

2020
**VERDE RIVER
WATERSHED**
REPORT CARD

THE VERDE RIVER: A RIBBON OF GREEN IN AN ARID LANDSCAPE

The Verde River is 190 miles of flowing water—one of Arizona’s last living rivers. The watershed is incredibly diverse—at 6,600 square miles it encompasses wide-open grasslands, ponderosa pine forests, and desert landscapes. The ribbon of green created by the river is a small part of the land area but a large part of the biodiversity. The USDA Forest Service is a critical land and water manager across four National Forests in the watershed that cover 70% of its area.

The Verde River springs to life in a narrow canyon, fed by groundwater that emerges from aquifers underneath the Big and Little Chino Valleys—some of the largest and highest-quality grasslands in Arizona. The rain that falls here recharges the underlying aquifers. The Big Chino aquifer supplies about 80% of the flow to the first 24 miles of the Verde River.

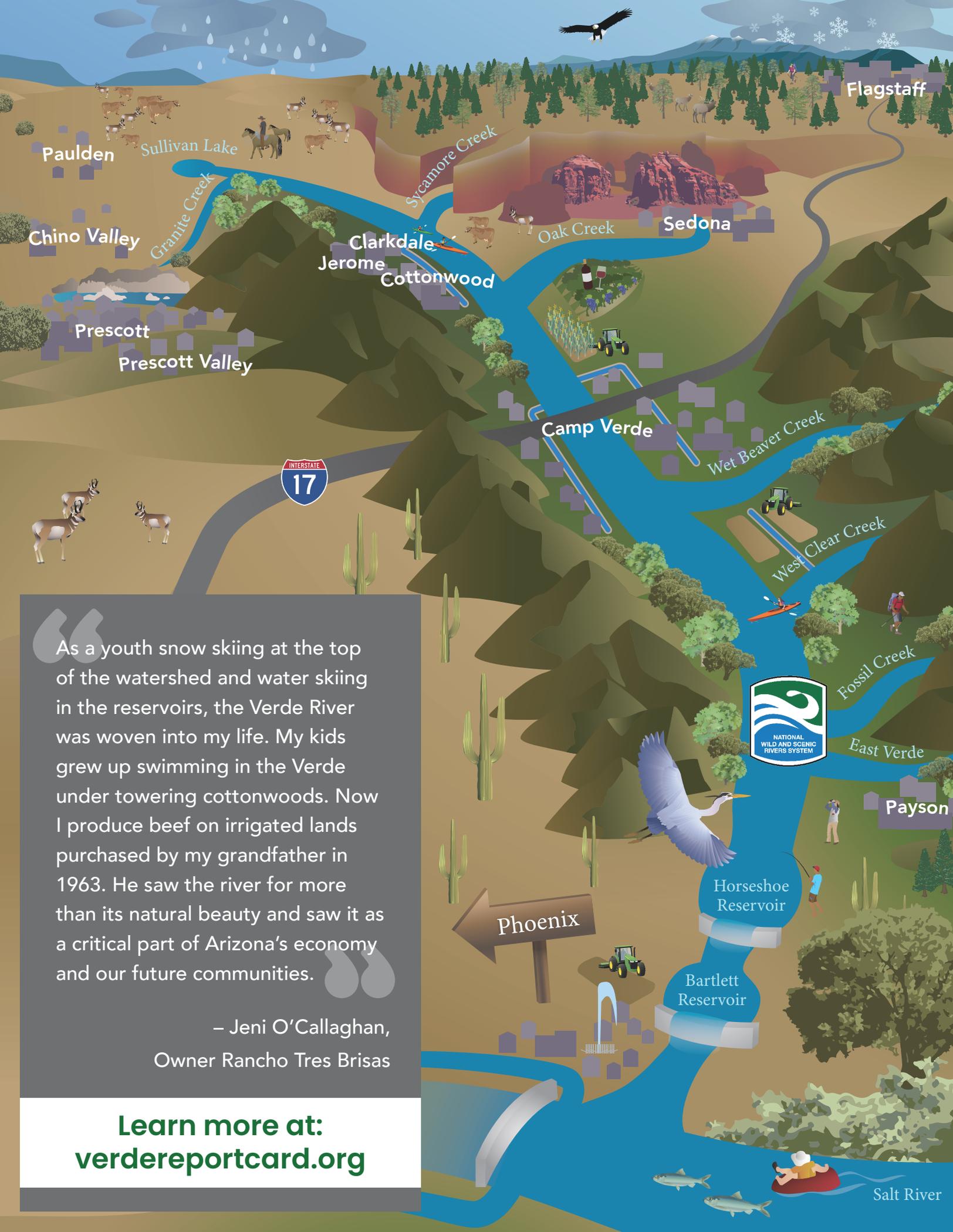
The river changes as it flows south into the Verde Valley. This 52-mile stretch is the most accessible area along the river and was originally settled for agriculture and mining. The Yavapai and Apache peoples have lived here since time immemorial. Seven large ditches divert water onto agricultural fields and yards. The river attracts people for boating and recreation, with public access in the Arizona State Parks’ Verde River Greenway, municipal parks, and Forest Service access points. Oak Creek, the largest tributary to the river, cuts through the iconic red rocks of Sedona.

As the river continues south, it is bounded by canyon walls and limited access has preserved much of its natural character. Over 57 miles of river in the watershed are designated under the National Wild & Scenic Rivers Act, a federal recognition for free-flowing rivers with unique and outstanding values. As the Verde River

approaches the confluence with the Salt River, it is impounded by Horseshoe and Bartlett dams. These reservoirs provide a crucial water supply to the Phoenix metropolitan area.

The Verde River is threatened by unrestricted groundwater pumping, surface water diversion, degraded habitats, and a changing climate. By working together, we can ensure that the river keeps flowing and our communities continue to flourish.





“As a youth snow skiing at the top of the watershed and water skiing in the reservoirs, the Verde River was woven into my life. My kids grew up swimming in the Verde under towering cottonwoods. Now I produce beef on irrigated lands purchased by my grandfather in 1963. He saw the river for more than its natural beauty and saw it as a critical part of Arizona’s economy and our future communities.”

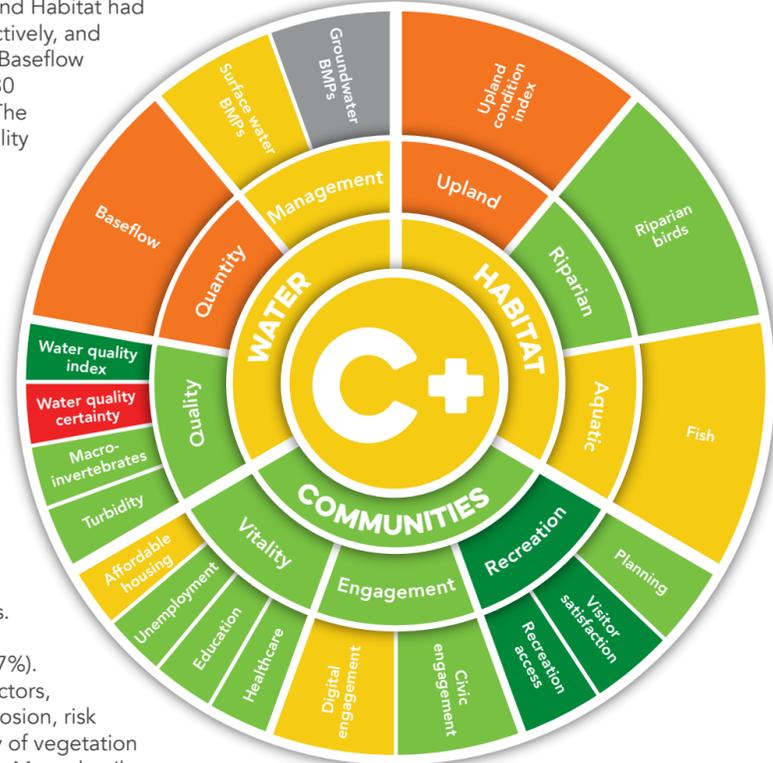
– Jeni O’Callaghan,
Owner Rancho Tres Brisas

**Learn more at:
verdereportcard.org**

Salt River

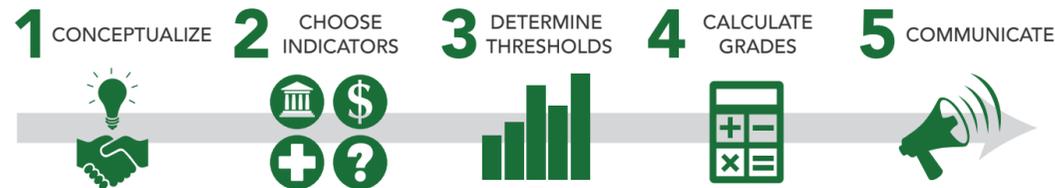
THE VERDE RIVER WATERSHED IS IN MODERATE CONDITION

Overall, the Verde River watershed earned a score of 57%, a C+. Of the three categories, Water and Habitat had moderate scores, 49% and 54% respectively, and Communities had a good score, 69%. Baseflow scored poorly, (38%) reflecting nearly 30 years of steadily declining baseflows. The lowest scoring indicator was water quality certainty, which was very poor (19%), and measures how certain we are that the water quality scores are accurate. This is due to the need for increased monitoring efforts throughout the watershed. While some reaches are studied extensively, others are studied very little or not at all. The highest scoring indicators were in the Communities category; both recreation access and visitor satisfaction had very good scores, 87% and 96%, respectively. There are many recreational opportunities available across the watershed and visitors are happy with their experiences on and around the river. The habitat category had mixed results. Upland habitat had a poor score (36%) and riparian birds had a good score (77%). Habitat scores are affected by many factors, including the susceptibility of soil to erosion, risk of catastrophic wildfire, and the quality of vegetation near streams and rivers for bird habitat. More details are available at verdereportcard.org.



How ecosystem health was evaluated

Watershed report cards are powerful tools used around the world to describe ecosystem status, increase public awareness, and inform and influence decision makers to act to improve the health of a watershed. This is the first Verde River Watershed Report Card and it reflects the collective effort of dozens of stakeholders that manage land, water, and wildlife in the Verde watershed. The five-step report card process (below) was highly participatory, involving the engagement of over 16 entities over an 18-month process of workshops, data compilation, and stakeholder interviews. Three categories of indicators were selected to evaluate the overall health of the Verde watershed: Water, Habitat, and Communities. Status of indicators within these categories was evaluated by comparing data to scientifically-derived thresholds or goals. Each region score is area-weighted or population-weighted to attain the overall Verde Watershed score.



Grade scale

- A** Very good (100–80%)
- B** Good (79–60%)
- C** Moderate (59–40%)
- D** Poor (39–20%)
- F** Very poor (19–0%)
- U** Unscored

Big and Little Chino C+

The Big and Little Chino had a moderate score, 55%, a C+. The highest-scoring indicators were visitor satisfaction and healthcare. The lowest-scoring indicators were upland habitat, aquatic habitat, and water quality certainty. This region had the lowest score for the water quality index indicator in the watershed. The Big and Little Chino are the names of both the aquifers and grasslands in this region. The grasslands provide habitat for pronghorn, burrowing owls, and prairie dogs, while supporting a vibrant livestock grazing industry. The aquifers serve the towns of Prescott, Prescott Valley, and Chino Valley and contribute to most of the flow in the Upper Verde River.

Upper Verde Valley C+

The Upper Verde Valley had a moderate score, 55%, a C+. Indicators with low scores were upland habitat, baseflow, and aquatic habitat. This region had the lowest baseflow score in the watershed. Higher scoring indicators were recreation access, recreation planning, and visitor satisfaction. This region had the highest recreation access score in the watershed. In this region, the river enters the Verde Valley, where water is used for recreation (kayakers), agriculture, and landscaping. Clarkdale and Cottonwood have recreation opportunities along the banks of the river with Deadhorse Ranch State Park and Tuzigoot National Monument.



Lower Verde B-

The Lower Verde had a good score, 62%, a B-. This region had the highest scores for water quality certainty, education, and healthcare in the watershed. Conversely, it had the lowest scores in the watershed for upland habitat and recreation planning. This region includes the Horseshoe and Bartlett dams that ensure Arizona has a robust and resilient water supply. Abundant and diverse wildlife flourish between the reservoirs and the Fort McDowell Yavapai Nation, where the Verde meets the Salt River just northeast of Phoenix.

C Upper Verde

The Upper Verde had the lowest score of any region, with 51%, a C. This was due to low scores in water quality certainty, recreation access, and upland habitat. This region had the lowest score for recreation access in the entire watershed. Some of the higher scoring indicators in this region were recreation planning, visitor satisfaction, and unemployment. The region includes the source of the Upper Verde River near the confluence with Granite Creek and flows to Sycamore Creek. This stretch is characterized by canyon walls and abundant wildlife. While there are limited access points, many visit this section of the watershed via the Verde Canyon Railroad.

B Oak Creek

Oak Creek was the highest scoring region in the Verde, with 65%, a B. This region had perfect scores (100%) in recreation planning and digital engagement. Recreation access and visitor satisfaction also had very good scores. This region had the highest scores for baseflow and macroinvertebrates (small aquatic animals) in the watershed. Lower-scoring indicators were water quality certainty and affordable housing. Most Arizonans know Oak Creek for its stunning red rocks and crystal clear waters, but it also supports agriculture and aquaculture. Arizona Game and Fish Department's Page Springs Fish Hatchery produces more than 70,000 trout each year.

B- Lower Verde Valley

The Lower Verde Valley had a good score, 62%, a B-. High-scoring indicators were the water quality index, recreation planning, recreation access, visitor satisfaction, and surface water BMPs (best management practices). This region had the highest civic engagement score in the watershed. Lower scores in the region were water quality stability and affordable housing. The Lower Verde Valley includes Beaver Creek and West Clear Creek. It is a diverse mix of public and private lands with the town of Camp Verde at its center. Recreation opportunities include exploring Montezuma Castle National Monument, picnicking in Camp Verde's Rezzonico Park, and kayak launches from Forest Service access points.

C Wild and Scenic

The Wild and Scenic region had a moderate score, 54%, a C. The lower scores were in water quality certainty, baseflow, civic engagement, and education. Higher-scoring indicators were water quality index, riparian habitat, and digital engagement. This region includes the river segments designated as part of the National Wild & Scenic River System and the community of Payson. In 1984, 40.5 miles of the river between Camp Verde and Horseshoe Reservoir were designated and another 16.8 miles of Fossil Creek were added in 2009.



Learn more at: verdereportcard.org

WATER SECURITY FOR PEOPLE AND NATURE

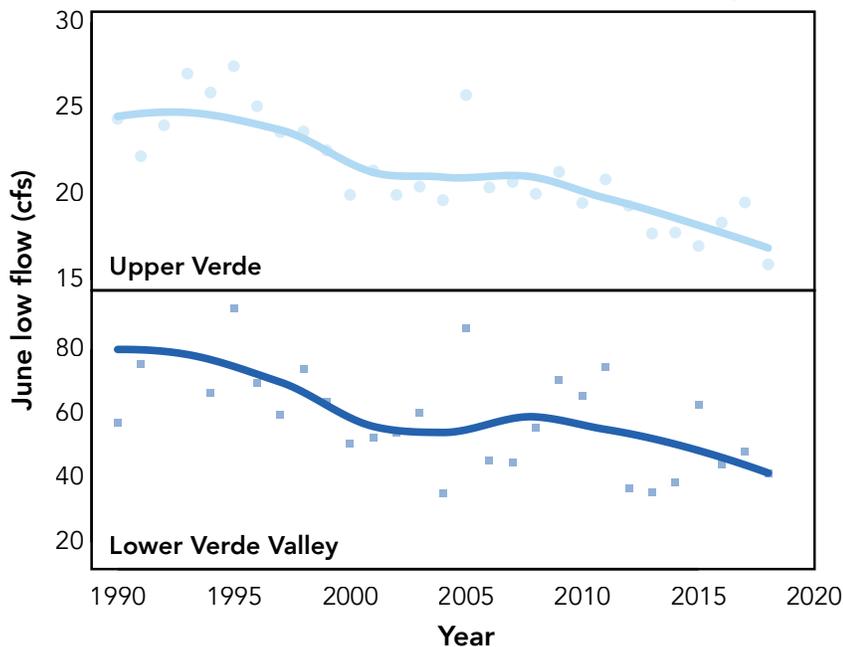
Every day, we use water in our homes and businesses. Water is essential to the food we eat and some of which is produced locally. Many jurisdictions manage water in the Verde River Watershed.

Most drinking water in the Verde Watershed comes from groundwater sources. Groundwater is the water found below the surface in the cracks and spaces in soil, sand, and rock. It is stored in, and moves slowly through, geologic formations called aquifers. Rules governing groundwater in Arizona differ based on whether the land is inside or outside of an Active Management Area (AMA). There are two AMAs in the Verde watershed: the Prescott AMA and the Phoenix AMA. Outside of AMAs, there is little regulation of groundwater. To learn more about AMAs and how they are managed visit: <https://new.azwater.gov/ama>.

Another important source of water in the Verde Watershed is surface water, which flows within a stream or river channel. In Arizona, water that is immediately adjacent to and under the river channel and will flow into the river can be regulated as surface water. Surface water in the Verde Valley is used to irrigate farms, gardens, and lawns where the landowners have historic rights to use water.

Adjudication is the judicial proceeding to determine the nature, extent, and relative priority of water rights in Arizona. The Verde River is part of the Gila River System and Source Adjudication initiated in the 1970s. As this adjudication process awaits completion, it remains unclear who has a right to how much water and where it can be used. As a result, we have uncertainty among surface water users, resulting in even more uncertainty for nature.

Verde River flow is declining



Since 1990, flow in the Verde River and its tributaries has been steadily declining. From 1990 to 2018, Verde River June low flow declined 32% in the Upper Verde (top panel) and 46% in the Lower Verde Valley (bottom panel). Trends are based on the mean June 7-day low flow in cubic feet per second (cfs), measured by the U.S. Geological Survey.



HEALTHY RIVERS, HEALTHY COMMUNITIES

Our vision of flowing waters ways, healthy riverside habitat, and successful human communities requires collaboration. Partnerships such as Verde Front Leadership Council, Verde Watershed Restoration Coalition, and the Verde Flow and Habitat Restoration Regional Conservation Partnership Program have brought together agencies, landowners, the agriculture sector, nonprofits, and other stakeholders. The results are significant:

- Removed invasive plants from more than 9,000 acres of riverside lands.
- Improved irrigation systems to reduce water demand by more than 40,000 acre feet annually.
- Introduced new crops and changed agricultural markets that added jobs in the economy, kept farms in production, and reduced consumptive use of water by more than 200 acre feet annually.
- Protected critical agricultural lands and riverside habitat on more than 3,300 acres of land through conservation easements.
- Developed state parks and conservation areas stretching from the Verde's headwaters, through the Wild and Scenic section, to its confluence with the Salt River.

Yet we have more to do. The Verde Watershed Report Card serves as a framework for measuring continued progress toward our vision by regularly evaluating the watershed with commonly identified metrics and driving actions to improve watershed health.



Learn more at: verdereportcard.org

You can practice a river-friendly lifestyle!

Reduce your water use to protect the river, lower costs, and use less energy.



Be a part of your community, stay informed, attend meetings, and make your voice heard.



Volunteer and donate with one of the many river-focused organizations.



Acknowledgments

This report card is a timely, transparent assessment of Verde watershed health as of December 2019. This document was produced by the Nature Conservancy, Friends of the Verde River, and the University of Maryland Center for Environmental Science. The data and methods underpinning this report card are detailed in the methods document and at verdereportcard.org. Funding support for this project was provided by the Nina Mason Pulliam Charitable Trust and the USDA Forest Service.

All photos and graphics: The Nature Conservancy, Friends of the Verde River, and the Integration and Application Network.