

A Long-Range Plan:



Melbourne's Drinking Water Supply

The long-term water supply of South Brevard County must be dependable, flexible, and affordable. With those goals in mind, we continue to improve and expand the Melbourne water supply.

This publication outlines how Melbourne is meeting these goals.

Melbourne's System

Over the past seven years, tremendous improvements have been made to Melbourne's water treatment facilities.

A new \$23 million surface water treatment plant is now online, with a dedication being held at the plant on Feb. 25, 2002. This plant, which draws water from Lake Washington, replaces a 42 year-old facility.

The successful operation of Melbourne's reverse osmosis (RO) water treatment plant also provides evidence of the progress being made. By using water from wells, which tap into an underground supply, this facility reduces the community's reliance on Lake Washington.

The new surface water plant offers great promise for the future, and plans are proceeding for the

doubling of production capacity from wells. These are steps to ensure the water supply will meet our needs into the next century.



Melbourne is responsible for providing water to some 150,000 customers. On a typical day, demand for water is about 15 million gallons.

Of course, we must also be ready to respond to a peak-day demand that could exceed 20 million gallons. This is accomplished both through production capacity and a storage capacity of 16 million gallons.

Because the population of our area continues to expand, it is vital

to maintain an adequate reserve capacity. Melbourne's water supply plan must allow for reserves to be assigned to developments which are approved by local government but not yet built. State law requires this assignment of reserves.

Melbourne also recognizes the importance of a supply plan that includes improvements to the quality of delivered water. The new surface water plant uses the innovative Actiflo treatment process along with state-of-the-art instrumentation and controls technology. The new plant allows treatment processes to be adjusted much more quickly to changes in the lake. In addition, the development of wellfields has allowed dramatic improvements in quality without

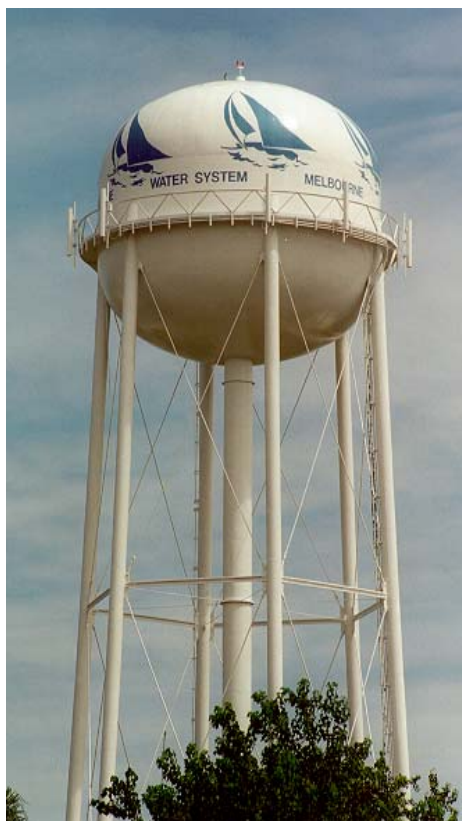
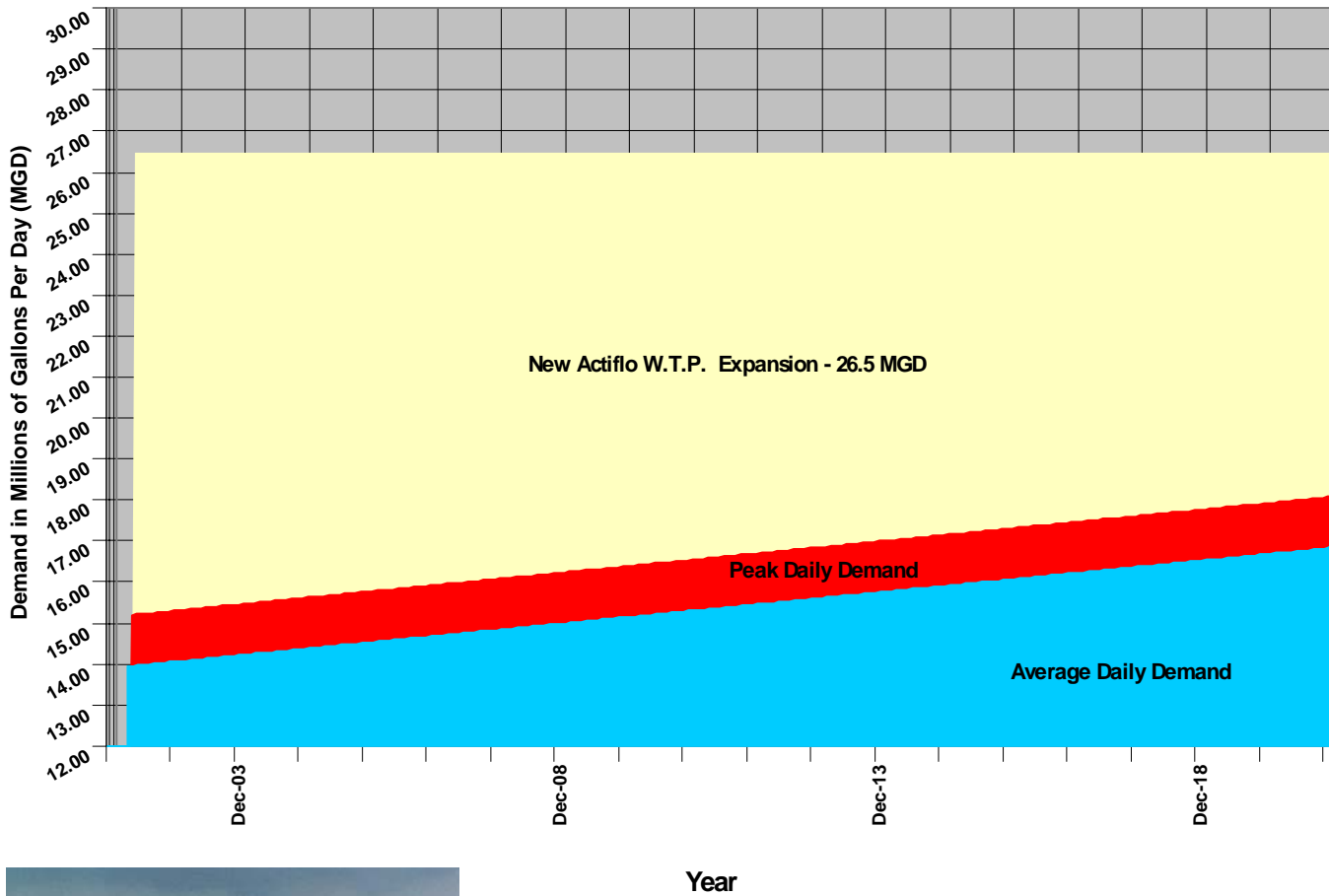
greatly escalating production costs.

The wells have also allowed us to diversify the water supply, which provides the flexibility to respond to unforeseen circumstances. At the same time, water quality in Lake Washington, the traditional water supply, has been improved by a federal and state restoration project in the Upper St. Johns River Basin.

Planning for the Future

Melbourne's water supply is

City of Melbourne Water Service Area Water Demand Projections



Water storage structures throughout Melbourne's distribution system stand ready to meet consumers' demands.



View of Lake Washington, Melbourne's surface water source.

designed to ensure ample water well beyond the year 2020 for the communities which we serve. Construction of the second phase of the surface water treatment plant improvement project should begin in 2003. Ozonation will be added as part of this \$12.5 million project, which will replace some chlorination steps and provide greater control of taste and odor.

Construction of a second phase of the reverse osmosis plant is anticipated in the future as well, which will provide capacity to accommodate a 100 percent build-out of the current service area.

Key components of the long-term water supply plan include:

- ◆ The new Surface Water Treatment Plant, which began production in February 2002, will continue to draw water from Lake Washington and will operate with a peak capacity of 20 million gallons per day (MGD). The capacity of this plant can be expanded.

- ◆ The Joe Mullins Reverse Osmosis Water Treatment Plant, which began production in 1995, will continue to operate at a peak capacity of 6.5 MGD. Water from the RO plant will be mixed with treated water from the surface water plant to meet daily demands.

- ◆ An expansion of peak capacity at the RO plant to 13 MGD can be accomplished. Melbourne is exploring alternative disposal options for the by-product as a necessary step toward expanding the RO plant.

Preparing for an Expansion

By-product from the current RO plant flows into the Eau Gallie River just west of where it meets the Indian River Lagoon.

Monitoring is ongoing to determine that the disposal process causes no environmental damage. Extensive technical studies predicted that no damage would occur, and none has.

The federal Environmental

Protection Agency and the Florida Department of Environmental Protection are now considering Melbourne's applications for permits to allow the by-product to be discharged into an injection well at the D.B. Lee Wastewater Treatment Facility.

The review process by these agencies is quite rigorous. Melbourne must show that potential impacts on the aquifer have been



The operations building of the new surface water treatment plant is shown to the left. Water treated at this plant is obtained from Lake Washington. The green pipe is for raw water, while the blue pipe is for finished water.

To the right, water flows after Actiflo treatment, ready for filtration.



Shown to the left are the membrane trains used to treat water obtained from the Floridan Aquifer wells. The peak capacity of the RO plant is 6.5 MGD. Work is in progress to expand the plant capacity.

thoroughly investigated. A detailed program of monitoring must also be proposed and approved.

Melbourne anticipates approval of permits to allow for an expanded RO capacity.

In planning water production capacity, Melbourne must anticipate “worst case” peak demand, shown on the chart on page two.

The Water Supply System

Melbourne has operated a treatment plant at Lake Washington since 1959. An experienced and accredited staff is responsible for 24-hour plant and laboratory operations.

With the recent start-up of the new surface water plant, operators underwent extensive training on the new high-tech computerized operating systems.

With the new plant, delivered water continues to meet or exceed the new, even more stringent, state and federal drinking water standards.

As with the surface water plant, the start-up of the RO plant in 1995 came after additional, specialized training for plant operators and support staff.

Finished water from the two plants enters a distribution system that includes 850 miles of pipeline.

Work to improve the distribution system is ongoing, as outlined in the City’s water distribution master plan.

Protecting Water Resources

Lake Washington is becoming more reliable as a water supply. More water is available and the quality is improving. The St. Johns River Water Management District predicted these changes as a consequence of a project started in 1988 to restore portions of the St. Johns River headwaters. The 10-year project included restoration of marshlands and increased the natural filtering and water-control processes of the river system. The District also expects water quality

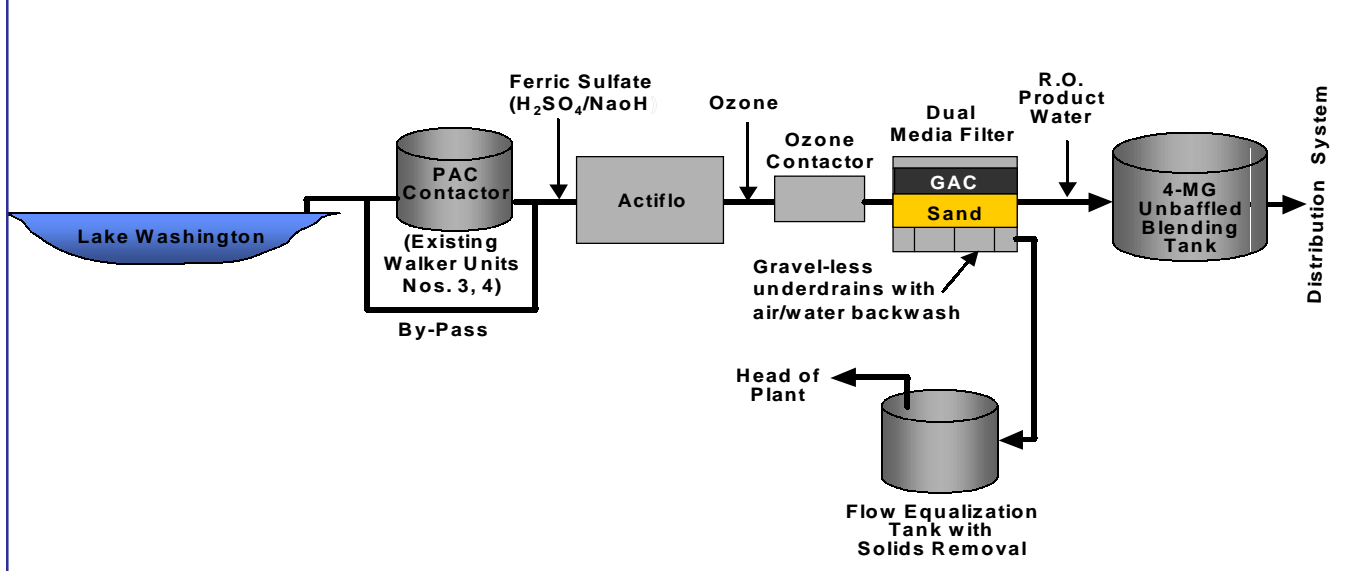
Melbourne’s water distribution system serves about 150,000 people, including the City’s 73,000 residents as well as these communities:

- ◆ Indialantic
- ◆ Indian Harbour Beach
- ◆ Melbourne Beach
- ◆ Melbourne Village
- ◆ Palm Shores
- ◆ Satellite Beach
- ◆ West Melbourne
- ◆ Nearby County areas

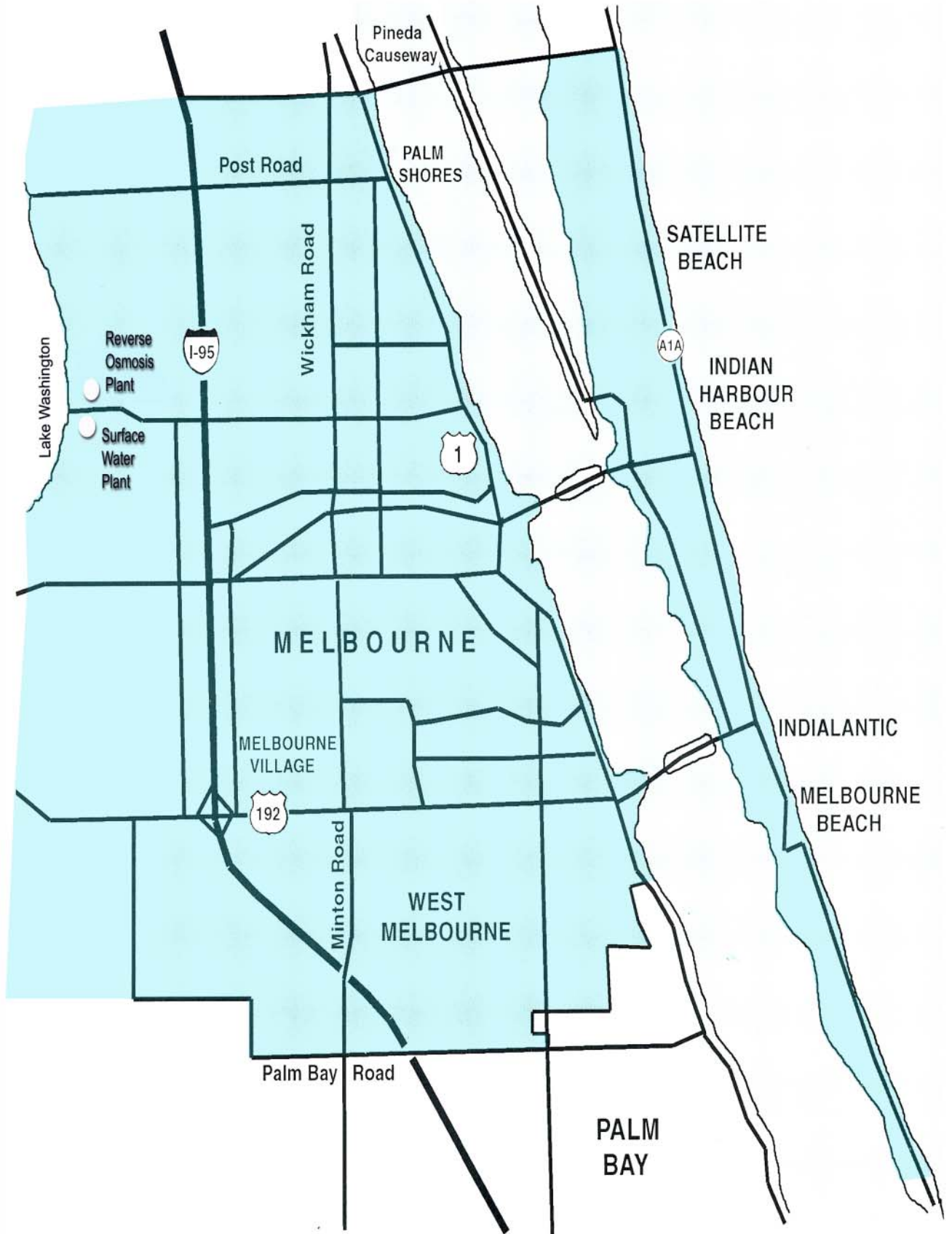
to be improved by the recent replacement of the weir at the north end of the lake.

The challenges that come with management of the lake as a public water supply will not vanish. These include efforts to combat heavy growths of the aquatic weed hydrilla. Melbourne has joined with the regional water management district in a hydrilla control program.

Phase I & II — Surface Water Treatment Plant Improvements



Melbourne Water Service Area





Lab Technician Shaniese Alexander takes regular samples from various hydrants throughout the distributions system to bring to the lab for testing.



Lab Supervisor Yvonne Gonsalves, along with her staff, perform thousands of tests on the City's water every year and prepare federal and state reports.

Melbourne is also prepared to respond to any threat from pollutants entering the lake as a result of accidents or other circumstances. Obviously, diversifying the water supply reduces this threat.

As an additional safeguard, Melbourne has entered into emergency supply agreements with both Palm Bay and Cocoa.

The Melbourne distribution system can receive water from Cocoa, or send water into the system. Interconnections also exist with Palm Bay.

Existing interconnections and piping capacities into Melbourne's system are listed below, reported in millions of gallons per day:

Palm Bay

- ◆ Florida Avenue
1.0 MGD
- ◆ Babcock Street
1.0 MGD

Cocoa

- ◆ Wickham Road
1.5 MGD
- ◆ Patrick AFB
1.25 MGD
- ◆ S. Patrick Drive
1.0 MGD

The RO plant has already allowed source diversification. The water for that plant is drawn from three wells just east of Lake Wash-

ington, which tap the Floridan Aquifer.

In implementing the first phase of the RO plant, and in planning for the second phase, necessary permits to protect the environment and the community were obtained.

As one part of the effort, consultant engineers determined that private wells in the vicinity of Lake Washington will not be adversely impacted by withdrawals from the City's well field.

Financing the Water Supply

Melbourne's water supply system is funded by charges to consumers. The City provides service to more than 50,000 water meter connections, including meter reading, billing and collections.

The revenue goes into the Water and Sewer Fund. Accounting within the fund ensures that both the water services and the sewer services are self-funding, so that one does not subsidize the other.

Water system revenue provides for system administration (shared with the wastewater system), operations, maintenance, improvements, and debt services. Total administrative costs are only 10.4 percent of the water and sewer system budget.

Professional services provided to the water system by other City departments are purchased at cost and paid for by transfers to the General Fund. This sharing of staff minimizes costs of services provided to the water system

Since the water system is self-funded, rates reflect the actual costs of providing service. Impact fees

are in place to allow new development to pay a fair share of the water supply cost.

Melbourne contracts with consultant firms to calculate rates to provide financial stability for the system. Comprehensive rate studies were conducted in 1985, 1986, 1987, 1991, 1994, 1998, 1999 and 2001. The current rates are based on the 1998 rate study.

In accordance with state legislation, the most recent study determined rates which are appropriate for service to a diverse and extended geographical area, including consumers who live outside of the Melbourne city limits.

Adjustments in rates must be approved by the City Council after public hearings to solicit comments about rate proposals.

Current rates provided for major improvements to the Surface Water Treatment Plant, as well as major improvements at the City's wastewater treatment plants. Those system improvements were funded by a \$38.8 million, 30-year bond issue.

Summary

As a water supplier, Melbourne looks forward to cooperating with other cities and Brevard County in projects to protect, improve, and expand our drinking water resources.

Melbourne's goal is to provide high quality water that meets all health standards, and to do so at the most economical cost to our customers.

Water conservation activities help preserve our precious resource

In addition to providing water, Melbourne sponsors an active water conservation program for schools and the community.

The City's Environmental Community Outreach Manager visits area schools each year, finding that young people are eager to carry the conservation message and practices home with them.

Working as a team to pool resources and enlist support for community-wide conservation efforts, a Melbourne Groundwater Guardian Team was formed five years ago and has accomplished numerous outreach and educational projects. Patterned after the Groundwater Guardian formula, a committee was formed almost two years ago, the Brevard Utilities Water Conservation Committee, made up of representatives from the five public water utilities in Brevard County. The committee has produced and distributed educational posters, newspaper inserts, Florida Friendly Landscaping seminars for the public and is working on a video for middle and high school audiences.

Participation in public events is also an important method in water conservation and environmental education, along with visits with homeowners groups and discus-



sions with customers.

Another program instituted in Melbourne five years ago is having a tremendous direct effect toward water conservation. The residential toilet retrofit rebate program has already resulted in the replacement of close to 600 water guzzling toilets with new water conserving models, estimated to be saving close to five million gallons of water per year.

The staff is also letting the community know about the value of irrigation with reclaimed water, also known as reuse, which reduces the demand on drinking water resources. Used widely for irrigation, customers include many large businesses and commercial properties, City properties, such as both of Melbourne's golf courses, and many medians, as well as large subdivisions.

For more information on programs or outreach events, please visit the City's web site at www.melbourneflorida.org.

