



There is perhaps nothing more important than protecting our environment. We must, however, do this while providing for the needs of our customers now and in the future. The nature of our work, managing water and wastewater utilities, requires us to be environmentalists. We must work in harmony with the environment in order to remain in business.

The T. Mabry Carlton, Jr. Water Treatment Plant is an excellent example of Sarasota County's commitment to the environment.

T. Mabry Carlton, Jr. Water Treatment Plant

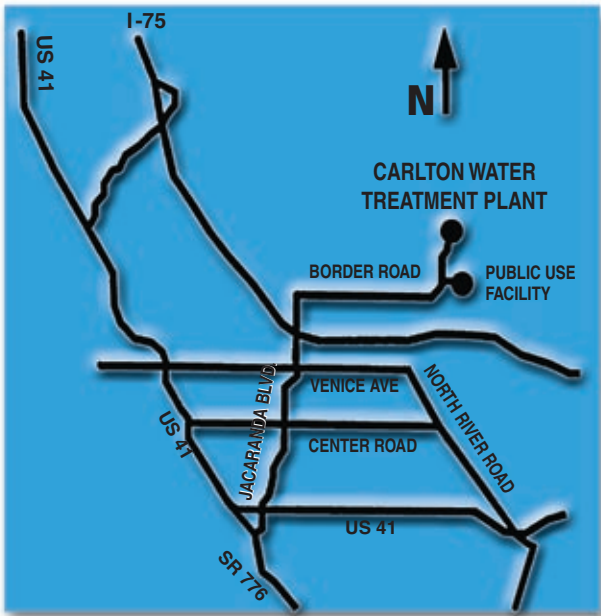


Carlton Facts

An example of Sarasota County's commitment to harmony with the environment:

- The tract contains over 24,000 acres with 99% of the land remaining in its natural state protected from further development.
- Environmental Services Resource Management is responsible for the land management and Community Services manages public recreation areas.
- The Electrodialysis Reversal (EDR) Water Treatment Plant:
 - Can produce 12 million gallons of water per day
 - Is one of the largest EDR facilities in the world
 - Produces 85 gallons of drinking water for every 100 gallons withdrawn from the ground; this compares to 60-70 gallons produced per 100 gallons for reverse osmosis, another membrane process

- Reject water from EDR:
 - Contains about 20% as much salt as sea water
 - Is disposed of by injecting it into deep wells
 - Is of higher quality than the original water in the deep wells
- The production wellfield:
 - Contains eleven wells
 - Wells are spread out on the property to mitigate the potential for drawdowns
 - Withdraws from Floridan and intermediate aquifers
 - Water withdrawn from these aquifers has too many minerals to drink without treatment
- Special County monitoring programs ensuring no environmental harm include:
 - Ecological Monitoring Plan
 - Vegetative Monitoring Plan
 - Hydroecological Monitoring Plan
 - Annual assessment of hydrologic system
 - Annual color infra-red aerial photographs



Carlton Treatment Process

Eight Steps to Drinking Water



1

Wellfield

Raw water is pumped from wells ranging in depth from 400 to 700 feet.



Pre-treatment

Raw water is pumped into a degasifier that removes naturally-occurring hydrogen sulfide and carbon dioxide. The degasifier is a large tank where water is sprayed from overhead sprinkler heads. The gases are separated out, rise to the top of the tank and are vented away into the atmosphere.

2



3 Settling Basin

The water collects in a settling basin. Sand and minerals sink to the bottom and a large rake, moving across the bottom, removes the sediment for disposal.



Dual Media Filters

These filters, coal over a bed of sand and gravel, much like a home aquarium filter, remove smaller sediment particles.

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Treatment Building

EDR is a water treatment process using membranes and electricity to remove hardness-causing minerals from the water.

The membranes are stacked one upon the other, with spacers in between, forming the path for water flow. Two separate streams of water enter the stack in parallel, but the spacer arrangement does not allow the two streams to mix. They are called the "fresh" and "salty" streams.

As the water flows over the surface of the membranes, the mineral ions are electrically transferred through the membranes from the fresh to the salty side by electricity.

Mineral ions contain a natural electrical charge and are compelled to move in the direction of their opposite poles when electricity is applied. This is what makes electro dialysis work.

There are 320 EDR stacks in the plant. At full production, the plant can produce a total of 12 million gallons of drinking water daily.

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Reject Water

As the potable (drinking) water flows to post-treatment, reject water, the by-product of the treatment process, is pumped through a pipeline to deep injection wells for disposal.

Chlorine Contact Chamber

The drinking water is disinfected using chlorine. The chlorine mixes with the water as it travels through a concrete contact chamber the size of an Olympic swimming pool.



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Public Consumption

The water is stored in a 5 million gallon tank at the north end of the site and then pumped into the water distribution system of Sarasota County.



History

1971 - Sarasota County began its quest for a dependable water system by commissioning the preparation of a Water and Wastewater Master Plan.

1976 - A United States Geologic Survey study documented for the first time the potential provision of a water supply on the Ringling-MacArthur Tract.

1980 - The Southwest Florida Water Management District (SWFWMD) joined Sarasota County in a letter of intent to participate in the testing, evaluation, design, construction and operation of water supply facilities on the Ringling-MacArthur Tract.

1982 - Sarasota County voters approved a referendum, by a 2 to 1 margin, authorizing the purchase of 16,074 acres of the Ringling-MacArthur Tract for a public recreation area and potable water supply source.

1989 - The Ringling-MacArthur Tract was renamed the T. Mabry Carlton, Jr. Memorial Reserve.

An additional 8,238 acres of land were purchased for a total of 24,312 acres.

1990 - Construction of the water transmission pipelines began.

1991 - The County acquired the Plantation Utility Services, Inc. water and wastewater systems, including an active, permitted deep injection well.

The SWFWMD Governing Board granted a permit allowing withdrawal of an average of 7.303 million gallons a day for a six-year period. This enabled the County to produce an average of 5.8 million gallons of water daily.

1993 - After a groundbreaking ceremony in January, construction began on the water treatment plant and wellfield collection system.

1994 - The T. Mabry Carlton, Jr. Water Treatment Plant was dedicated on September 23.

1995 - In January water began flowing into the County system.