



Groundwater Replenishment System

Groundwater Replenishment System Questions & Answers

Q: What is the Groundwater Replenishment System?

A: The Groundwater Replenishment System is an innovative project that will create a new, safe and reliable water supply to meet the county's increased demand for high-quality water.

The Groundwater Replenishment System will take highly treated sewer water currently discharged into the ocean, direct it through an advanced water treatment plant that includes microfiltration, reverse osmosis and ultraviolet light with hydrogen peroxide treatment, and allow it to percolate into the groundwater basin along the same natural filtering path rainwater takes through the ground. These processes have a proven track record in providing safe, high quality water for many businesses including bottled water companies.

The resulting purified water will help meet the water demand of a growing population and be of higher quality than water sources currently used to recharge the groundwater basin. Some of the water will be used for groundwater injection to protect the groundwater basin from seawater intrusion.

Q: Why is the Groundwater Replenishment System needed?

A: The Groundwater Replenishment System is needed to provide Orange County with an additional source of safe, reliable water and to meet the growing water needs of north and central Orange County. The GWR System is one of many projects that will be required to prevent future water shortages.

The Groundwater Replenishment System's service area's population stands at 2.3 million and is projected to continue to increase to 2.8 million by 2020. Currently, this 350-square-mile area of Orange County uses approximately 500,000 acre-feet of water per year. To put that number in perspective, one acre-foot of water is sufficient to serve the needs of two families of four for an entire year. Experts estimate that the region will need nearly 120,000 additional acre-feet annually by the year 2020.

With increased population, decreased availability of imported water and higher water quality requirements, water supplies will become even more limited and expensive. In order to meet growing water demand, the Orange County Water District and Orange County Sanitation District are looking for ways to provide a safe, reliable, high quality water supply. This project is the environmentally responsible thing to do.

Q: Where will the Groundwater Replenishment System be built?

A: An advanced water treatment plant will be located at current water and sanitation district facilities in Fountain Valley. In addition, the Orange County Water District and the Orange County Sanitation District will construct a 13-mile pipeline between Fountain Valley and Anaheim to pump the purified water to ponds located in Anaheim, and additional seawater intrusion injection wells along the coast. In Anaheim, the water would then percolate naturally from the recharge ponds or lakes into the groundwater basin.

Q: What is the project schedule?

A: In March 1999, the Environmental Impact Report (EIR) for the Groundwater Replenishment System was unanimously certified by the Orange County Water District and the Orange County Sanitation District Boards of Directors, marking the first major milestone for the GWR System. The project schedule included obtaining a State Department of Health Services permit, conducting a water quality study, completing project development studies and conducting widespread public outreach activities. A vote by the agencies' Boards of Directors to proceed with project final design was held in March 2001.

The dedication ceremony for the project's first phase is scheduled for the spring of 2006, producing 70,000 acre-feet of water per year. Phase II will become operational in 2010, increasing production to 95,000 acre-feet per year. The final phase will be in operation by 2020, resulting in enough water to serve 200,000 Orange County families annually.

Q: How much would the Groundwater Replenishment System cost?

A: The first phase of the project (70,000 acre-feet per year) is estimated to cost \$352 million. The total proposed cost to build all three phases of the Groundwater Replenishment System is estimated at \$600 million over 20 years. All costs are based on 2000 dollars.

Q: Who will pay for the Groundwater Replenishment System?

A: A mix of federal, state and local funding is being explored. Grants of \$62.5 million have been secured, which includes \$37 million from the State Water Bond (Proposition 13) approved by California voters in 2000 and \$5 million from the California Water Resources Board awarded in 2002. Another \$50 million in grant funding is pending from the California Department of Water Resources. Additional funds have been granted by the California Energy Commission, Environmental Protection Agency, Bureau of Reclamation and Metropolitan Water District of Southern California.

Q: Would the water it produces be safe?

A: Absolutely. In fact, a separate study has indicated it will be the safest water available to Orange County in the future from any source. The water would be treated—with the most advanced technologies available—to near-distilled water quality, exceeding state and federal drinking water standards.

Most people already drink some reclaimed water that has been blended into drinking water supplies in a variety of ways. Every major body of water in the nation contains some amount of purified wastewater. Orange County and other communities inject purified water into seawater intrusion barriers, where it blends with groundwater. The groundwater is then pumped out and piped to homes and businesses. In areas of Los Angeles County, as well as many areas throughout the country and the world, reclaimed water has been used to recharge groundwater basins for decades.

Q: How would the water be treated to ensure that it is safe for drinking water?

A: The water would be purified using microfiltration, reverse osmosis and ultraviolet light and hydrogen peroxide treatment techniques.

The first process is microfiltration (MF). Microfiltration is also used to purify food products, such as fruit juices and baby foods, and to sterilize medicines that cannot be heated. It works like a screen that is large enough to allow small water molecules to pass through, but small enough to stop particles and bacteria. The next, and most widely known process, is reverse osmosis (RO). Reverse osmosis is used by many bottled water companies to purify water for their products. Water is directed under high pressure through thin membranes that eliminates salts, viruses, pesticides, and most organic compounds, creating near-distilled quality water. The final stage of the water-treatment process is ultraviolet (UV) light and hydrogen peroxide treatment. UV light (concentrated sunlight) combined with hydrogen peroxide is the most effective way to eliminate any remaining compounds in water by breaking them down into their basic elements such as carbon dioxide and water. UV with hydrogen peroxide provides a powerful oxidation process that destroys low molecular weight or specially charged organic compounds and thoroughly disinfects the water prior to its use.

Q: Who would monitor this process to ensure safety?

A: In order for the Groundwater Replenishment System to proceed, it must be reviewed and evaluated by more than a dozen federal, state and local agencies responsible for protecting the environment, public health and water quality.

Once the project is built and fully operational, the purified water would be monitored continuously, 24 hours a day.

Q: How would the Groundwater Replenishment System help in a drought?

A: Southern Californians are all too familiar with the reality of droughts and the extreme pressure they can exert on an already strained water supply. In order to minimize the effects of droughts in the future, the Groundwater Replenishment System would help keep Orange County's underground water basin filled. Because the water source will be available regardless of a drought, the Groundwater Replenishment System would act as a countermeasure against droughts, providing Orange County with a dependable supply of pure, clean water. It would also help ease regional needs, especially important in a drought.

Q: What effect might the project have on water rates?

A: An independent rate study showed that the project will have little effect on water rates. GWR System water will cost water ratepayers approximately \$1 per month.

In any case, water officials expect water rates to rise in the future as the State and county's populations grow, as imported water becomes less reliable and as future water quality requirements become more restrictive. Replenishing Orange County's groundwater basin is a cost-effective solution to the county's future water demand.

Q: Which communities would benefit from the Groundwater Replenishment System?

A: Communities within the Orange County Water District's and Orange County Sanitation District's service areas would primarily benefit from the Groundwater Replenishment System. This includes Anaheim, Brea, Buena Park, Costa Mesa, Cypress, Fountain Valley, Fullerton, Garden Grove, Huntington Beach, Irvine, La Habra, La Palma, Los Alamitos, Newport Beach, Orange, Placentia, Santa Ana, Seal Beach, Stanton, Tustin, Villa Park, Westminster and Yorba Linda. If past experience is any example, during the last drought, the groundwater basin was drawn down to free up imported water for South Orange County. The Groundwater Replenishment System would help provide water for this to occur again, when there is another drought.

Q: How can the public participate in the decision-making process?

A: Public input is considered vital to the success of the project. The public can attend Groundwater Replenishment System Joint Cooperative Committee meetings. Meeting schedules are available by calling (714) 378-3200. A Groundwater Replenishment System Web site is available to ask and receive answers to questions about the project: www.gwrsystem.com.

Thirty-five elected and appointed officials representing the affected cities will be involved in the approval process. The public is encouraged to write or call the Orange County Water District and the Orange County Sanitation District Boards of Directors to let them know their thoughts on the project.

Q: Where can the public get more information?

A: For more information, contact Ron Wildermuth, Public Information Officer at the Orange County Water District, (714) 378-3351 or Lisa Murphy, Communications Manager at the Orange County Sanitation District, at (714) 593-7120.

Or visit the Groundwater Replenishment System Web site at www.gwrsystem.com.

A Groundwater Replenishment System video and the Environmental Impact Report are available at public libraries located in the Orange County Water District and the Orange County Sanitation District service areas.

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