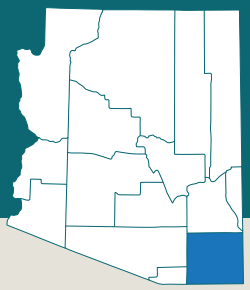


ARIZONA WATER FACTSHEET
Cochise County

Get to know water in your county

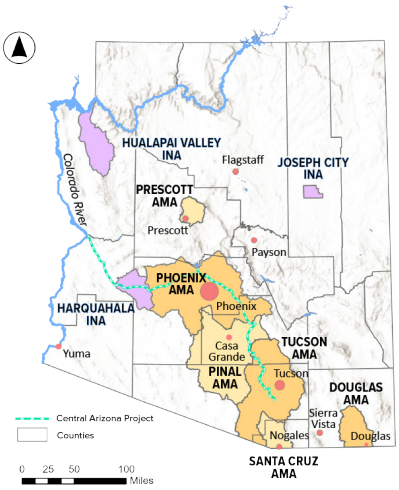
February 2023

COLLEGE OF AGRICULTURE & LIFE SCIENCES
COOPERATIVE EXTENSION
WATER RESOURCES RESEARCH CENTER
wrrc.arizona.edu/arizona-water-factsheets

Water in Arizona

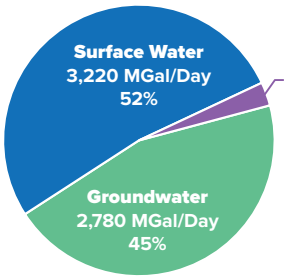
Arizona's future depends on sustainable water supplies, which in turn depend on vigilant and innovative management of those supplies. In our varied landscapes, from low deserts to high mountains, counties and communities face different water challenges and take different approaches to addressing those 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. ADWR regulates groundwater more strictly in Active Management Areas (AMAs) than in the rest of the state.

Statewide Context



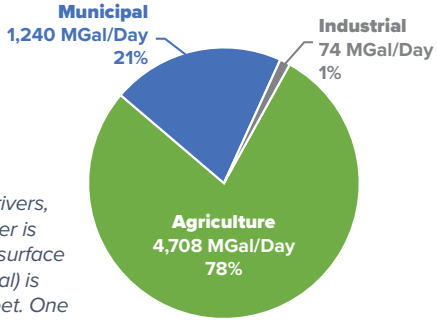
County and AMA boundaries (WRRC 2023).

Arizona Water Supply and Demand



SUPPLIES

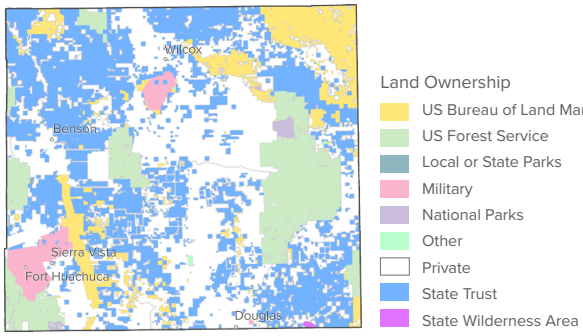
Surface water includes streams, rivers, lakes, and reservoirs. Groundwater is water stored underground in subsurface aquifers. One million gallons (MGal) is equal to a little over three acre-feet. One acre-foot of water serves three single-family homes in the Phoenix area for a year (ADWR 2021, USGS 2015).



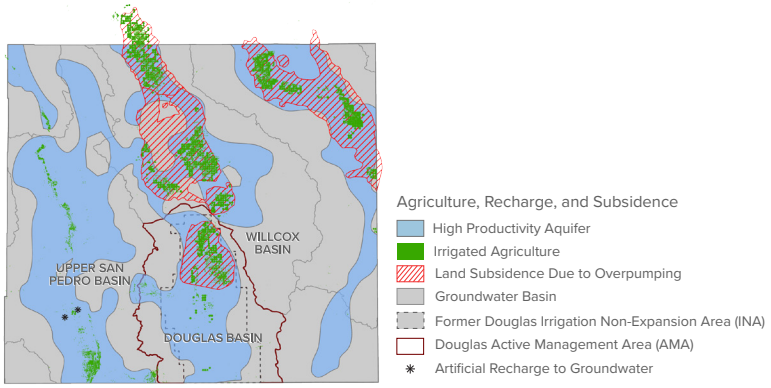
DEMANDS

Water in Cochise County

From mountain woodlands to desert scrub, Cochise County is home to diverse life zones and biomes. Precipitation varies widely from 11 to 41 inches annually in the county, which supports large areas of farming as well as riparian habitat located near naturally flowing streams and springs. Some perennial streams such as the San Pedro River, which runs north from Mexico, provide refuge for hundreds of species of birds, plants, and animals. Approximately 40% of the county is privately owned, more than twice the average for Arizona of just 18%. State and federal ownership account for most of the remaining land.



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



Agriculture, recharge, and subsidence in Cochise County (ADWR, USDA 2022).

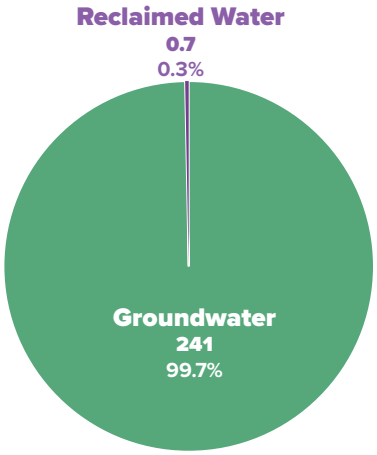
Frequently Asked Questions

Where Does Cochise County's Water Come From?

The primary source of water in Cochise County is groundwater.

For 81% of Cochise County, groundwater supplies are not regulated by ADWR. Instead, groundwater is governed by a doctrine of prior appropriation and beneficial use as defined by the Arizona Supreme Court. However, several strategies are applied in the county to manage groundwater use including:

- The **Douglas Active Management Area (AMA)** was designated on December 1, 2022. When the Douglas AMA was designated, AMA-specific regulations replace those of the previously established Irrigation Non-Expansion Area (INA). Elements of the new AMA will include prohibition on expansion of irrigated acres, metering and reporting requirements, a management goal and plan, wells requirements (e.g. impact analysis for new non-exempt wells), among others.
- Since the 1980s, the county has been implementing measures aimed at reducing overdraft and sustaining surface water. For example, in 2007, Cochise County elected to become a mandatory adequacy jurisdiction, which requires developers to prove a 100-year water supply. If ADWR determines that the available water supply is not adequate, the county can deny approval of a new subdivision.
- The Cochise Conservation and Recharge Network (CCRN) was established in 2015 to implement a series of conservation and recharge efforts using stormwater or reclaimed water - highly treated wastewater - in the vicinity of the San Pedro Riparian National Conservation Area. Their eight project sites comprise more than 6,000 acres and have had a cumulative benefit of more than 41,000 acre-feet of water through recharge, retired pumping, and precluded pumping.



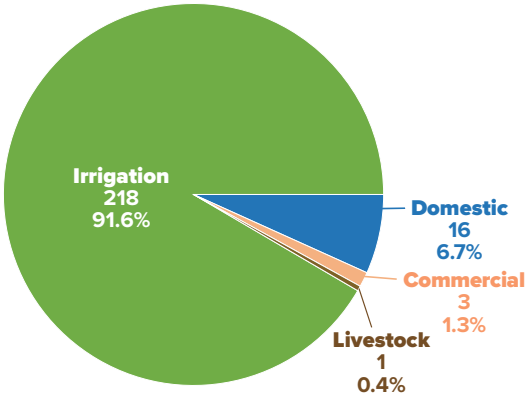
Sources for Cochise County's water (USGS 2015).

The Environmental Operations Park in Sierra Vista recharges nearly 3,000 acre-feet of treated wastewater to the aquifer each year.

How Is Water Used in Cochise County?

Water use in Cochise County is influenced by both land ownership and industry factors, which have changed over time. Long-term drought has added stress to competing water demands in the county, including cities, agriculture, industry (military, tourism, healthcare, mining), and the environment.

- Most of the water in Cochise County (about 92%) is used for irrigation, with municipal use (domestic and commercial) accounting for the remaining approximate 8%. Of the water used for municipal purposes, over half is used outdoors.
- The use of groundwater for irrigation purposes began in the 1940s in the Willcox and Douglas Basins. In the Willcox Basin, water use increased from 133,000 to 180,000 acre-feet per year (or 35%) between 1991-2014. In the Douglas Basin, a similar increase was recorded (from 37,000 to 50,000 acre-feet per year) during the same time period, despite additional oversight of groundwater resources with creation of the Douglas INA in 1980.



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

- Although most homes are served by public or private water providers, many homeowners outside of water utility service areas in Cochise County rely on private domestic wells for household and outdoor use. These wells are not monitored, but a household is estimated to use over 80,000 gallons of water per year by water utilities in southern Arizona.

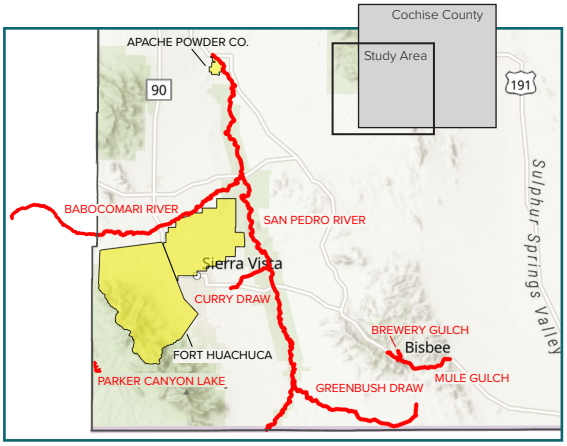
What Water Challenges Does Cochise County Face?

Water Quantity Challenges

- **Overdraft** (pumping more groundwater from an aquifer than is recharged) can cause altered groundwater flows and land subsidence, a sinking ground level that can cause damage to infrastructure. Cochise County contains identified subsidence areas, including Willcox and Douglas basins (see map on page 1).
- In the Willcox Basin, groundwater overdraft has caused some irrigation wells to be drilled to over 1,200 feet deep. In 2017, the cost to drill a well to 1,200 feet was approximately $420,000. Where severe groundwater overdraft occurs, the costs to extract water may eventually exceed farm revenue, making irrigation too expensive for farmers.

Water Quality Challenges

- **Superfund Sites.** Superfund sites are federally designated areas contaminated by toxic substances. Cochise County has one Superfund site found on land formerly owned by Apache Powder Company (nitrate and perchlorate). Fort Huachuca is a Department of Defense (DOD) site that also presents groundwater contamination concerns at its mining and landfill sites (organochlorine pesticides, metals, VOCs, munitions constituents, and petroleum hydrocarbons).
- **Groundwater Contamination.** Nitrates have been found in shallow groundwater and perchlorate has been found in perched groundwater zones as well as in the southern part of the shallow aquifer near Molinas Creek.



Impaired streams and Superfund sites in Cochise County (ADEQ 2022).

- **Surface Water Pollution.** Since they were assessed as impaired in 2022, ADEQ has monitored listed surface water in Cochise County, including a 54-mile stretch of the San Pedro River and three of its tributaries along with Parker Canyon Lake and Mule Gulch and Brewery Gulch in the Douglas Basin.
- **Emerging Contaminants.** Emerging contaminants are found throughout Arizona. They include ingredients found in pharmaceuticals, household items, and personal care products. Water quality standards for most of these substances do not exist. Per- and polyfluoroalkyl substances (PFAS) are ubiquitous, and drinking water standards for members of this large class of emerging contaminants are being considered.

How Is Cochise County Moving Toward Sustainable Water Management?

As water resources in the state become more strained, people continue to study ways to stretch or increase supplies. Cochise County is a leader in uniting land and water planning outside of AMAs.

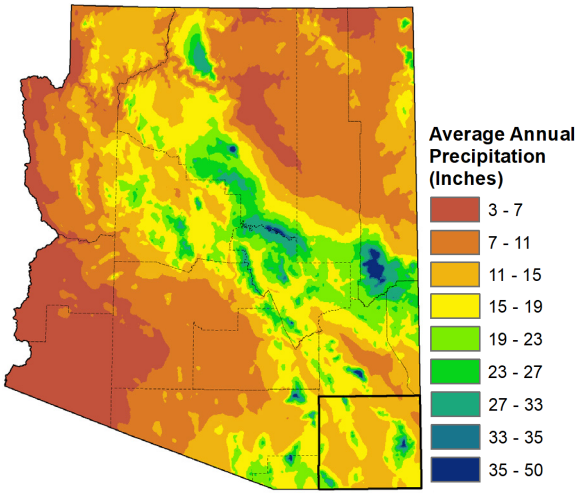
- **Irrigation Efficiency.** Farmers are using less water by planting drought-tolerant crops, shifting from summer dominant crops to winter production, and employing minimum tillage and cover cropping techniques (which also benefit soil health and reduce erosion).
- **Conservation.** Conservation easements, such as the Babocomari Ranch, Tombstone Ranch, and Three Canyons Ranch all in the San Pedro River watershed, and local zoning ordinances help promote sustainable water management and protect critical habitat and ecosystems.

Cochise County is the only county in Arizona to offer a Toilet Rebate Program for local residents who upgrade to low-water use models.

- **Undeveloped Water Supplies.** Stormwater can be managed to support aquifer and wetlands recharge. Small-scale flood and erosion control structures (i.e., rock dams and gabions) can slow floodwaters and improve infiltration. Rainwater harvesting can offset the use of groundwater supplies and support landscaping. The CCRN uses hydrologic monitoring of its natural and constructed recharge sites to optimize infiltration of reclaimed and stormwater and inform site maintenance.

What Does Cochise County's Future Water Situation Look Like?

- The state of Arizona has been experiencing drought conditions for over 20 years. As temperatures rise, evapotranspiration (water surface and soil moisture evaporation plus, plant transpiration) increases, creating drier conditions. A hotter and drier future means increased demands on county water resources. Despite uncertainty about future rainfall and runoff, local drought plans can define responses to these changing conditions.
- Significant declines in perennial flow and endangered species habitat strain the San Pedro River. Continued groundwater overdraft, population growth, and climate change affect the remaining flow, its dependent habitats, and in turn, local economic vitality. Trans-border cooperation between the U.S. and Mexico could provide additional management options for the San Pedro River.
- In context of lowered groundwater tables and drying wells, Cochise County residents voted to create the Douglas Active Management Area (AMA) in November 2022. The proposed AMA for the Willcox Basin was not approved by voters. Groundwater dependence in this area will continue to be a concern. Throughout the county, coordination among stakeholders and innovative approaches to help replenish groundwater supplies, such as watershed restoration and mountain front recharge will continue to be needed.



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

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 Department of Defense (DOD) Sites**: A list of active and closed military 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:** Find information about local water providers serving your area.
- **Cooperative Extension Water Wise**: Information on water saving techniques for Arizona relating to irrigation, gray water, and rainwater harvesting.
- **Desert Water Harvesting Initiative**: Green infrastructure guidance and other resources for water harvesting in arid and semi-arid climates.
- **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 and aquifer basics and in-depth publications about aquifers throughout the US.

Regional Management and Planning

- **Active Management Areas**: Information on groundwater regulation in Arizona and the management of AMAs.
- **Arizona Land and Water Trust**: Non profit organization that collaborates with federal, state, and local partners for land conservation and habitat restoration.

County Specific Water Resources

- **Arizona County Agricultural Economy Profiles:** County profiles highlighting agricultural production, water use, and regional economic data.
- **Cochise Conservation and Recharge Network:** A collaborative partnership tasked with implementing recharge and conservation projects in Cochise County.
- **Cochise County Comprehensive Plan**: Amended and readopted in 2015, the county details long-term goals for land and water use and conservation.
- **National Integrated Drought Information System (NIDIS):** Cochise County specific drought information.
- **San Pedro Web-Based Hydrologic Informational Portal (WHIP)**: Explore the WHIP interactive maps and learn about the availability of groundwater and surface water within the Upper San Pedro Basin.
- **Upper San Pedro Partnership:** A consortium of agencies and organizations that work together to assist in meeting water needs in the Sierra Vista Sub watershed of the Upper San Pedro River Basin.

TRIF Initiative

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