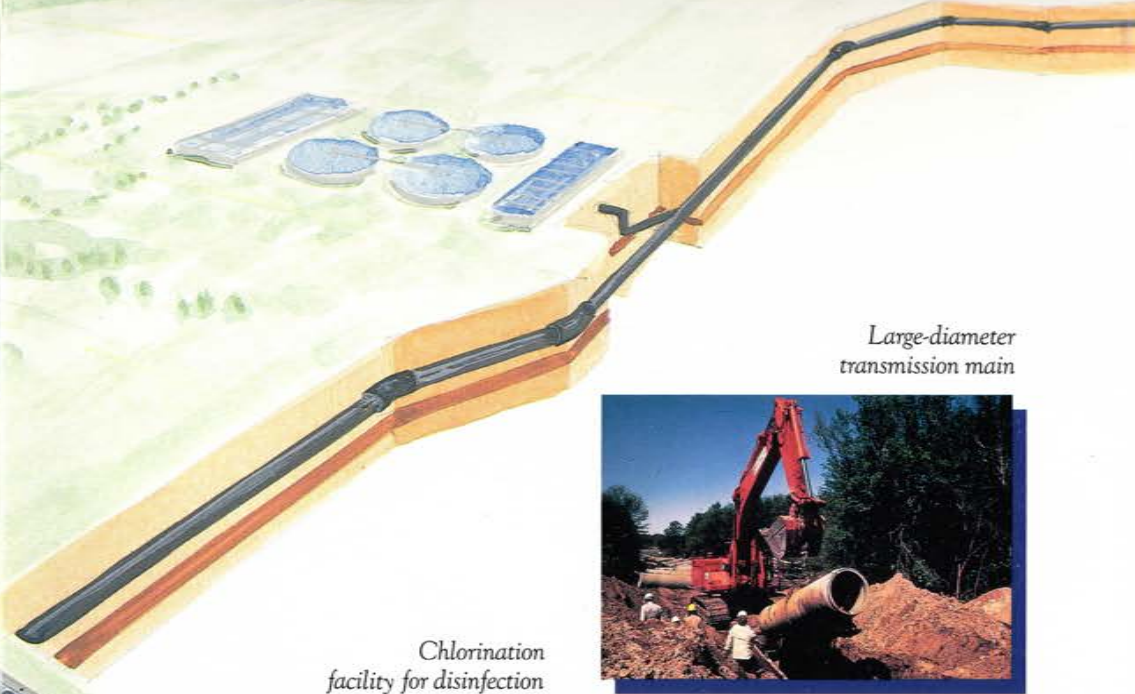
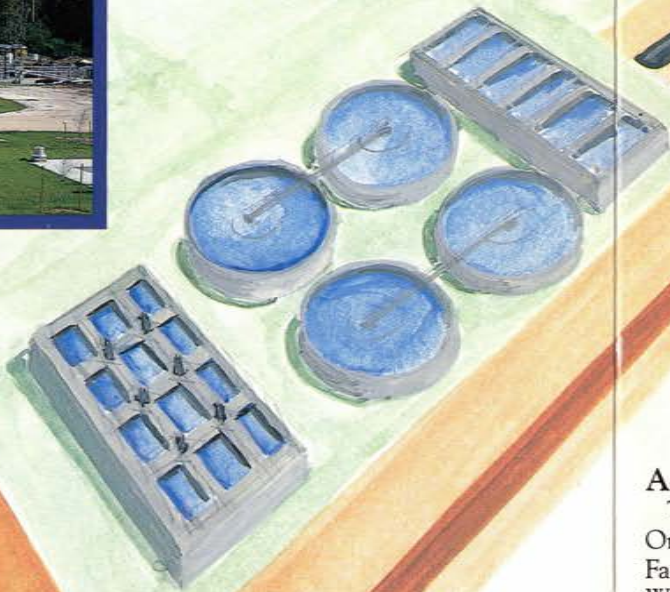


A • COOPERATIVE • WATER
REUSE • PROGRAM

Carbon and sand filter beds



Filtration facility for virus removal



Large-diameter transmission main



Chlorination facility for disinfection



Advanced Treatment

The project includes two treatment facilities: Orlando's Water Conserv II Water Reclamation Facility and Orange County's Sand Lake Road Wastewater Treatment Facility, which are being upgraded and expanded to 21 mgd and 23 mgd, respectively. Both treatment facilities are designed to produce virus-free reclaimed water suitable for citrus irrigation and safe for human contact.

Advanced secondary treatment to reduce turbidity and remove viruses is achieved through dual-media (carbon and sand) filtration and chlorination. Because of the strict treatment requirements, extensive pilot testing of the filtration and disinfection processes was performed. Both facilities were designed to meet EPA Class I Reliability Requirements to ensure a clear, odorless, and virus-free product.

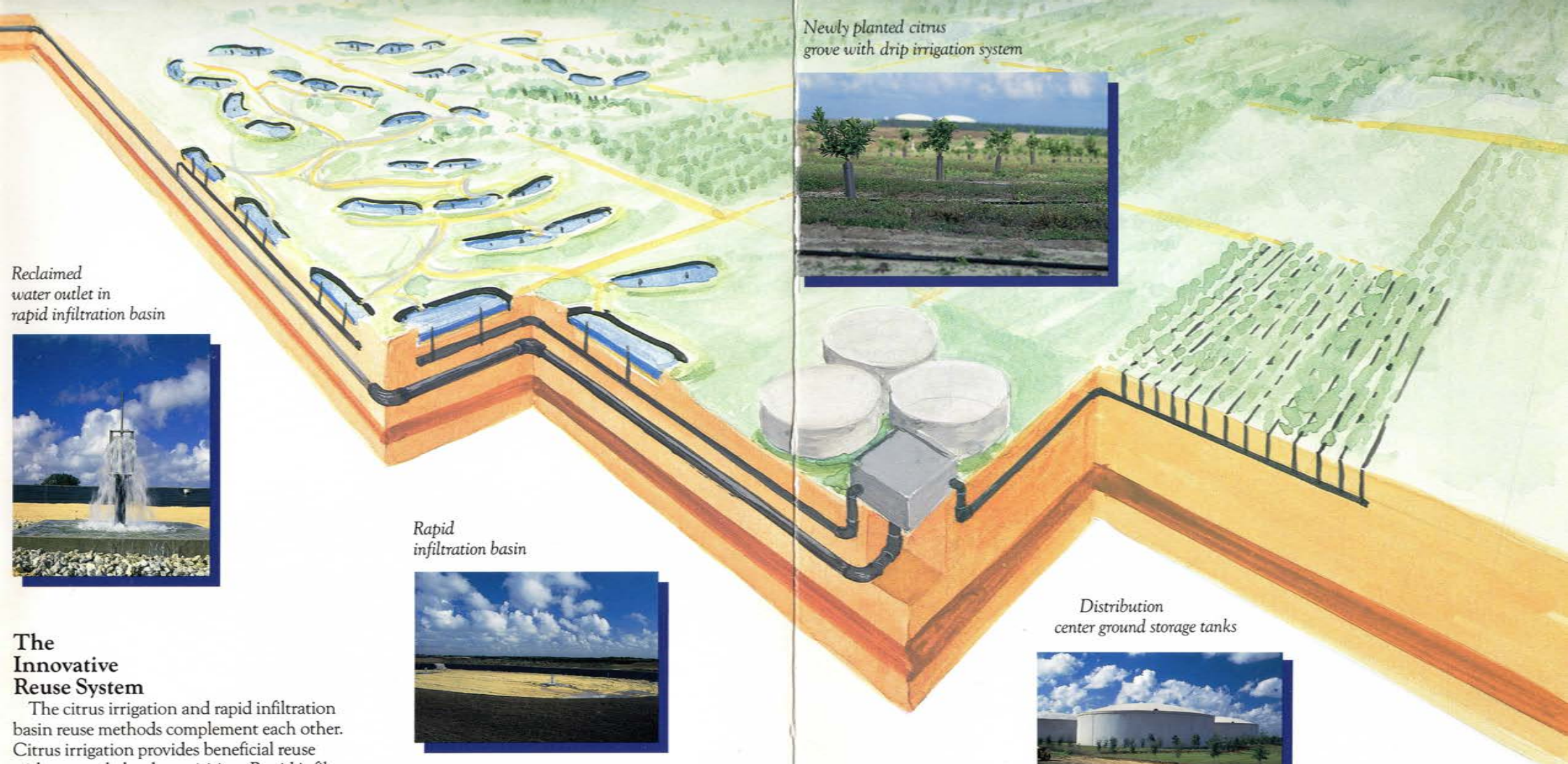
Transmission

After treatment, transmission facilities transport the reclaimed water from the metropolitan area to the center of the agricultural community located about 15 miles to the west. Large effluent pump stations at each treatment plant pump the reclaimed water to a common transmission force main. The transmission main, which varies from 42 to 54 inches in diameter, extends 21 miles to deliver the combined flows to the distribution center.

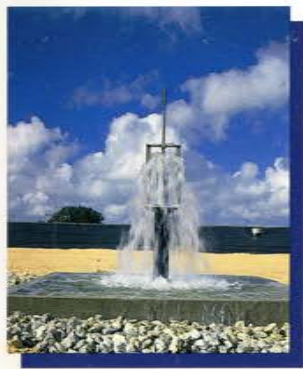
Distribution

The distribution center includes four 5 million-gallon ground storage tanks, a 100 mgd pumping station, a maintenance building, and an operations building with computer facilities for monitoring and operating the system.

From the distribution center, reclaimed water is pumped through the distribution system to citrus groves for irrigation and/or to rapid infiltration basins for recharge of the aquifer. The distribution system includes over 30 miles of pipeline, 23 supplemental wells, and over 20 computer-controlled, metered connections. Under 20-year contracts, the water is delivered to the participating growers' property lines for use in their irrigation systems.



Reclaimed water outlet in rapid infiltration basin



Rapid infiltration basin



Newly planted citrus grove with drip irrigation system



Distribution center ground storage tanks



The Innovative Reuse System

The citrus irrigation and rapid infiltration basin reuse methods complement each other. Citrus irrigation provides beneficial reuse without costly land acquisition. Rapid infiltration basins provide reuse capacity when irrigation demand is low. Both systems provide the added benefit of recharging the Floridan aquifer.

The citrus irrigation system will initially provide reclaimed water to about 8,000 acres and will ultimately serve between 12,000 and 15,000 acres. A key environmental benefit of the system is the conservation of our freshwater supply. Without reclaimed water, these thousands of acres would continue to be irrigated with groundwater from wells on each grower's property.

The project also aids the agricultural community, which has recently suffered from diminished rainfall, damaging freezes, and more stringent groundwater use restrictions. Benefits to the growers include a dependable water supply

for irrigation and freeze protection, potential reduced fertilization due to nutrients in the reclaimed water, and reduced energy costs because the water is delivered under pressure.

The rapid infiltration basin system consists of 60 individual basins, each about 300 to 400 feet long and 150 feet wide. The reclaimed water percolates rapidly through the underlying sands, which range in depth from 30 to 200 feet. This sand layer provides additional filtration before the reclaimed water reaches the aquifer to replenish the freshwater supply.

The rapid infiltration basins are distributed over four different sites covering about 1,600 acres of freeze-damaged citrus groves and open land in an area of groundwater recharge.

Instead of the traditional rectangular shape, the basins are curved to maintain the existing landform and natural character of the gently rolling landscape.

An extensive reforestation program was designed to return the area to its pre-citrus, forest-like state. Between 500,000 and 600,000 seedlings and shrubs will be planted, including long-leaf pines, turkey oaks, pawpaws, gopher apples, and other native species. The reforested land will attract wildlife once common to the area, and the habitat will be open to the public for birdwatching and other naturalist activities.

The City of Orlando/Orange County water reuse project may become a benchmark for other communities faced with a water reclamation challenge. The program demonstrates how cooperative efforts between the urban and agricultural communities can result in water reuse projects that effectively satisfy the water-related needs of all.

An aerial photograph of a large-scale water reclamation facility. The landscape is dominated by a grid of numerous circular and oval-shaped basins, each containing a light-colored, sandy or silty material. These basins are interconnected by a network of narrow, light-colored channels or roads. The surrounding area is a mix of green fields, some with rows of crops, and patches of trees. In the upper left, there are several large, white, cylindrical storage tanks. The overall scene depicts a complex engineering project for water treatment and reuse in a rural or agricultural setting.

Faced with the need to expand wastewater treatment services and a state requirement to eliminate discharge of treated effluent to surface waters, Orange County and the City of Orlando jointly developed an innovative water reclamation program.

The Water Conserv II/Southwest Orange County Water Reclamation Project involves the use of highly treated wastewater, called reclaimed water, for citrus irrigation and groundwater recharge through rapid infiltration basins. It is one of the largest water reuse projects in the country, and the first reuse program permitted in Florida that involves irrigation of crops intended for human consumption. Initially, the project will provide approximately 25 million gallons per day (mgd) of reclaimed water and will ultimately deliver 50 mgd.