



# Utilities Department Cocoa Water System

## Overview

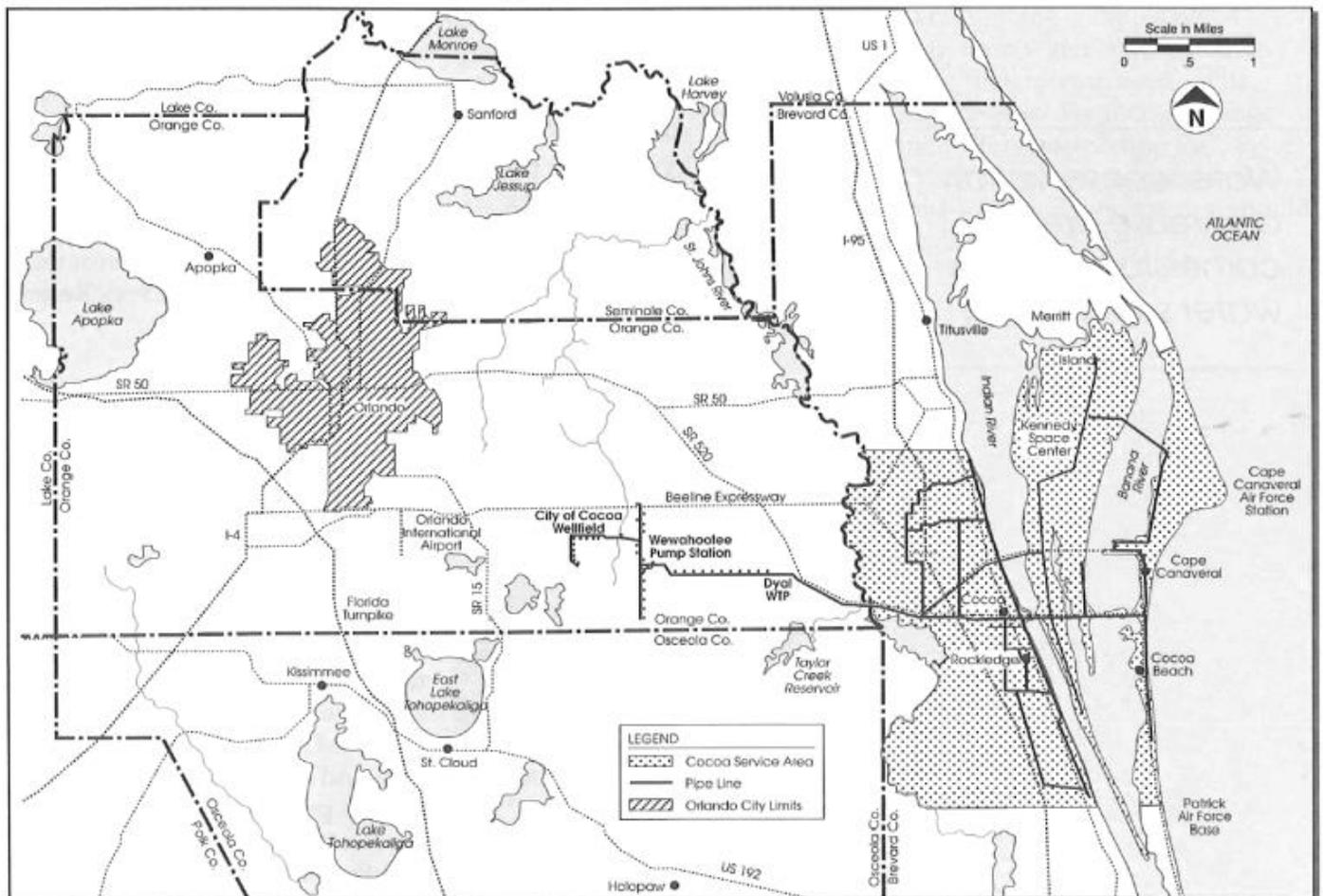
Since 1957, Cocoa has supplied the communities of central Brevard County with high quality water at a reasonable cost. Cocoa has accomplished this by making major investments in the water supply and treatment facilities needed to produce a sophisticated, well-developed sub-regional water system.

Today Cocoa provides water to over 80,000 customers (200,000+ people) in Cocoa, Rockledge, Port St. John, Merritt Island, Cape Canaveral, Cocoa Beach, Suntree/Viera, Patrick AFB and the Kennedy Space Center.

Cocoa's water system includes the wellfield and raw

water collection system, Wewahootee Water Treatment Plant, transmission mains, and the Dyal Water Treatment Plant (WTP). Cocoa's drinking water sources include the Floridan Aquifer, Intermediate Aquifer, Taylor Creek Reservoir, and Aquifer Storage and Recovery (ASR) wells. All of these facilities are located in east Orange County. A distribution system and storage and pumping facilities are located in Brevard County.

The Dyal WTP processes about eight billion gallons year, with peak flows reaching 30 million gallons per day (mgd) during the summer. Daily flows average 22 mgd. The Dyal WTP is unusual for Central Florida because it can treat both ground and surface water.



## **Ground Water Treatment**

Ground water enters the plant where chlorine, lime, soda ash, and coagulant are added to remove hardness and suspended solids. Fluoride is then added to the water in accordance with the Environmental Protection Agency/Center For Disease Control guidelines. Carbon dioxide is added to reduce the pH and to stabilize the water. Chloramination is used to disinfect the water before passing through filters containing sand and anthracite coal. Turbidity (cloudiness) is constantly measured at each filter.

## **Surface Water Treatment**

Surface water requires a different type of treatment. After surface water enters the plant, ferric sulfate, hydrated lime and a polymer are added. Ozone is injected into clarified water for disinfection, taste and odor removal, and for control of disinfection by-products. After adding ozone, the water is treated with hydrated lime, carbon dioxide, chlorine and ammonia before passing through sand and anthracite coal filters. Turbidity is constantly measured at each filter.

The surface water treatment plant was built alongside the existing ground water treatment plant and came on line in October 1999. Water from both processes is pumped and blended into storage tanks before it is sent into the distribution system and to your home or business.

## **Wellfield**

Raw water comes from 48 wells in the Cocoa well field: 34 wells drilled 400 to 600 feet into the Floridan Aquifer and 14 wells drilled into the Intermediate Aquifer. The well field can produce a maximum of 60 mgd with all wells pumping simultaneously. Safe well field management practices advise an operating rate that allows for well rotation to alleviate stress on the aquifer and provide down time for well and pump repair and maintenance. Such management practices allow Cocoa to operate the well field safely at 27.31 mgd for average flows and 46.21 mgd for maximum flows.

## **Floridan Aquifer**

The Floridan Aquifer is one of the most productive sources of ground water in the United States. Public-supply systems that draw water from the Aquifer include

Tallahassee, Jacksonville, Gainesville, Orlando, Daytona Beach, St. Petersburg, and Cocoa. In Brevard County, the Aquifer generally contains brackish water. For this reason, Cocoa located its well field in east Orange County.

## **Intermediate Aquifer**

The Intermediate Aquifer is discontinuous throughout the Cocoa well field and where present is typically found at a depth between 50 to 150 feet below land surface, between the surficial aquifer and the Floridan aquifer. The production zone of this aquifer in this well field is a shell layer of variable thickness and permeability resulting in well yields ranging from 27 gallons per minute (gpm) to 740 gpm.

## **Taylor Creek Reservoir – Surface Water**

Taylor Creek is a tributary to the St. Johns River and is about 11 miles west of Cocoa and three miles from the Claude H. Dyal Water Treatment Plant. A reservoir was created to store water and a retaining structure is maintained by the SJRWMD in accordance with an operating schedule approved by the US Army Corp of Engineers (ACOE). Minimum flows and levels have been adopted for the reservoir downstream of discharge structure, known as S-164. The Taylor Creek watershed annual runoff is about 36 mgd and the reservoir has a capacity to store 5 billion gallons of freshwater. The District permits Cocoa to withdraw an average of 8.83 mgd and a maximum of 12 mgd. Surface water from the reservoir is blended with the ground water before distribution.

## **Aquifer Storage and Recovery (ASR) Wells**

Cocoa's ASR system consists of 10 wells, a control valve station, a backflow preventer, and a computer. The ASR wells are located around the perimeter of the Claude H. Dyal Water Treatment Plant. Treated water can be stored 300 feet underground in the Floridan Aquifer during periods of low demand or recovered during periods of high demand. Water from the ASR system can be pumped to the head of the plant or to the ground storage tanks. The capacity of the existing ASR system is eight mgd.