

WHAT YOU CAN DO

WOULD YOU LIKE TO LEARN MORE ABOUT SPRINGS ECOLOGY AND HELP US SURVEY SPRINGS?

Scan the QR Codes below!



[SPRINGSTEWARDSHIPINSTITUTE.ORG](http://SpringStewardshipInstitute.org)
for more information about Verde River springs and this project.



[VERDE SPRINGS VOLUNTEER PAGE](#)
for the Springs Stewardship Institute volunteer sign-up form. Please include **“Verde Watershed Springs”** in the *Interests* box.

NOT READY TO VOLUNTEER?
YOU CAN ALSO

- Spread the word about the importance of springs.
- Practice Leave No Trace principles
Learn more at: LNT.org
- Get your home or business certified with River Friendly Living. Learn more at: verderiver.org/river-friendly-living
- Are you a land manager, researcher, or community scientist? Create an account at Springs Online (SpringsData.org) to contribute your information to the knowledge base.

SUPPORTING PARTNERS



NINA MASON PULLIAM
CHARITABLE TRUST
CELEBRATING 25 YEARS



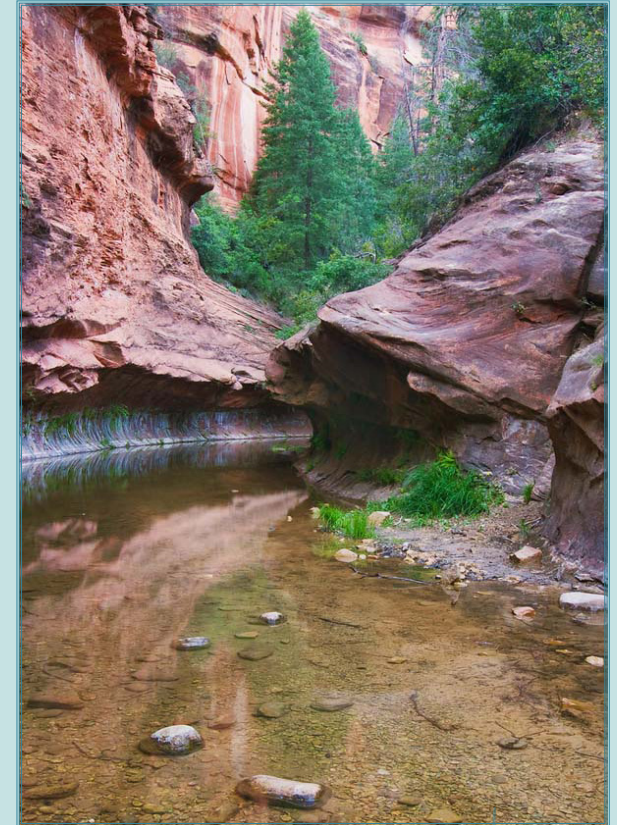
Springs

STEWARDSHIP INSTITUTE
[SPRINGSTEWARDSHIPINSTITUTE.ORG](http://SpringStewardshipInstitute.org)



SPRINGS OF THE VERDE RIVER

DISCOVERY AND STEWARDSHIP



The springfed West Fork of Oak Creek. Photo courtesy of Joel Hazelton.

AN INITIATIVE OF
Springs Stewardship Institute
&
Friends of the Verde River

WHAT ARE SPRINGS?

Springs are places where groundwater is exposed at, and often flows from, the Earth's surface. These waters are sourced from **underground aquifers**.

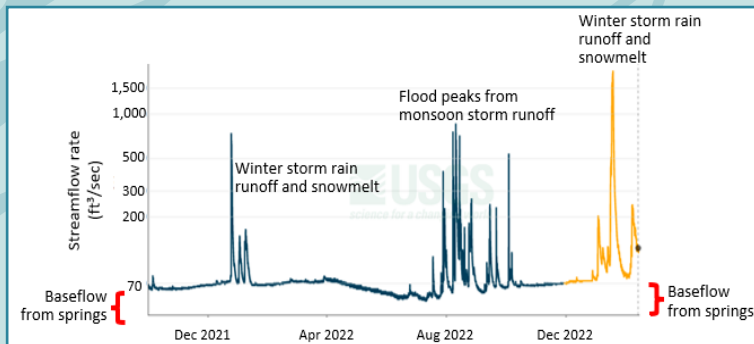
In some cases, the waters emerging from a spring may have traveled long distances, taking tens, hundreds, or even thousands of years before they reach the surface. Springs can be either **perennial** with constant outflow, or **ephemeral** and have seasonal or erratic emergence intervals throughout the year. Their flows may be immeasurably small or incredibly large, often creating rivers or lakes.

Springs are said to be **windows into the Earth**. They



Montezuma Well, Yavapai County. Photo from SpringsOnline.

are some of the most **sensitive indicators** of global climate change. Despite the relatively small area of springs within landscapes, these ecosystems support more than 20 percent of the **endangered species** in the United States, as well as a high number of rare groundwater-dependent species. They hold great **cultural significance** for many indigenous cultures throughout the southwestern United States and the world. Thus, springs play a vital role in the health and longevity of our society as well as our planet.

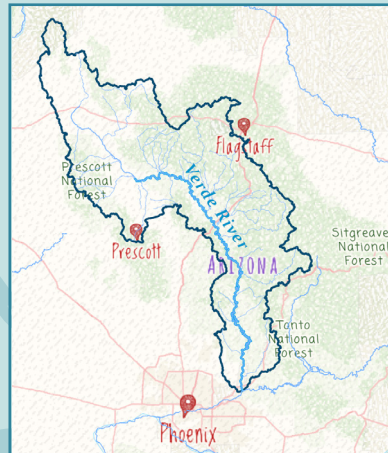


Streamflow data from Clarkdale gauge courtesy of USGS.

VERDE RIVER WATERSHED

The Verde River and its watershed are at the heart of Arizona. It is a critical feature on the landscape for its lush riparian habitat, its role as an ecological migration corridor, and as one of the last of Arizona's free-flowing rivers. Forty miles of the Verde River have been given a federal designation of **Wild and Scenic River**.

Like many riparian and groundwater dependent ecosystems, the Verde and its springs support many special animal and plant species, several of which are threatened or endangered.



Boundary of the Verde River watershed.

Flow in the Verde River comes from several sources: runoff from rainstorms, runoff from snowmelt, and **flow from springs**. In the Verde River, the portion of the river flow derived from springs is referred to as baseflow. The **baseflow** is the portion of the river flow not dependent on recent weather patterns, such as a rainstorm this week or snowpack accumulated during the prior winter. In other words, springs are responsible for the **perenniality**, or relative permanence of the river flow in the Verde.

WHAT WE ARE LEARNING

SSI is excited to embark on a major effort in the Verde watershed. We are partnering with Friends of the Verde River to map and inventory the headwater springs that provide critical baseflow to the Verde River and its tributaries. SSI is dedicated to protecting Arizona's springs, including spring fed streams, springs-dependent wildlife, and the human cultures they support.

WE WANT TO KNOW:

- Where are the Verde's headwater springs located?
- What important, unique, or endemic flora and fauna do the springs support?
- How much flow does each spring contribute, and what is the quality of the spring water?
- How are human activities impacting the springs, and what recommendations can we make for better stewardship and management?



Springs Stewardship Institute crew member measures outflow from a spring.