

Water Recycling and Salt Management Planning for a New Central California Community



EKI planned potable water supply and wastewater treatment with effluent recycling for a new, several thousand-unit community in Central California. The project featured the reuse of all generated wastewater, with recycled water distributed to parks and median strips throughout the development.

Regulatory agencies are increasingly concerned about total dissolved solids (TDS) in recycled water in light of potential impacts to groundwater. Current and anticipated regulations make salt management a key part of the overall water resources planning for many major developments in California. EKI worked with our client to develop a strategic, integrated water supply and wastewater treatment plan aimed at how to best address TDS in recycled water. EKI prepared costs for various options and determined that it would be cost-effective to remove salts during potable water treatment rather than from the wastewater. Removing salts from the potable water would also reduce hardness and improve taste.

The plan would treat raw groundwater through an innovative treatment process combining water softening, electrodialysis reversal (EDR), and treatment of the EDR brine flow. The brine side stream generated by the EDR demineralization process would undergo second-stage, high-pressure reverse osmosis to further concentrate the brine. Then, the brine would be solidified in lined solar dryers that occupy a relatively small portion of the development.

In this way, as supported by water quality modeling, TDS in the potable water supply was reduced to a concentration that allows treated wastewater reclamation and on-site reuse while managing TDS in local groundwater.