

Provo Aquifer Storage and Recovery: A Sustainable Water Supply Solution

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Background/Objectives. In 2017, Utah's Governor Herbert received the recommendations of a comprehensive water strategy on the future management of groundwater and surface water resources for the state. It is a difficult situation with Utah being one of the driest states in the country and experiencing a booming economy that is expected to double the population before 2060. One city, Provo, is facing the challenge of protecting ownership of water rights, replenishing diminishing underground aquifers, and providing a sustainable water supply for its growing population. Aquifer Storage and Recovery (ASR) is the strategy that was chosen to provide a sustainable future for the city and its residents. Candidate sites were evaluated and selected for both surface infiltration and direct injection to the groundwater aquifers. For a period of two years pilot testing was performed at five different sites. Final design and permit applications are underway to establish a long-term ASR program for the city. Aquifer Storage and Recovery (ASR) is a manmade process or natural process enhanced by humans that conveys water underground. The process replenishes groundwater stored in aquifers for beneficial purposes. Often, the intention is to provide a reliable water supply. The primary objective of ASR is to replenish water in an aquifer. The recovery of the water stored in the underground aquifers is used for drinking water supplies, irrigation, industrial needs, or ecosystem restoration projects.

Several methods of introducing water into an aquifer exist including:

- surface spreading
- infiltration into constructed pits and basins
- injection wells

Approach/Activities. After identifying possible ASR candidate sites, the proper permitting applications were filed with state agencies (Division of Water Rights, Division of Water Quality, and Division of Drinking Water) to perform pilot testing. Three of the candidate sites were surface infiltration sites and two sites were direct injection sites.

Results/Lessons Learned. Through extensive pilot testing of the five selected sites, it was determined that a successful long-term ASR program could be achieved for the city of Provo. Final engineering design and permitting is now taking place to implement the final ASR program.