Challenges for Future Water Management in the Southwest

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Population growth in the southwestern states has increased rapidly in recent decades and will continue to increase in the foreseeable future. Furthermore, rapid expansion of agriculture in the region after World War II required extensive development of surface-water and ground-water supplies. In the second half of the twentieth century, estimated water withdrawals for domestic, agricultural, and industrial purposes in Arizona, California, Nevada, New Mexico, and Utah increased 58 percent, from 39.6 to 62.8 million acre-feet. With future population increases, water use for public supply likely will continue to increase, perhaps with a reduction in water use for agriculture. Consequences of ground-water withdrawals will be among the major issues for future water management. These include deepening water levels and increased pumping lift; loss of ground-water supplies to springs, streams, wetlands, and phreatophytes; land subsidence; and degradation of water quality. Future climate change could have an effect on rates of recharge to ground-water systems, but effects of changing recharge in most aquifers of the Southwest will be much slower than effects seen in surface-water resources. In aquifer systems with connected surface water, managers should view consequences of ground-water withdrawals in terms of the amount of connected surface water and evapotranspiration that can be captured, not in terms of the expected amount of recharge to the aquifer.

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