

ARIZONA WATER FACTSHEET

Pima County

Get to know water in your county

4-Page Version - August 2022



THE UNIVERSITY OF ARIZONA
COOPERATIVE EXTENSION

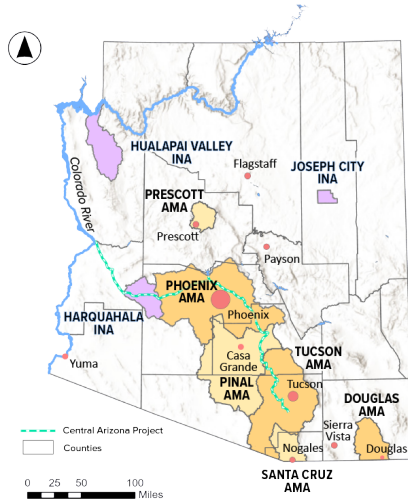
WATER RESOURCES RESEARCH CENTER

wrrc.arizona.edu/arizona-water-factsheets

Water in Arizona

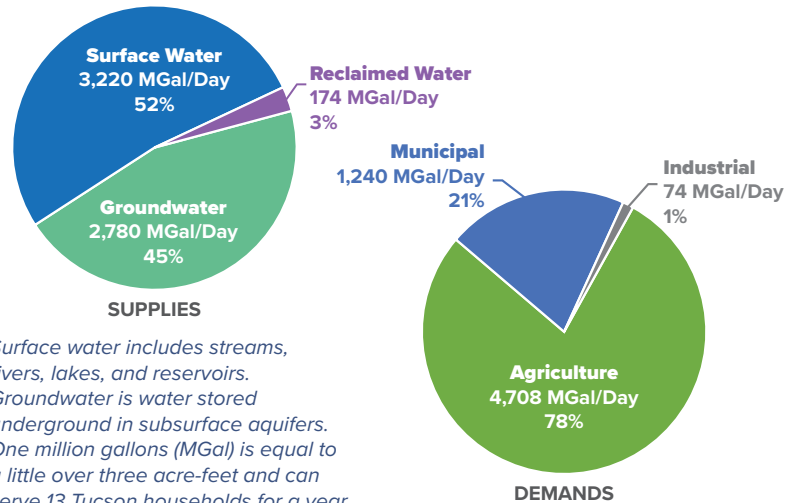
Arizona's future depends on sustainable water supplies, which in turn depend on vigilant and innovative management of those supplies. From low deserts to high mountains, counties and communities face different water challenges and take different approaches to addressing those challenges, while conforming with regional, state, and federal requirements. The Arizona Department of Environmental Quality (ADEQ) is responsible for water quality and tasked with enforcing federal environmental standards. The Arizona Department of Water Resources (ADWR) oversees the use of surface water and groundwater, which are legally distinct though physically interconnected. In general, ADWR regulates groundwater more strictly in Active Management Areas (AMAs) than in the rest of the state.

Statewide Context



County and AMA boundaries (WRRC 2021).

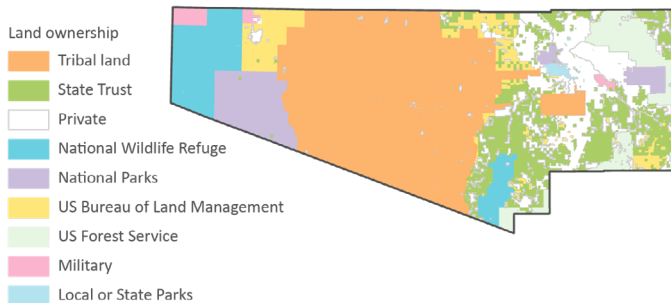
Arizona Water Supply and Demand



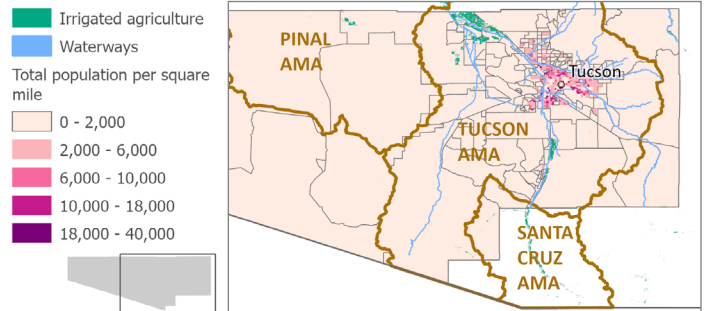
Surface water includes streams, rivers, lakes, and reservoirs. Groundwater is water stored underground in subsurface aquifers. One million gallons (MGal) is equal to a little over three acre-feet and can serve 13 Tucson households for a year (Tucson Water 2018, USGS 2015).

Water in Pima County

Pima County lies at an ecological crossroad where the neo-tropics meet the Sonoran Desert and Rocky Mountains. Covering much of the county, the Sonoran Desert is the wettest, hottest, and most biodiverse desert in North America. On average, Arizona receives 3-40 inches of precipitation per year, with Pima County averaging 13 inches. The summer and winter rainy seasons are vital to this region and to many naturally flowing streams and springs. While most watercourses only flow when it rains, segments of the Santa Cruz and San Pedro Rivers flow year-round. As Federal and Tribal lands span most of central and western Pima County (Tribal 42%, Federal 19%, State Trust 15%, private 14%), water use and management are concentrated on the more populous eastern side of the county.



Land ownership in Pima County (Arizona State Land Department 2020).



Population density and agricultural lands in Pima County and Tucson AMA (US Census Bureau 2020, USDA 2011).

Frequently Asked Questions

Where Does Pima County's Water Come From?

Groundwater

The primary source of water in Pima County is groundwater. Most local groundwater is so-called "fossil water" that percolated into the ground many thousands of years ago and is considered nonrenewable because it is not replenished by nature.

Central Arizona Project (CAP)

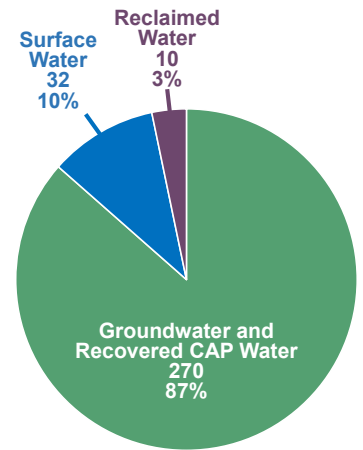
Colorado River water delivered via the Central Arizona Project (CAP) is the primary source of municipal drinking water in Pima County.

- CAP water is transported 336 miles from the Colorado River across central Arizona to supply Maricopa, Pinal, and Pima Counties. CAP water blends with native groundwater when it is recharged to the aquifer. The blended water can be pumped out of the aquifer by local wells for delivery to customers.
- Renewable surface water supplies from CAP are also stored in underground aquifers to prepare for future water demands in Pima County.

Active Management Areas (AMAs)

Pima County includes parts of the Tucson, Pinal, and Santa Cruz AMAs.

- ADWR regulates groundwater use within Active Management Areas (AMAs). Most water users in Pima County live in the Tucson AMA, so rules set for this AMA often also serve as a substitute for broader management in the county.
- The **Tucson AMA's** management goal is safe yield by 2025. To achieve safe yield, groundwater recharge should balance groundwater pumping within the AMA.
- The **Pinal AMA's** goal is to maintain the agricultural economy while working to preserve groundwater for future non-irrigation uses. The **Santa Cruz AMA's** goal is to maintain safe yield and prevent water tables from experiencing long-term declines.
- Within the AMAs, the Assured Water Supply program requires new subdivisions to demonstrate in advance of development that a 100-year supply of good quality water is continuously and legally available.



Sources (Million Gallons/Day) for Pima County's water (USGS 2015).

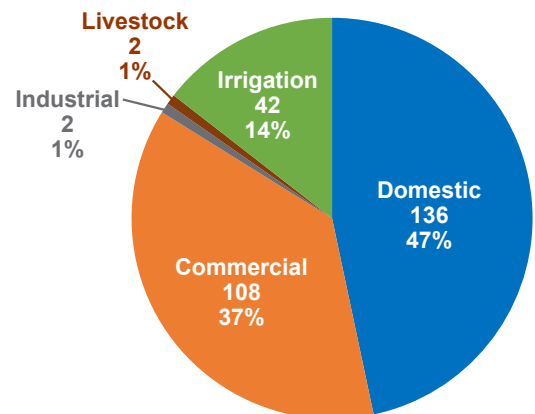
Note: USGS categorizes stored CAP water as groundwater, because it is withdrawn for use from the aquifers after storage.

Recharging CAP water to the local aquifer has raised groundwater levels by 60-200 feet in some areas of Tucson.

How Is Water Used in Pima County?

Despite nearly doubling in population, Tucson, the largest city in the Pima County, uses the same amount of water that it did in the 1990s.

- In the mid-1980s, agriculture and municipalities used roughly the same amount of water in the Tucson AMA. In Pima County as a whole, the ratio has changed over time. By 2015, irrigation accounted for only 14% of water use, while domestic and commercial use accounted for 84%.
- Water Management in Pima County includes providing, protecting, and restoring water to natural areas and the environment to boost tourism, property values, economic vitality, and quality-of-life benefits for residents.



Water use (Million Gallons/Day) in Pima County (USGS 2015).

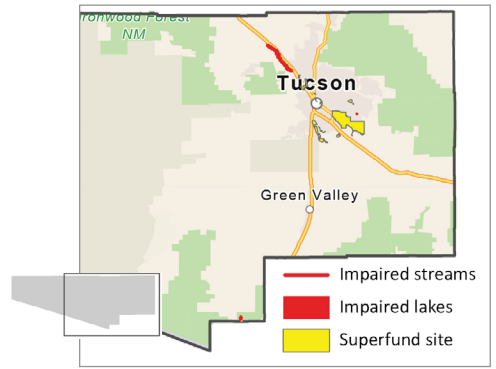
What Water Challenges Does Pima County Face?

Water Quantity Challenges

- The Tucson AMA has been at or around safe-yield since 2010. However, some areas are still seeing groundwater levels fall. Outside of major metro areas where the largest water providers are located, much of the county is groundwater dependent. Rural areas rely primarily on private wells.
- The location of groundwater water pumping may be different from where it is being recharged. This ‘hydrologic disconnect’ affects where groundwater is actually available.

Water Quality Challenges

- **Superfund Sites.** A Superfund site is a federally designated area contaminated by toxic materials. The Tucson International Airport is the only Superfund site in Pima County, containing seven project areas with groundwater contaminated by trichloroethene (TCE), dichloroethane (DCE), chloroform, chromium, 1,4 dioxane, PFOS, and PFOA compounds.
- **Groundwater Contamination.** There are eight Water Quality Assurance Revolving Fund (WQARF) sites in the county undergoing or scheduled for groundwater remediation. Governed by ADEQ, these sites are associated with landfills or industry and often involve **chlorinated solvents** that are used in degreasers, paint strippers, and dry cleaning.
- **Surface Water Pollution.** Impaired waters are rivers, streams, and lakes that do not attain federal Clean Water Act or Arizona water quality standards. Some portions of the Santa Cruz River are considered impaired because they do not meet the standards for their designated water uses, such as for wildlife, recreation, and public water supply. ADEQ monitors surface water impairment.
- **Emerging Contaminants.** Contaminants of emerging concern are found throughout Arizona. They include ingredients found in pharmaceuticals, household items, fire retardant fabrics, and personal care products. Water quality standards for most of these substances have not been defined.

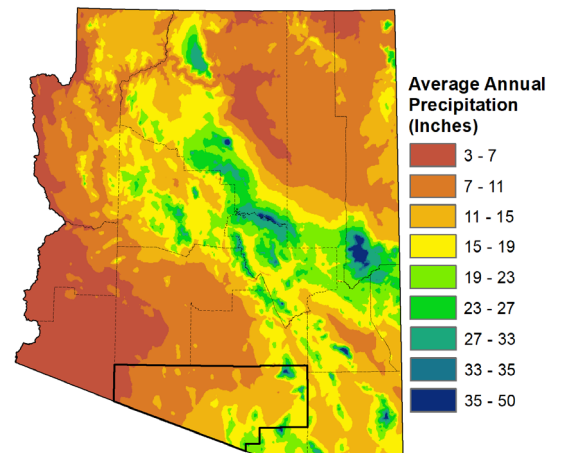


Impaired streams, lakes, and Superfund sites (ADEQ 2020).

What Does Pima County’s Future Water Situation Look Like?

Because the region is expected to be disproportionately impacted by climate change, Pima County's water supplies, communities, and ecosystems are likely to be hit harder and faster than elsewhere around the country. Projected impacts include:

- More extreme heat days (which increase water demand) and a stronger urban heat island effect.
- Increased evapotranspiration (water vaporized from soil and plants). The accumulated soil moisture deficit prolongs drought conditions, putting the county’s water resources at risk.
- Increased groundwater pumping as surface water supplies decrease, adversely affecting the natural environment, creeks, and wells in shallow groundwater areas.
- Increased sediment discharge, flooding, and water quality challenges caused by the growing number, size, and intensity of wildfires.



Mean Precipitation 1981-2010 (PRISM Climate Group 2016).

Shortages on the Colorado River caused by drought and overuse may affect Pima County through reduced CAP deliveries. The **Drought**

Contingency Plan (DCP) aims to forestall catastrophic shortages and mitigate impacts.

How Is Pima County Moving Toward Sustainable Water Management?

Living in a desert city has prompted not only water conservation but also innovation. Tucson's groundwater recharge and recovery provides reliable water supplies using renewable CAP supplies.

CAP Recharge. CAP water has been replacing groundwater use since the 1990s. CAP and recycled water has been stored in aquifers for future use.

Water Reuse. Reclaimed water use has increased four-fold in the Tucson AMA since 1985. Reclaimed water uses include recharge, landscape irrigation, and restoring aquatic and riparian habitat.

Rainwater Harvesting. Landscaping with harvested rainwater (rain that is collected and directed to specific uses) can increase tree shade and reduce urban heat island effects while reducing the use of potable water.

Integrated Land and Water Planning. Communities affect long-term water conservation through building codes, landscaping ordinances, and other strategies, such as the City of Tucson's rainwater harvesting rebate program and green stormwater infrastructure program.

By the early 1900s, the Santa Cruz River had lost all native fish species. Due to efforts to improve water quality and increase streamflow, two native fish species have been reintroduced to the river!

Additional Resources

The WRRC compiled and periodically updates a list of additional resources related to water in Arizona. These resources range from statewide information to information available from local watershed groups and non-profits. Visit the [WRRC website](#) to see a complete list. The resources used for this factsheet are listed below.

WRRC Water Map

A reliable and concise visual representation of Arizona's water resources. This map includes information on land ownership, water use by groundwater basin, annual precipitation, subsidence and groundwater storage, annual water use by region, supply and demand, Colorado River apportionment, and more. [Map Info](#)

Statewide Water Resources

- **ADEQ Emerging Contaminants Report:** An assessment of the emerging contaminants in Arizona's water supplies.
- **ADEQ Impaired Water Information:** Maps and information about the impaired surface waters in the state.
- **ADEQ WQARF Registry:** A list of WQARF sites across the state with descriptions of the individual sites.
- **ADEQ Superfund Sites:** An overview of Superfund sites and descriptions of the sites located in Arizona.
- **ADWR Community Water System Map:** A map of water providers and their service areas.
- **AZ State Maps:** A state population density map with county boundaries.
- **Desert Water Harvesting Initiative:** Green infrastructure guidance and resources for local water harvesting.
- **PRISM database:** Data on historic and current climate patterns, used for the precipitation map of Arizona.

- **USGS Ground Water Atlas of the United States:** Groundwater basics and in-depth research about US aquifers.

Regional Management and Planning

- **Active Management Areas:** Information on groundwater regulation in Arizona and the management of AMAs.
- **Central Arizona Project (CAP):** Background information on the Central Arizona Project.
- **Drought Contingency Plan (DCP):** An overview of the Drought Contingency Plan and its implications for Arizona water users.

County Specific Water Resources

- **PAG Resources:** Various data resources and interactive maps from Pima Association of Governments.
- **PAG Areawide Water Quality Management Plan:** Water quality inventories and wastewater facility interactive map.
- **Pima County Comprehensive Plan:** Pima Prospers is the update to the long-range county plan.
- **Pima County Drought Response Plan:** Information about Pima County's drought response planning.
- **Pima County Living River Report:** The 2020 report on Santa Cruz River conditions.
- **Sonoran Desert Conservation Plan:** Pima County's plan to conserve natural resources.