

Proposed Orange County Sanitation District

Water Reuse Policy

Should OCSD study the feasibility of tapping non-wastewater sources for the purpose of generating more water recycling beyond the final expansion of GWRS?

Summary Policy Statement

The Sanitation District will seek to beneficially reuse all reclaimable water for potable, industrial, irrigation and environmental uses.

Background

For over 40 years, the Sanitation District and the Orange County Water District (OCWD) have partnered to beneficially reuse treated wastewater from the Sanitation District. OCWD, which serves roughly the same service area as the Sanitation District, manages and replenishes the groundwater basin in northern and central Orange County, ensures water reliability and quality, prevents seawater intrusion, and protects Orange County's rights to Santa Ana River water.

Beginning in 1975, the Sanitation District contributed treated wastewater from its Plant No. 1 to OCWD for the operation of Water Factory 21, which reclaimed the treated wastewater and injected it along with deep well water into the groundwater basin to prevent seawater intrusion. In the mid-1990s, OCWD needed to expand Water Factory 21. At the same time, the Sanitation District faced the challenge of having to build a second ocean outfall pipe to discharge treated wastewater into the Pacific Ocean. Both agencies collaborated to build an advanced water purification facility to resolve these challenges. This state-of-the-art facility, known as the Groundwater Replenishment System (GWRS), took the place of Water Factory 21, and began operation in 2008. The GWRS treats secondary treated wastewater from the Sanitation District Plant No. 1 to drinking water standards and uses the purified water for both injection and percolation, through injection wells and recharge basins, as source water to replenish the groundwater basin's drinking water supplies. With approximately 75 percent of the water demand in northern and central Orange County cities coming from the groundwater basin, GWRS supplements existing water supplies by providing a new, reliable, high-quality source of water.

While the original GWRS facility was constructed to supply up to a 70 million gallon per day (MGD) of purified water, the facility was designed for an ultimate treatment and conveyance capacity of 130 MGD. The original GWRS design intent was to expand the GWRS facility in two phases – an initial and a final expansion of an additional 30 MGD of treatment capacity with each expansion. The GWRS Initial Expansion Project was completed in June 2015 and has been producing up to 100 MGD of purified water for groundwater injection and recharge. The Final Expansion of GWRS is scheduled to be completed in 2023 and will produce the maximum capacity of 130 MGD.

In addition to providing treated wastewater to the GWRS, the Sanitation District also provides treated water to OCWD's Green Acres Project, which provides recycled water for landscape

irrigation at parks, schools, and golf courses; and industrial uses, such as carpet dying; toilet flushing; and power generation cooling.

Current Situation

The GWRS currently produces 100 million gallons per day of purified water – enough water for about 850,000 people. All of the Sanitation District's Plant No. 1 secondary effluent, between 120-130 MGD, is sent to OCWD for the GWRS and Green Acres Project. However, secondary effluent from the Sanitation District's Plant No. 2 and other non-reclaimable flows, such as brine from inland desalters and GWRS's reverse osmosis process, and the Sanitation District's process sidestreams, continue to be released into the ocean.

In 2016, the Sanitation District and OCWD jointly conducted the Effluent Reuse Study, which evaluated the feasibility of recycling the Sanitation District's secondary effluent from Plant No. 2 and identified projects required to achieve the final expansion of the GWRS. The GWRS final expansion effort will include implementation of projects to construct new, modified or rehabilitated facilities at Plant No. 2 to separate reclaimable flows from non-reclaimable flows; to equalize, pump, and convey secondary effluent from the Sanitation District's Plant No. 2 to the GWRS facility; and to treat the additional source water to produce 130 MGD of purified water.

Reverse Osmosis brine generated at the GWRS Initial Expansion is currently discharged into the ocean. The 2016 Effluent Reuse Study identified alternative brine management strategies such as evaporation ponds, deep well injection, and engineered wetlands. Evaporation ponds are land intensive and are also energy intensive when combined with a brine crystallizer to remove solids from highly concentrated brine system using heat and pressure. While the areas around both the Sanitation District treatment plants have the appropriate geology for brine injection, there are concerns with contamination of drinking water aquifers, and seismic risks due to the Newport-Inglewood zones near Plant No. 2. At this time, it does not appear economically feasible to provide alternative management strategies for the brine discharge.

In November 2016, the Sanitation District Board of Directors adopted the Second Amended and Restated Joint Exercise of Powers Agreement for the Development, Operation and Maintenance of the Groundwater Replenishment System and Green Acres Project, which committed the agency to continue supporting the GWRS and the Green Acres Project, and specifically, the final expansion of the GWRS. The implementation of the final phase of the expansion will be executed by multiple projects, some executed by the Sanitation District while the others executed by OCWD. Project costs related to GWRS are funded by OCWD, including \$50 million reimbursement to the Sanitation District for its costs incurred to manage related projects.

By supporting the GWRS Final Expansion, the Sanitation District will be able to recycle all reclaimable wastewater generated in its service area and treated at its two treatment plants, and OCWD will have sufficient water to run the GWRS facility to full capacity.

Future Policy Statement

The treated effluent produced from the Sanitation District's Plant Nos. 1 and 2 is a valuable resource that can help boost local water resources and reduce dependence on imported water, while reducing the effluent discharged to the ocean. The Sanitation District will continue to seek opportunities for beneficial reuse of all reclaimable wastewater collected and treated at its facilities.

The Sanitation District will continue to support the completion of the final expansion of the GWRS in accordance to the adopted Second Amended and Restated Joint Exercise of Powers Agreement for the Development, Operation and Maintenance of the Groundwater Replenishment System and Green Acres Project. This includes providing secondary effluent as source water for GWRS free of charge; allowing OCWD to discharge brine via the Sanitation District's ocean outfall free of charge; leasing approximately 10 acres of land to the Sanitation District at \$1 per year for the GWRS Final Expansion project; allowing OCWD to discharge North and South Basin extraction well flows to the Sanitation District sewers; managing the design and construction efforts of the Plant No. 2 Headworks Modifications Project and the Plant Water Pump Station Replacement Project (OCWD will reimburse up to \$50 million of project cost); managing and finance the construction of the Ocean Outfall Low Flow Pump Station at Plant No. 2 and the construction of Plant No. 2 primary and secondary facilities to allow segregation of non-reclaimable flows.

The Sanitation District will continue to maximize the delivery of secondary effluent available to GWRS and the Green Acres Project in order to maximize full production of purified recycled water for indirect potable reuse, and industrial and irrigational uses. The Sanitation District has been operating the Steve Anderson Lift Station to divert more flows to Plant No. 1. The two agencies regularly communicate and coordinate the Sanitation District operations and construction projects that may have impacts on GWRS operation and will continue this collaboration effort.

Input received during the Strategic Planning process included enhancing flows available for recycling by pumping shallow groundwater into OCSD's sewer system. The desired goal is to increase the water supply for recycling, beyond the planned final expansion of GWRS, as well as reduce problematic shallow aquifers for member agencies.

Initiatives to Support Progress Toward the Policy Goal:

Initiative: Support the completion of the final phase of the Groundwater Replenishment System and maximize water availability to the Orange County Water District.

Initiative: Support Green Acres project water production to provide reclaimed water for industrial and irrigation uses.