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Dilution and Pollution: Assessing the Impacts of Water Reuse and Flow Reduction on Water Quality in the Los Angeles River Basin

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ABSTRACT

Los Angeles (LA), California, USA is one of many population-dense, arid cities whose treated wastewater discharge comprises most of the river flow (up to 70% in the LA River). Like other arid cities, LA plans to improve water supply by reusing treated wastewater and diverting nonstorm stormdrain flows. This study quantifies the impact of these management actions on pollutant loads and concentrations in the LA River. Daily pollutant loads and concentrations for total suspended solids (TSS), total dissolved solids (TDS), copper, zinc, and lead were predicted using EPA SWMM across nine wastewater reuse and nonstorm stormdrain diversion scenarios. Reduced flows generally decreased daily loads for all pollutants, but the impact on daily concentrations varied. Concentrations of TDS, TSS, copper, and lead increased with wastewater reuse, while zinc concentrations increased with the reduction of nonstorm stormdrain flows. Copper, zinc, and TDS water quality objectives were met less frequently with increasing flow reduction. These results elucidate the potential impacts of flow reductions on water quality and will help inform management decisions in effluent-dominated rivers.