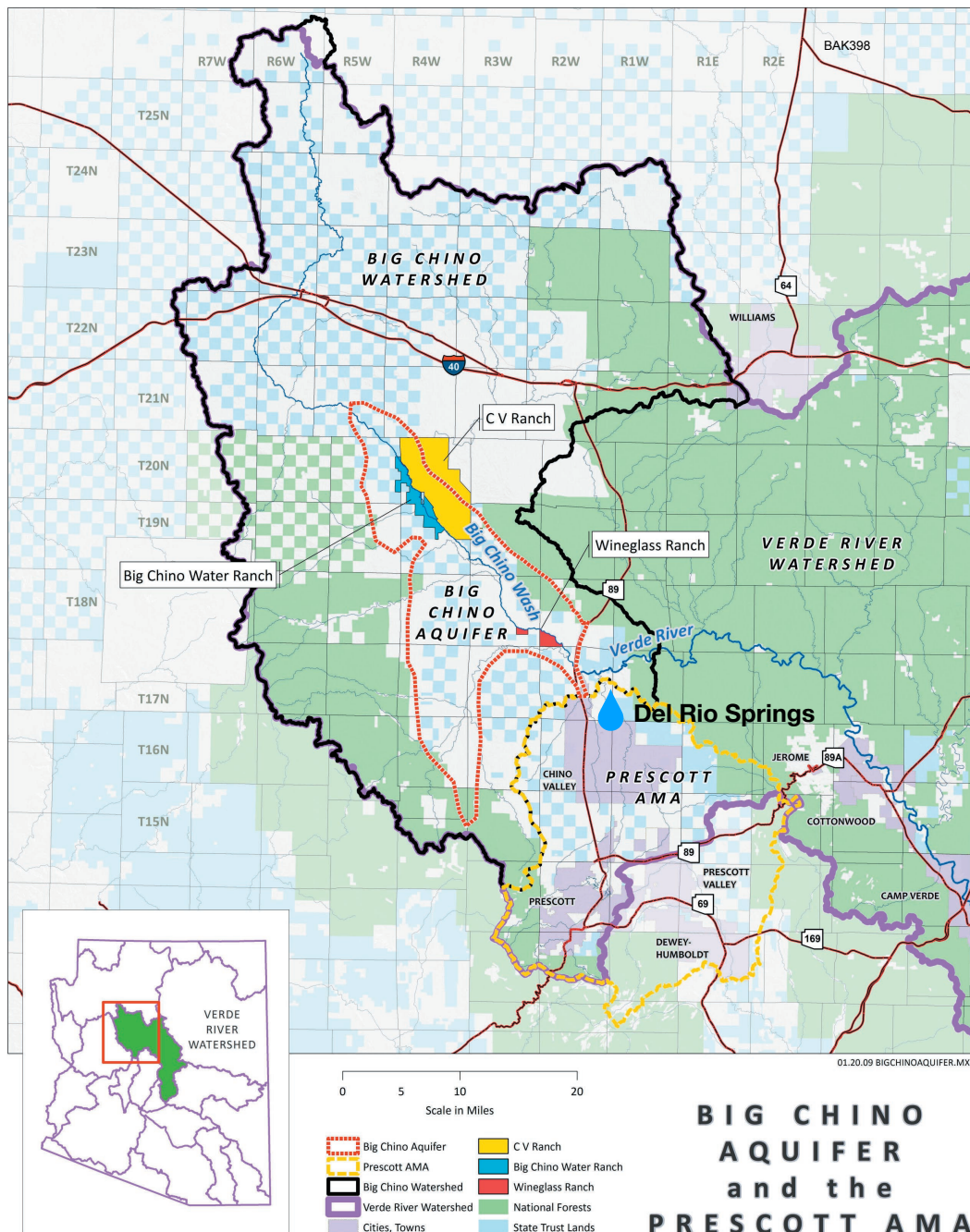


# 2023 CWAG Candidate Forum

## Prescott City Council/Mayor Election

### Factual Basis For Questions

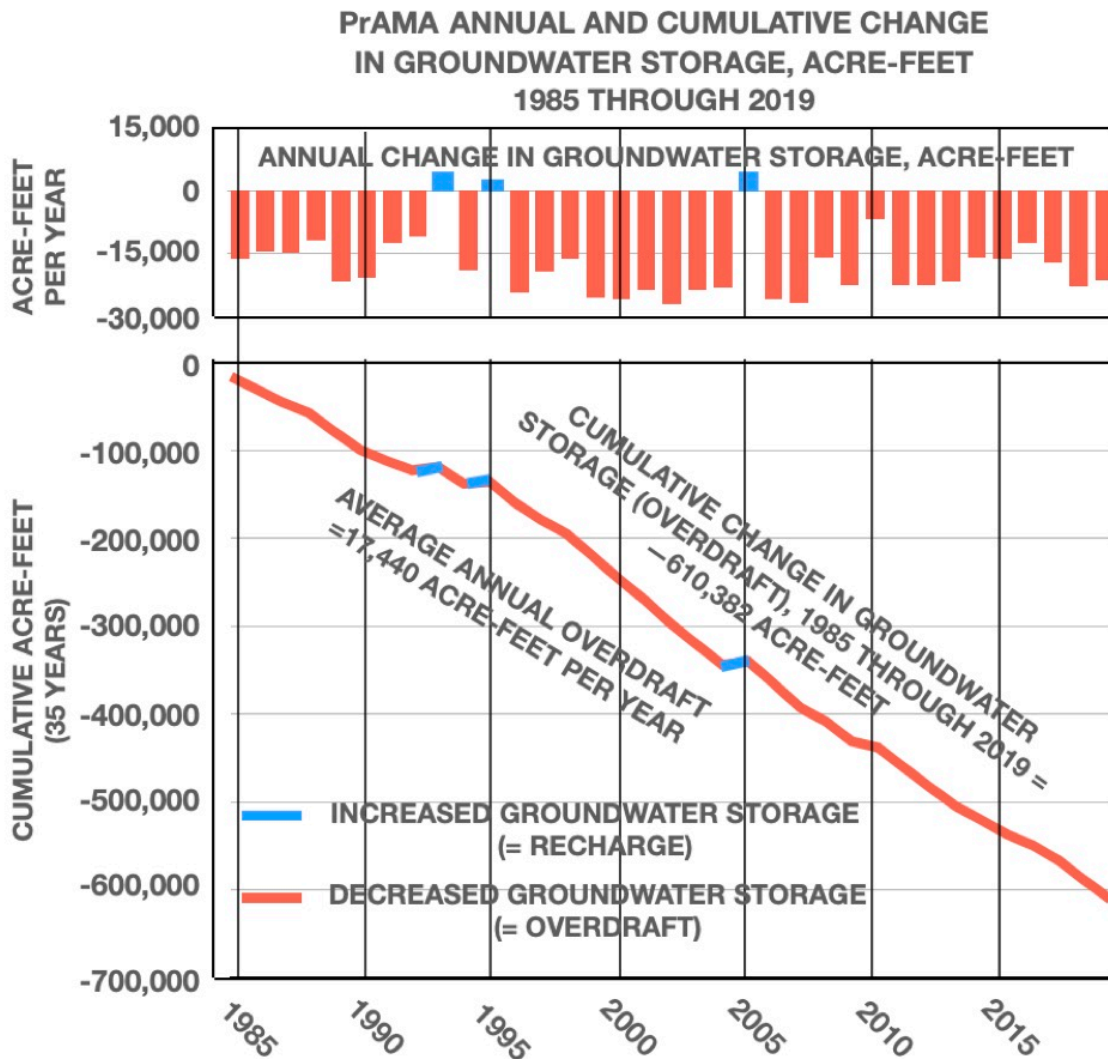
Because the questions refer to regional water problems, it is helpful to have a few basic facts in mind to establish why we must address threats to a secure water future and the continued flow of the upper Verde River. The map below displays the regions of concern: the Verde Valley, the Prescott AMA (PrAMA) and the Big Chino Watershed. Our water issues are larger than the Prescott city limits.



## Current Status of the Prescott Active Management Area

Groundwater resources in the PrAMA are managed by the Arizona Department of Water Resources (ADWR). The management goal of the PrAMA is safe yield by 2025.

Safe yield is a long-term balance between recharge and withdrawal of groundwater. The chart uses ADWR data and shows that the overdraft is accumulating, indicating that we are moving away from safe yield. In the recent 5th Management Plan, ADWR admits that, realistically, it is impossible to attain the management goal.



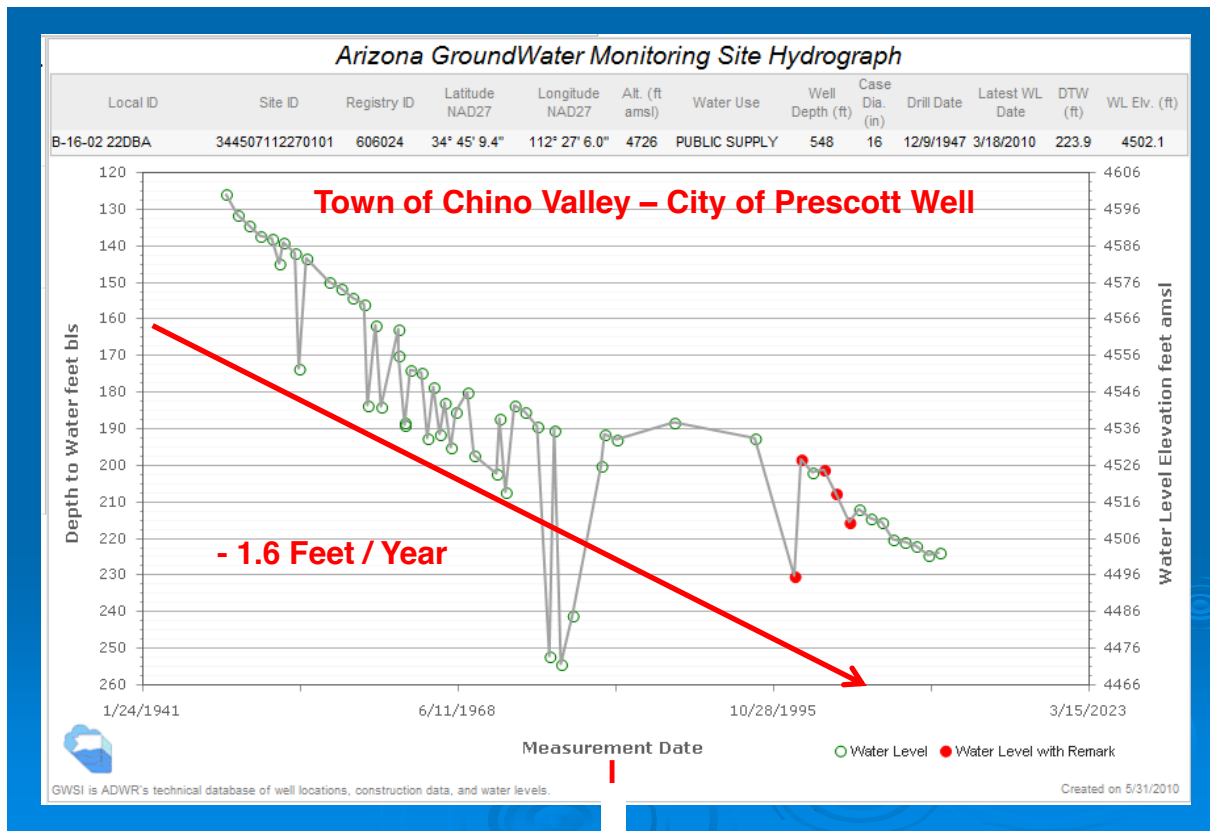
Data downloaded August 22, 2022, from Arizona Dept. of Water Resources Overdraft Dashboard

ADWR has managed the PrAMA for about two decades. In that time the annual overdraft has remained unchanged and very large. The annual overdraft for 2019 exceeds 21,000

acre-feet per year (afy). To envision an acre-foot, imagine a football field with water one foot deep. The cumulative overdraft now exceeds 600,000 af. In 2019, we removed enough water from the aquifer to flood a football field 4 miles deep, and the cumulative overdraft would fill a football field 114 miles deep in water! This cannot go on forever.

Unfortunately, the PrAMA is moving away from, not toward, the management goal: safe yield. Safe yield is a goal, not a requirement. ADWR places the responsibility for a safe yield plan on elected city officials in the PrAMA. At this time, no plan exists, and there are no planned discussions about a safe yield plan. There are no legal consequences for failing to achieve safe yield; there is no penalty for failure. There are no incentives. Therefore, safe yield is a policy designed to fail. The long-term consequences of failing to reach safe yield are loss of water security and damage to the upper Verde River.

Our domestic and municipal potable water supply is groundwater. The Little Chino sub-basin (within the PrAMA from Prescott north through Del Rio Springs) is our greatest concern because it is the primary source of water for Chino Valley, Prescott, and some Yavapai County residents, plus it supplies over 60% of Prescott Valley’s water. Little Chino wells intercept groundwater flowing north from the Prescott basin through Del Rio Springs and to the Verde River. The relentless overdraft causes groundwater levels in the Little Chino aquifer to decline. You can see the decline in the plot below showing the declining water level in one of Prescott’s production wells in Chino Valley.

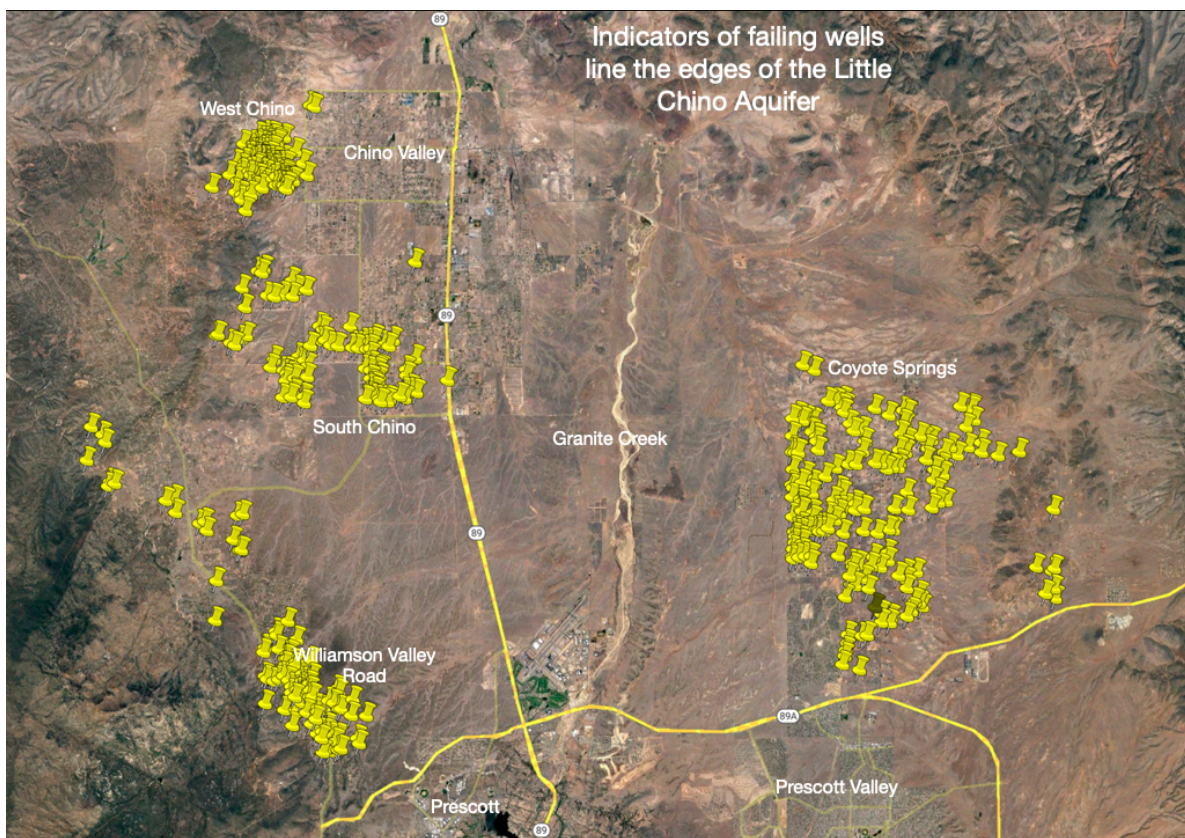


### **Who is Contributing to the Increasing Overdraft in the Prescott AMA?**

Municipal water use is currently about 75% of the total demand in the Prescott AMA in 2022. Prescott and Prescott Valley each contribute approximately equally to the overdraft because both communities pump much more groundwater than the volume of natural recharge plus wastewater recharge.

### **Declining water levels cause domestic wells to go dry.**

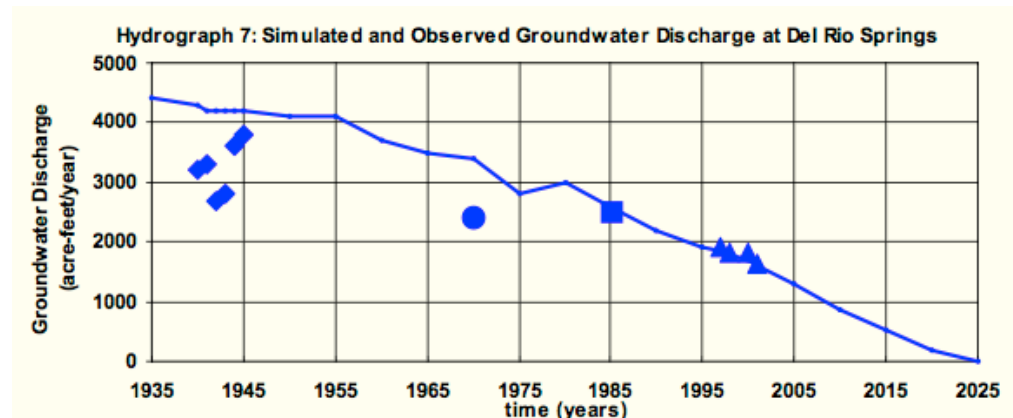
By inspecting aerial photos of the PrAMA, CWAG has identified hundreds of large water storage tanks on rural lots not served by a municipal utility. These tanks indicate a failing or dry well that cannot supply enough water for the home, forcing families rely on commercial water haulers to refill the tanks. These failing wells are found on the outside edges of the aquifer: west and south of Chino Valley, in the Williamson Valley Road area, and in Coyote Springs. CWAG expects that there are many more failing wells, and that the number will increase. This is a financially devastating event for the families. A dry well adds hundreds of dollars in monthly water hauling bills and can cut the home property value in half.



**Declining water levels in the Little Chino sub-basin are also causing Del Rio Springs to dry up.** The graph below from ADWR projects that Del Rio Springs will cease flow in 2025.

Note that Del Rio Springs was the historical headwaters of the Verde River, but now perennial flow begins 6 miles downstream at Verde Springs. We have already lost 6 miles of the river due to groundwater pumping. The Little Chino sub-basin contributes about 14% of the base flow of the upper Verde River; thus, the overdraft in the Little Chino Aquifer reduces the base flow of the river.

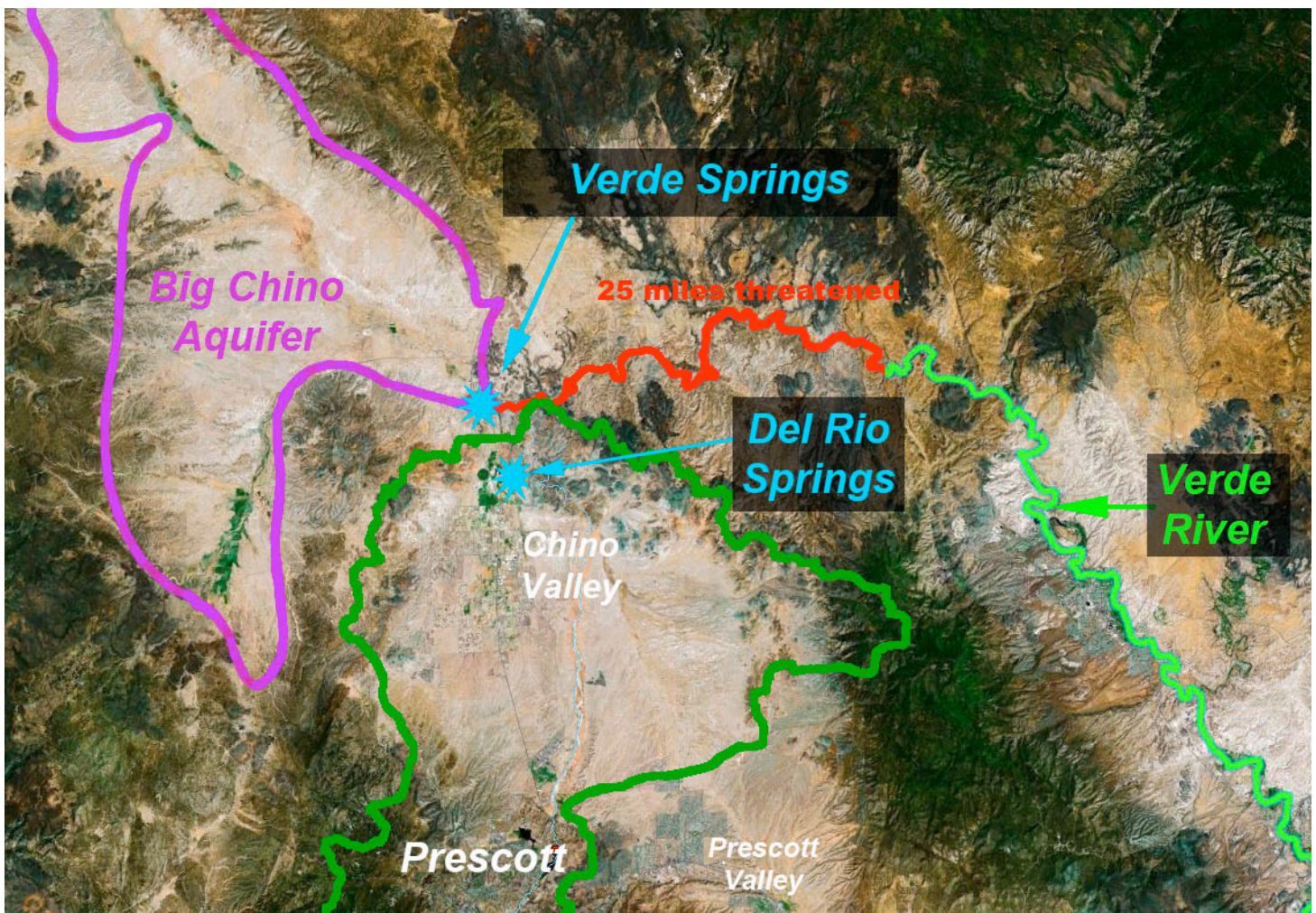
*The measured flow from Del Rio Springs is declining. Graph from the ADWR groundwater model for the PrAMA.*



## Current Status of the Big Chino and Verde River

The Big Chino Valley, which overlies the Big Chino aquifer, consists of unincorporated lands within Yavapai County. They are not part of the PrAMA. There is no management, monitoring, or restriction on groundwater pumping; any landowner can pump groundwater without limit for a beneficial use.

A geochemical analysis by the US Geological Survey (USGS) calculated that 80-86% of the base flow of the upper Verde River is groundwater from the Big Chino aquifer. Currently, that groundwater emerges between the beginning of Verde Springs (mile 2) and the Paulden stream gage (mile 9.8, not shown on map) to constitute most of the base flow (the groundwater component of streamflow) of the river. Groundwater pumping in the Big Chino will reduce the base flow by the amount pumped. Unmitigated groundwater pumping from the Big Chino aquifer is an existential threat to the upper Verde River.

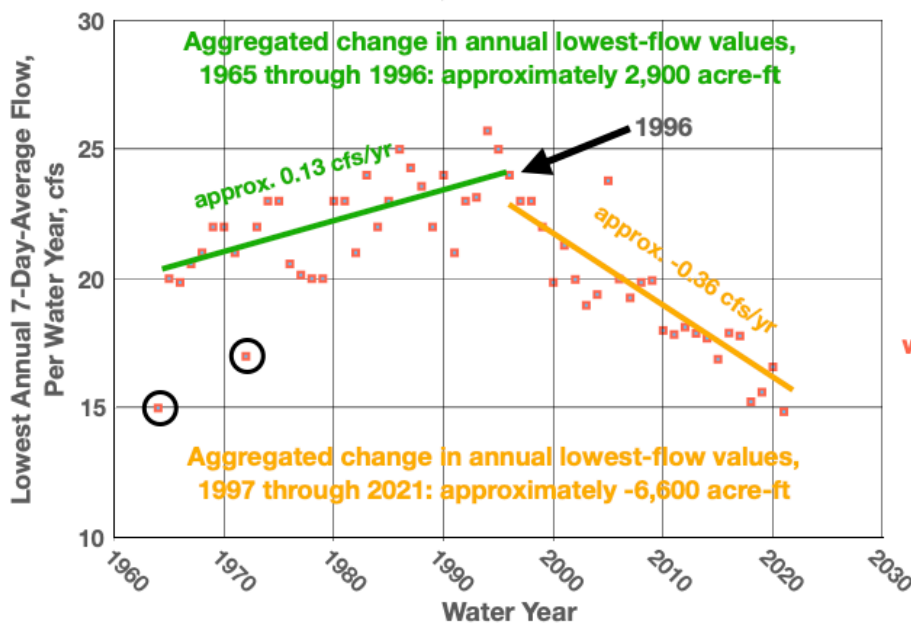


The graph below uses data from the USGS Paulden stream gauge. It shows that the base flow (lowest 7-day flow per year) has been declining since the mid-1990s. In June 2020, this lowest annual flow is just below 15 cubic feet per second (cfs), which is approximately 60% of the lowest flow in the mid-1990s. In 2018 the annual volume flowing past the site of the Paulden gauge was 61% of the estimated pre-development flow in 1940. In other words, the lowest flow increased minimally and erratically until mid-90's but has declined drastically since then. The river is now in an especially vulnerable condition.

Groundwater pumping, higher temperatures, and regional drought are the likely causes. Climate change models project higher temperatures and reduced aquifer recharge which will further reduce streamflow in future decades.

***We are now losing the Verde River.***

**USGS PAULDEN STREAMGAGE, LOWEST 7-DAY ANNUAL FLOW**



**If declining trend at Paulden gage -0.36 cfs/y, or -260 af/y, continues unchanged, Verde River will be briefly dry annually through Perkinsville, 25 river miles, beginning in 2060s**

## Upper Verde River Watershed Protection Coalition

Logically, because we share the same groundwater supply, we should jointly and cooperatively manage the water resource. Legally, ADWR holds the water users in the PrAMA responsible for achieving Safe Yield. So far, neither logic nor law has generated effective and sustained regional management of groundwater.

An early effort by the Yavapai County Board of Supervisors failed when they dissolved Water Advisory Committee in 2014.

Another effort was the Upper Verde River Watershed Protection Coalition (UVRWPC), formed in 2007 with membership of Chino Valley, Prescott Valley, Prescott, Dewey-Humboldt, Yavapai County, and the Yavapai-Prescott Indian Tribe. Salt River Project declined to participate. The IGA of formation states the purpose:

*“Working together to protect the Upper Verde River, the COALITION is committed to balancing the reasonable water needs of the residents of the Upper Verde River Watershed Area with protection of the base flow of the Upper Verde River to the maximum possible extent by developing BMP’s [sic: Best Management Practices] that incorporate science-based planning, utilization, and conservation of all water resources within the Upper Verde River Watershed Area...”*

After 16 years of work the UVRWPC accomplishments are few and ineffective. For over 10 years, the Coalition has spent millions in taxpayer funds, including large federal grants, without adhering to standard public accounting practices, and projects have lacked public transparency. No Coalition project shows measurable water savings. Several of their expensive projects had little scientific merit. Since then, our overdraft has only increased. Some selected examples:

- Funded the 2008 Larson Report on Regional Water Conservation. Prescott had previously adopted the plan recommendations, which were not implemented by other members.
- Created the 2010 Safe Yield Workgroup which recommended the creation of an Augmentation District. This suggestion was rejected.
- Attempted to use vegetation management (cutting 400,000 acres of Pinon-Juniper woodland in the Big Chino Valley) to increase recharge, despite extensive published science showing this is ineffective and will not benefit the aquifer. This ill-conceived program persists due to grant funds from ranching support organizations, and the only benefit is to create forage for grazing. This program is inconsistent with the stated mission to protect water resources. Land management agencies (AZ State Lands, AZ Game and Fish, Prescott National Forest) no longer participate.
- Pilot program for collecting rainwater from rooftops for recharge in an on-site French-drain system. The test sites lacked monitoring and science oversight. The UVRWPC



ignored groundwater modeling showing that small and intermittent collected water will not reach the aquifer.

Recently, the City of Prescott withdrew stating that they had spent over \$1 million with no real results. Other entities are also considering withdrawal at this time.

The Coalition had tremendous potential to perform regional planning, and it is unfortunate that they have been unable and unwilling to do so.

## **2010 Agreement: (SRP, Prescott, Prescott Valley)**

In a December, 2004 Intergovernmental Agreement, Prescott and Prescott Valley agreed to jointly develop a project to import water from the Big Chino Valley. Costs and water are shared: Prescott 54%, Prescott Valley 46%. In 2008, Prescott asked ADWR to add the Big Chino water to their water supply portfolio. Strong public concern that the planned groundwater export would degrade the base flow of the Verde River caused numerous parties to object, resulting in litigation.

In February 2010, Salt River Project (SRP), Prescott, and Prescott Valley announced a negotiated settlement of litigation. In the "Statement of Principles," a roadmap for settlement, the parties agreed to settle the 2010 litigation, to a monitoring and modeling plan, to an expanded monitoring and groundwater modeling effort, and agreed to mitigate losses of Verde River base flow caused by the pipeline, plus other points. The Monitoring and Modeling plan cost over \$5 million over a planned 8-year study to investigate Big Chino hydrology and to create a new groundwater model. The plan has completed new monitoring wells, weather stations, flow measurements of ephemeral streams, and geophysical surveys. The new monitoring data feeds into the new groundwater model. The goal of the model is to determine if groundwater pumping will diminish the base flow of the Verde, to establish a means of advance warning for impending base flow changes, and to project the location, timing, and quantity of mitigation water needed.

The groundwater model results, originally due in 2021, have been repeatedly delayed and are now promised for fall, 2024. The monitoring and modeling administrative process is not open to the public, so we have no idea about the cause of the delay or the mitigation measures being evaluated.

Basic hydrology concepts require that to mitigate the effects of groundwater mining, an equal volume of mitigation water must be restored to the aquifer. To date no scientific mitigation plan has been published. One acceptable mitigation would be to retire actively pumping agricultural wells, but at this time CWAG cannot identify any mitigation resources that are large enough to protect the river.

## Big Chino Groundwater Pumping Threats

The Big Chino Valley is not part of the Prescott Active Management Area, so groundwater is governed by the “beneficial use” doctrine. This permits a property owner to pump groundwater for a beneficial use, without limit. Three classes of groundwater pumping threaten to deplete the Big Chino aquifer, any one of which could dry the Verde River:

**Expanded Agricultural Irrigation.** It is legal under Arizona law for a farmer to irrigate with groundwater. Big agriculture from out of state has moved into Arizona. The Arizona State Land Department has leased land and water to grow alfalfa that is shipped to other countries. In Willcox, groundwater pumping by big agricultural corporations increased by over 250,000 afy. In Kingman, agricultural pumping increased over 25,000 afy. If only half of the Kingman pumping occurred in the Big Chino, it would dry the upper Verde. The *Arizona Legislature* must control agricultural pumping in the Big Chino Valley.

**Groundwater Export.** Arizona water law (ARS 45-555) authorizes Prescott to export 8,068 afy of Big Chino groundwater to Prescott via the proposed Big Chino pipeline and to share that water with Prescott Valley. Also, cities may export water (est. 10,000 afy) from historically irrigated but now fallowed agricultural fields. The total legally authorized exportable water is approximately 18,000 afy, far more than enough to dry the Verde River. The cities of *Prescott and Prescott Valley* have promised to offset the effects of their pipeline pumping on the river, but no specific construction dates or mitigation plans have been released.

**Population Growth.** As Paulden grows and expands up the Big Chino Valley, groundwater pumping will increase. At the recent growth rate of 1.3%, population growth will eventually dry the upper Verde. The *Board of Supervisors* is responsible for controlling the density and character of land use in the Big Chino Valley.

## Why the Verde River Matters:

For the first 25 miles of the upper Verde, from Verde Springs downstream to Perkinsville Bridge, is some of the finest surviving wildlife habitat in Arizona. Verde Springs is the only significant source of water for base flow within this part of the river.

Prescott National Forest has declared that the upper Verde River is eligible for Congressional designation as a Wild and Scenic River. A coalition of national and regional conservation groups is now working to request Congress to designate the Upper Verde Wild and Scenic River.

See the following Op-Ed published in the Daily Courier:

# Eleven Reasons to Protect the Verde

By Gary Beverly (gbverde99@gmail.com)

The Verde River is a green artery pulsing through the heart of Arizona, a jewel of the Southwest, continuously flowing over 190 miles from Paulden to the Salt River near Scottsdale.

The upper Verde, tucked away deep within the Prescott National Forest between Paulden and Clarkdale, is remote, unknown, under-appreciated, and threatened. The upper Verde's future is clouded by unmitigated groundwater pumping in the Big Chino Valley, which threatens to convert 25 miles of a living river into a dead, dry wash.

The Citizens Water Advocacy Group believes that we are smart enough to live here responsibly, enjoying a comfortable lifestyle while protecting our natural areas and our wildlife. The question is: Do we have the political will?

Here are eleven reasons we should protect the Verde:

**Economy:** The Verde sustains over 700 jobs and over \$100 million in economic value in the Verde Valley, plus 40% of the Phoenix area's surface water supply. Plus, natural areas are proven to benefit local economies.

**Recreation:** As our population grows, we require more recreational area. The upper Verde is a wonderful place for people to hike, hunt, fish, camp, backpack, kayak, canoe, view wildlife, photograph, ride horses, climb rocks, and observe birds.

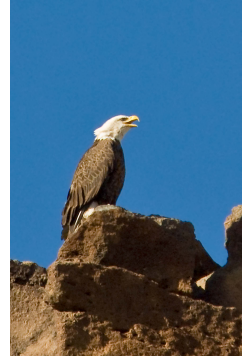
**Quality of Life:** Clean air, unfettered open spaces and bodies of water, and opportunities to view wildlife enhance our daily living.

**Scenery:** Primal colors and spectacular rock formations create scenery second to none in the state — red rocks, green plants, blue sky, and white clouds. The Verde displays tremendous natural beauty.

**Cultural & Historic Values:** The entire river corridor is laced with ancient rock art, campsites, structures, and artifacts revealing the historical lifestyle of Native Americans. The river and its springs are an essential spiritual and cultural foundation for the Yavapai-Apache Nation. Also, remnants of early Arizona ranching history dot the canyon.



**Wildlife:** Although the Verde River watershed comprises only 5.8 percent of the land area in Arizona, it contains the best remaining riparian areas — lush, green ribbons full of life. The Verde supports a surprisingly large fraction of Arizona’s vertebrate species: 78 percent of breeding bird species, 89 percent of bat and carnivore species, 83 percent of native ungulate species, and 76 percent of reptiles and amphibian genera — an impressive concentration of wildlife. Many bald eagles overwinter on the Verde. Seven eagle chicks have fledged at Del Rio Springs in the last five years. The Verde River, the lifeblood of the watershed, supports most of Arizona’s wildlife species, a heritage we all share.



**Endangered Species:** The Verde River supports a rich and diverse variety of plants, animals, and fish. The Endangered Species Act (ESA) lists 21 species in the Verde watershed, including the yellow-billed cuckoo, the southwestern willow flycatcher, native fish and snakes, and more. Wildlife managers monitor an additional 16 sensitive species of concern.

**Native Fish:** Of Arizona’s original 33 native fish, three are extinct, 19 are protected by the ESA, and the Verde supports ten. The upper Verde River sustains four ESA-listed native fish.



**Uniqueness:** Of Arizona’s six major perennial rivers, the Gila, Salt, and Santa Cruz Rivers have been consumed by dams and groundwater pumping, the Colorado is fully diverted and no longer flows to the Gulf of California, and the San Pedro is struggling for life. The Verde River is the longest surviving living river in Arizona.

**Stewardship:** Because we exploit our forests, rivers, and land for the resources that support our society, some environmental degradation is inevitable. Our challenge is to manage this rich and amazing world sustainably so our kids, and their children, can also live comfortably and enjoy nature and wildlife. We can learn from our local Native Americans, the Yavapai-Apache Nation in Camp Verde. Monica Marquez, a Yavapai, told me: “Water is Life. You never take it all.” Vince Randall, past YAN Tribal Chairman and Apache Cultural Chair, asks: “When are you going to learn to share with all living things? When will you learn the true meaning of stewardship? Will it be when there is only one of you left?”

**Water is Life:** To indigenous people, the land, plants, and animals are alive; they are identified as beings to be respected, not as nouns representing objects to be owned and exploited. When asked “Where is the river?” they reply “The river lives over there.”