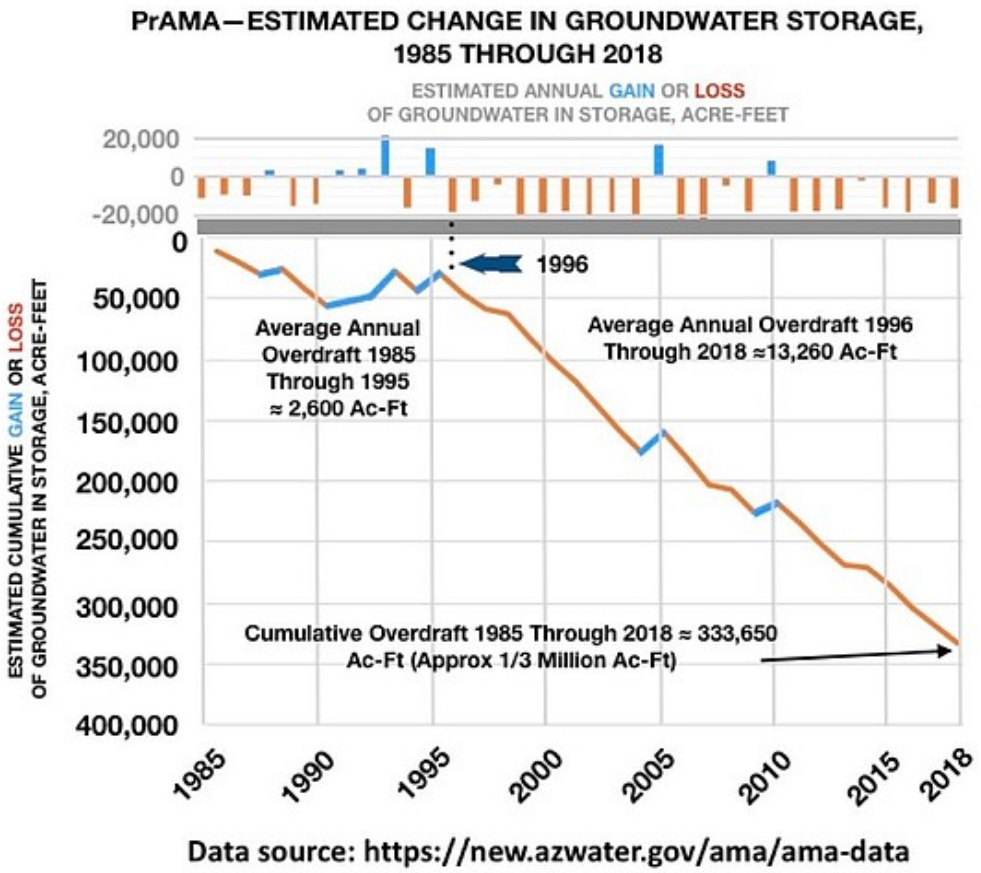
Talk of the Town: Our water is a diminishing resource — we must adapt

dcourier.com/news/2020/oct/06/talk-town-our-water-diminishing-resource-we-must-a



Groundwater in the Prescott Active Management Area (PrAMA), serving four municipalities and thousands of private wells, is seriously overcommitted. Some wells have already failed, and more will follow.

The aquifer underlying the quad-city area is our only source of potable water. We are extracting far more water from it than either we or nature replace. An immediate consequence is decline of the water table.

The Arizona Department of Water Resources (ADWR) reported declines of 20 to 30 feet or more in some parts of the area from 1994 to 2010. Wells that go dry force homeowners to drill deeper, haul water, or move elsewhere.

ADWR began analysis of the annual gain or depletion (overdraft) of the Prescott region groundwater in 1985. ADWR's calculations, complete through 2018, indicate that the average annual depletion (overdraft) of our PrAMA groundwater from 1985 through 1995 was modest, averaging about 2,600 acre-feet per year.

Those were good water years. In five of them, with the help of winter storms, water was added to the aquifer; the calculated net depletion through 1995 was a modest 29,000 acre-feet. Then a major change occurred.

In the 23 years from 1996 through 2018 there were only two years, 2005 and 2010, in which winter storms provided a net gain to the water stored in the aquifer. The average annual rate of depletion of our groundwater over those 23 years was more than 13,000 acre-feet per year, about 4.3 billion gallons yearly, hypothetically enough to supply 78,000 new homes. Total depletion of our groundwater from 1985, when ADWR's calculations began, is an estimated one-third of a million acre-feet, more than a hundred billion gallons. Our primary water source is being depleted at a far greater rate than we and nature replenish it.

Streamflow measurements at the U.S. Geological Survey Paulden stream gage, on the Verde River about 10 miles east of Paulden, record a 40% reduction in lowest annual streamflow during the quarter century from 1994 through 2019. Such a sustained reduction is unprecedented and is reasonably interpreted as representing depletion of groundwater.

Drought and elevated temperature reduce recharge and increase groundwater depletion. The average of mean annual temperatures in Yavapai County is 2 degrees Fahrenheit higher for years 1996 through 2019 than is the average for the full century from 1895 through 1995. This is a signal that climate change will make groundwater protection ever more critical.

Our water future is seriously threatened; its salvation requires serious remedies:

• Coordinate PrAMA water management among our four municipalities and Yavapai County.

• Eliminate use of groundwater for all outdoor irrigation.

• Eliminate as fully as possible water system leaks.

• Maximize water conservation in homes and businesses.

• Capture storm water runoff from roofs, roads, parking lots etc. to treat and effectively return to the PrAMA aquifer system.

• Limit development in this high desert.

I will discuss our diminishing groundwater supply and describe strategies to address its depletion in a Zoom webinar hosted by the Citizens Water Advocacy Group (CWAG) at 10 a.m. Saturday, Oct. 10. Details at cwagaz.org.

Edward W. Wolfe, Ph.D., is chair of the CWAG Education Committee, former chair of the Verde River Basin Partnership, and a retired USGS geologist.