

**RALPH D. BOLLMAN
WATER TREATMENT PLANT**

The Ralph D. Bollman Water Treatment Plant is a state-of-the-art facility that provides safe, high-quality drinking water primarily to residents of central Contra Costa County. The plant treats water before it is piped to customers in Concord, Clayton, Clyde, Pacheco, Port Costa and portions of Pleasant Hill, Walnut Creek, Martinez and Bay Point. Occasionally, the plant also serves water to eastern Contra Costa County through the 21-mile Multi-Purpose Pipeline that was completed in 2003.

Built in 1968, the plant has undergone two major upgrades, each time incorporating the latest water treatment advances. In the second upgrade, ozone was introduced as the plant's primary disinfectant, once again putting the Bollman Plant at the forefront

of water treatment technology and enabling the District to meet increasingly stringent state and federal water-quality standards.

The use of ozone disinfection results in drinking water that is very safe, with little taste and odor. Ozone effectively destroys potentially harmful microorganisms

and, by breaking up the organic material often found in water, vastly improves the taste and odor of drinking water. In addition, ozone disinfection reduces the formation of many disinfection by-products, such as trihalomethanes, a class of suspected cancer-causing compounds associated with chlorine disinfection.



**RALPH D. BOLLMAN
WATER TREATMENT PLANT**

**SERVING WATER CUSTOMERS IN
CENTRAL AND EASTERN
CONTRA COSTA COUNTY.**

Plant Cost (1968) \$7.3 million
Plant Expansion Cost (1986) \$5.5 million
Plant Upgrade (1999) \$40 million
Plant Capacity 75 million gallons a day (mgd)



Contra Costa Water District

1331 Concord Avenue
Concord, CA 94520

Mail: P.O. Box H2O
Concord, CA 94524

Telephone: (925) 688-8000
Website: www.ccwater.com

Printed On Recycled Paper ♻️ PIC 3,000 08/10



**RALPH D. BOLLMAN
WATER TREATMENT PLANT**



**State-of-the-Art
Water Treatment
for the Protection
of Public Health**



HOW THE BOLLMAN PLANT PRODUCES CLEAN, SAFE DRINKING WATER

- 1. Starting in the Delta:** Water from the Sacramento-San Joaquin Delta is pumped into the Contra Costa Canal from intakes at Rock Slough near Knightsen, Old River near Discovery Bay, and Middle River on Victoria Island. Stored water from the Los Vaqueros Reservoir can also be released into the Contra Costa Canal.
- 2. Mallard Reservoir:** The Contra Costa Canal directs water to the Mallard Reservoir, where solids settle to the bottom before the water is pumped into the treatment plant. Maximum storage is 3,060 acre-feet, which can provide up to 12 days of drinking water in an emergency.
- 3. Hydraulic Mixing:** Chemical coagulants are mixed into the water in a high-energy hydraulic mix. These coagulants cause fine particles suspended in the water to clump together, making them easier to remove later in the treatment process.
- 4. Flocculation and Sedimentation:** The water flows through chambers that slow the mixing process and encourage the clumping of particles. This process is

called flocculation. The resulting clumps, called floc, settle quickly in the sedimentation basin and are easily trapped in filters later in the treatment process. After flocculation, the water is mixed with a polymer which enhances the filtration process.

- 5. Ozonation:** Ozone is the plant's primary disinfectant. In the ozone contact basin, ozone is bubbled into

the water to kill bacteria and viruses. Any excess ozone is converted to oxygen before being released to the atmosphere.

- 6. Filtration:** The water passes over filter beds of granulated activated carbon (GAC) and sand. The GAC absorbs taste-and-odor causing substances and other undesirable organic compounds. As water flows through the filters, floc is trapped, leaving the water clean and clear. Periodically, the filters are washed by forcing a combination of clean water and air through them.
- 7. Treated Water Storage:** Before the water is stored in the clear well (a ten million gallon underground storage tank), fluoride is added to prevent tooth decay and the pH is adjusted to control corrosion in home plumbing systems and the District's pipelines. A combination of chlorine and ammonia, called chloramine, is added to provide a residual level of disinfection that protects the water as it travels through pipelines to customers' homes and businesses.

