

## Water Re-use and Conjunctive Use

Much of the water treated for domestic and industrial use is discharged to storm drains or sewers. The sewage then flows along collection piping to a wastewater treatment plant. In most cases, the treated water from such a plant is discharged to a surface water body. Where discharge is to a river, water intakes for other communities are often located downstream. Thus, the water is then retreated for potable use. In densely populated areas, this cycle is often repeated many times by downstream communities before finally reaching the ocean.

Increasingly, the discharge of wastewater to a surface water body is being bypassed and the water is subject to advanced treatment to drinking water levels. The water is then either used for direct potable supply or, more often, used to recharge aquifers through surface percolation or aquifer storage and recovery (ASR) wells.

The movement of the water through the aquifer then “refreshes” what was a waste stream.

Excluding the use of water for thermo-electric power plant cooling, agriculture uses >70% of all freshwater withdrawals, industry about 15%, and domestic supply <15%. To meet the water supply demands of a growing and more urban and affluent global population, more efficient use of water in agricultural production will be needed. In those jurisdictions where a “pumper” owns or has a right to a set amount of water, the water has a monetary value. If a farmer can sell excess water to a growing municipal water utility, then the farmer has a financial incentive to be more water efficient in growing crops and raising livestock. Through effective conjunctive use of surface water and groundwater by all parties (agriculture, industrial, and domestic) in a given area, yields can be optimized to meet demand and allow for possible longer-term storage of excess water.

**Aquilogic** staff has experience supporting the design, installation, and operation of ASR systems and other water re-use programs. We also have experience working with multiple stakeholders to develop conjunctive use plans that optimize water yields.