

## SEGERSTROM WELL 4

<b>Year Drilled:</b>	<b>1977</b>
<b>Depth:</b>	<b>710 feet</b>
<b>Gallons per minute:</b>	<b>3,800</b>
<b>Area of well site:</b>	<b>10,000 square feet</b>
<b>Type of engine:</b>	<b>Well powered by a 600 hp. natural gas engine</b>



### History of Well 4

Well 4 was named in honor of the Segerstrom family, who settled the area in 1898. They began by growing lima beans on a 40-acre parcel in 1918. At that time, less than 20,000 people lived in Orange County. Today, the population is approaching 3 million. The Segerstroms eventually turned their focus from lima bean farming to land development. South Coast Plaza is one of their most notable commercial developments.

Well 4 is operated by a natural gas engine. Using natural gas reduces the demand for electricity during normal daylight hours when the greatest need for electrical power occurs. The use of both natural gas and electricity helps to balance the energy sources used by Mesa Consolidated Water District (Mesa) to effect greater reliability. Natural gas powered wells at Mesa are backed up by LPG, or bottled gas, for use in the event of disruption in the natural gas supply.

In 1977, Mesa entered into a property lease agreement with C.J. Segerstrom and Sons relative to the property on which Well 4 and well facilities are located. The property lease ran for a term of 20 years to March 1997. At that time the lease was extended for an additional 10 years to March 2007, as an option in the original property lease. Mesa also has the option to purchase the leased premises for the fair market value of the land, excluding all improvements made by Mesa.

### Colored Water

In 1977 when Mesa drilled Well 4, amber colored water was encountered. This type of water is found in deep

aquifers ranging from 600 to 1,200 feet. The water is high in quality and is the color of tea, smells like sulfur or rotten eggs, and is slightly warmer than average water. The color and odor are caused by natural organic material from ancient redwood forests. The amber colored water is extremely soft, high in quality, and is superior to imported water.

In 1986, Well 4 was temporarily capped until further research could provide analysis for Mesa's Colored Water Treatment Facility.

Mesa is a pioneer in the use of ozone for the treatment of "colored water" which removes all traces of color and odor. Mesa is among a few in the nation using this progressive technology.

### State-of-the Art Facility

Mesa's Colored Water Treatment Facility is located on more than two acres of land in Costa Mesa. The facility treats five million gallons of amber colored water per day via two wells. Mesa is the first water purveyor in Orange County to treat and distribute colored water to the community. Mesa's facility is a model for area water agencies that are exploring colored water resources.

### Long-range Planning

In 1986, Mesa introduced a Master Plan designed to meet the long-term growing needs of its customers. The plan defined ways to improve water delivery systems, create additional local storage facilities, and develop new sources of water. In 1990, the Master Plan was updated with a primary focus to "drought-proof" the service area. This is

accomplished by developing additional supplies of local groundwater, reducing reliance on imported water.

Increasing the use of well water provides operational flexibility and local control that enables Mesa to minimize the use of imported water. Well water is higher in quality, and lower in cost than imported water. Mesa is fortunate to have access to such a reliable low-cost source of water.

## Service Area

Mesa provides water service to more than 100,000 customers in an 18-square mile area including the City of Costa Mesa, parts of Newport Beach and unincorporated Orange County, including the John Wayne Airport.

## Source of Water

Mesa's primary source of water is groundwater. Mesa strives to provide its customers with as much groundwater as possible, which is pumped from Orange County's natural groundwater basin or aquifer via nine wells. The groundwater basin stretches 350 square miles from the Orange County line at Seal Beach and Long Beach, along the coast, down to the 55 freeway and east to Yorba Linda.

Backup for Mesa's well water is imported water, which comes from the Colorado River. It flows through aqueducts to the Robert B. Diemer Filtration Plant in Yorba Linda. Imported water is more costly than groundwater because of transportation and treatment costs.

Currently Mesa owns and operates two reservoirs, which have the combined capacity to store more than 28 million-gallons of water.

## Groundwater Basin

Groundwater in Orange County occurs in horizontal layers of water-bearing sand, gravel or broken rock and not in underground lakes or streams. These formations, called aquifers, are separated by layers of non-water bearing materials, and make up the groundwater basin. The Orange County Water District manages the local area groundwater basin and utilizes advanced techniques for helping nature recharge the groundwater basin.

The Santa Ana River is the main contributor to the groundwater supply. Water from the Santa Ana River reaches the aquifers through a number of routes. It infiltrates the soil on the earth's surface as rainfall, or percolates through the gravel of streambeds or unlined ditches. Water is also placed in the ground artificially, through man-made percolation ponds or injection wells.