

RANDALL-BOLD WATER TREATMENT PLANT

The Randall-Bold Water Treatment Plant is a state-of-the-art facility that provides safe, high-quality drinking water to residents of eastern and central Contra Costa County. Jointly owned by the Contra Costa Water District and the Diablo Water District, the plant treats water before it is pumped to the cities of Oakley, Brentwood and Antioch, and into the District's treated-water distribution system at an entry point in Concord.



Completed in 1992 and upgraded in 2007, the plant has a production capacity of 40 million gallons per day (mgd) and is designed for future expansion up to 80 mgd. Delivery of treated water from the plant into the treated-water distribution system started in 2003 with completion of the 21-mile Multi-Purpose Pipeline that stretches from Oakley to Concord.

The plant uses ozone disinfection, resulting in drinking water that is very safe with little taste or 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.

R A N D A L L - B O L D W A T E R T R E A T M E N T P L A N T

SERVING WATER CUSTOMERS IN
CENTRAL AND EASTERN
CONTRA COSTA COUNTY.

Plant Cost (1992) \$49.6 million

Plant Upgrade (2007) \$16 million

Plant Capacity 40 million gallons a day (mgd)

Future Expansion Capacity. up to 80 mgd

Jointly owned by the
Contra Costa Water District
& the Diablo Water District



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RANDALL-BOLD WATER TREATMENT PLANT



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



HOW THE RANDALL-BOLD 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 and Old River near Discovery Bay. Another Delta intake – the Alternative Intake – is planned for Victoria Island as early as 2010. Stored water from the Los Vaqueros Reservoir can also be released into the Contra Costa Canal.
- 2. Grit Basin:** From the canal, water is pumped into the Randall-Bold Grit Basin where solids, known as grit, are allowed to settle out.
- 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. Intermediate Ozone:** Ozone is bubbled through the water to improve coagulation and provide initial disinfection. 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. Post Ozonation:** Ozone is again bubbled through the clean, filtered water to kill disease-causing microorganisms. As in the intermediate ozone stage, excess ozone is converted back to oxygen before being released.
- 8. Treated Water Storage:** Before the water is stored in the clearwell (a five 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.

