





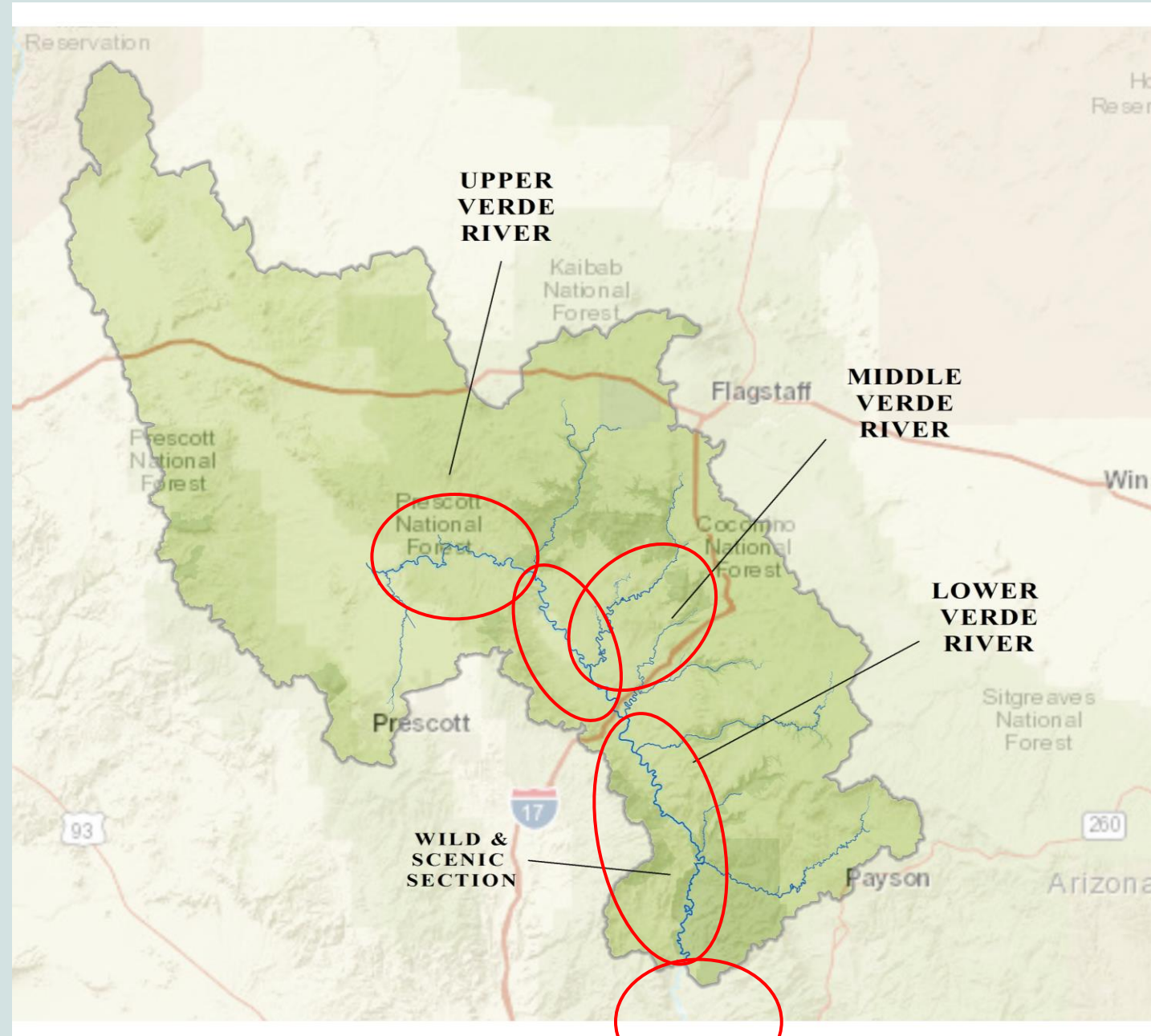
# Overview of the Verde Watershed



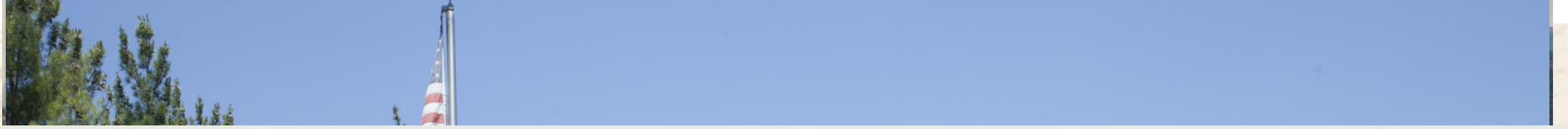


# Today's Speakers

- **Kathy Davis**
  - *Introduction and Conclusion*
- **Walt Anderson**
  - *Upper Verde River*
- **Doug Von Gausig**
  - *Middle Verde River*
- **John Martinez**
  - *Oak Creek*
- **Dexter Allen**
  - *Wild and Scenic Verde River*
- **Greg Kornrump**
  - *Lower Verde/Phoenix Area*













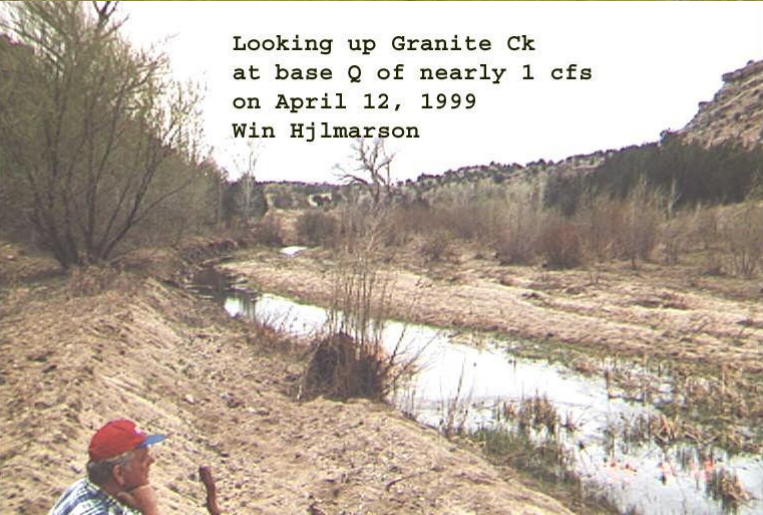


Courtesy  
of  
Matt  
Turner



Walt Anderson Photos

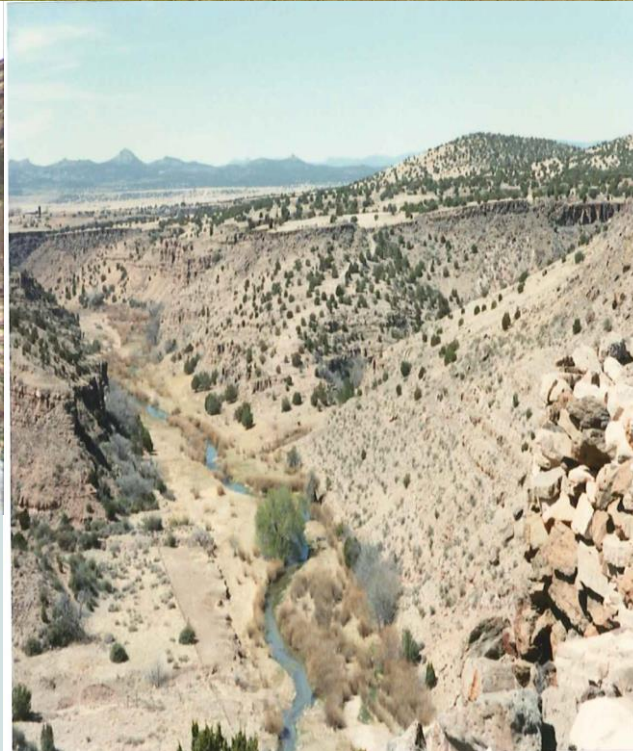




Looking up Granite Ck  
at base Q of nearly 1 cfs  
on April 12, 1999  
Win Hjlmarson

Grazing & flooding both  
affect riparian vegetation.

Verde in 1989  
by Edessa Carr



Verde in 2011 by Walt Anderson











# Water birds



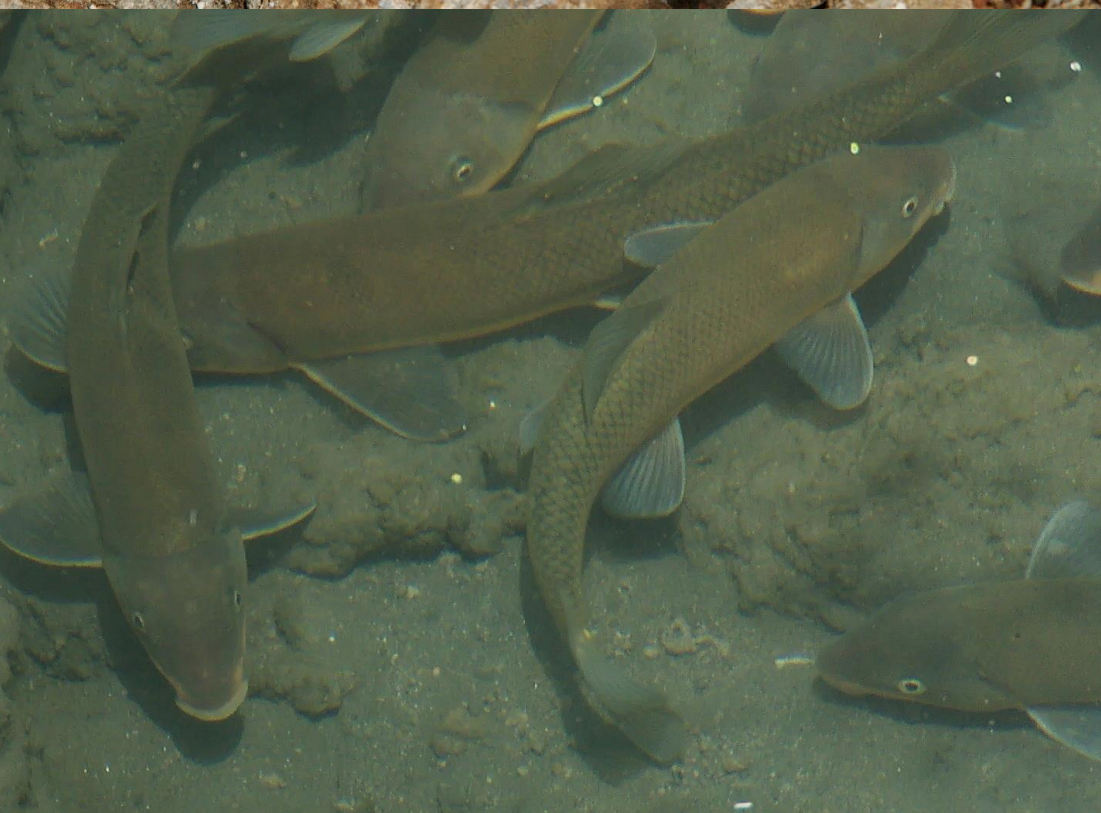




Raptors









Sullivan Lake



Del Rio Springs







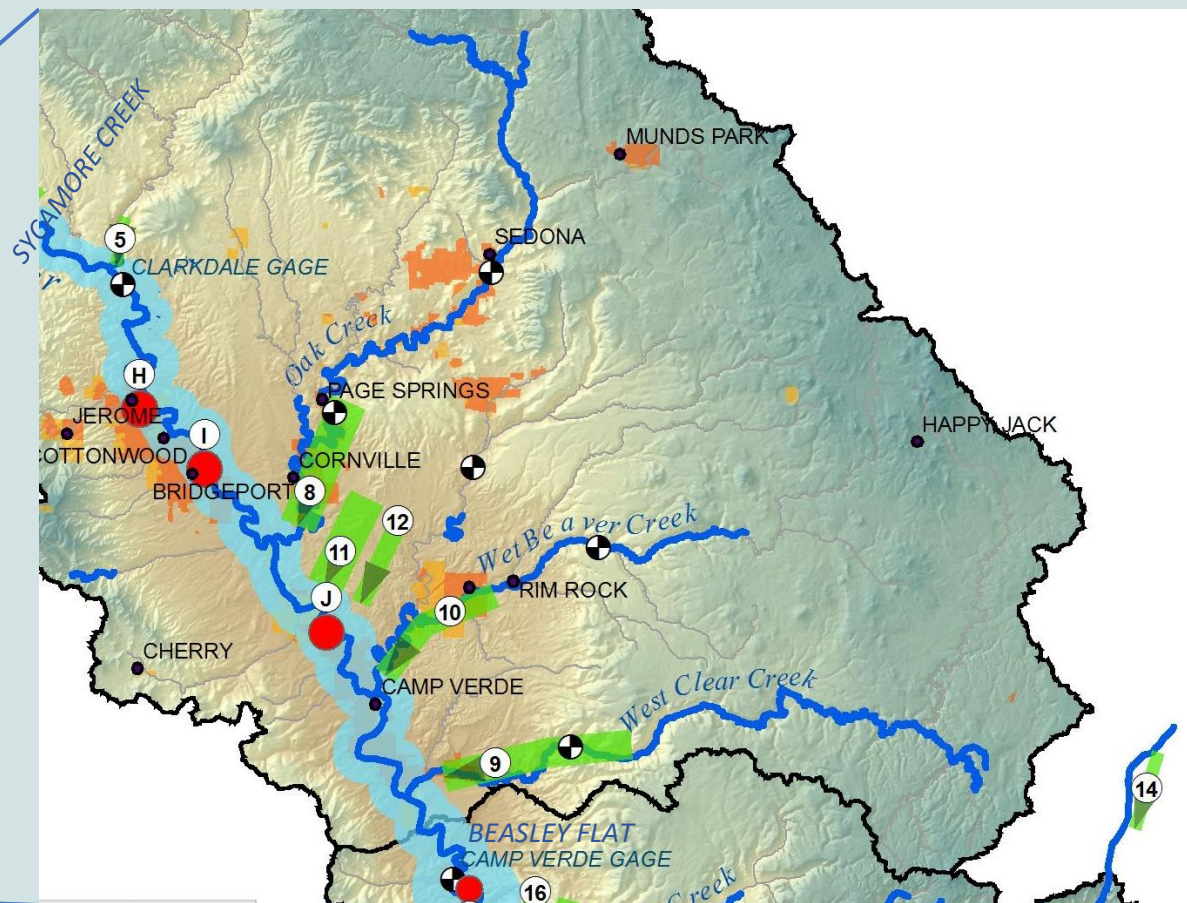
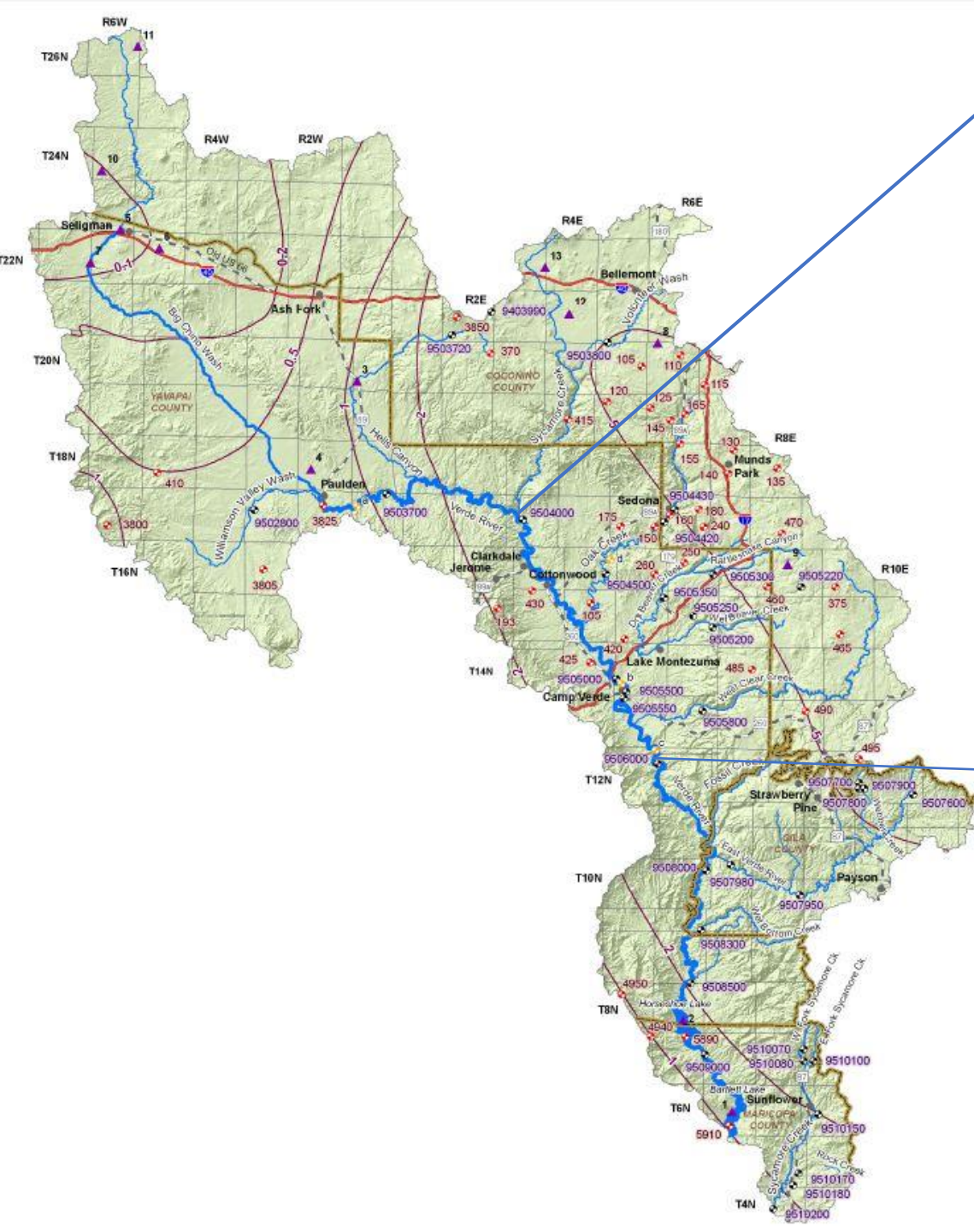












## Middle Verde Sub-watershed

River Mile 36 to RM 86, 50 river miles

Sycamore Creek to Beasley Flat

5 Incorporated Communities

68,000 People (All above average!)

Includes Sycamore Creek, Clarkdale Gauge, Oak Creek, Wet Beaver Creek, West Clear Creek



# River Flows

Losing Stretch from Headwaters to Mormon Pocket

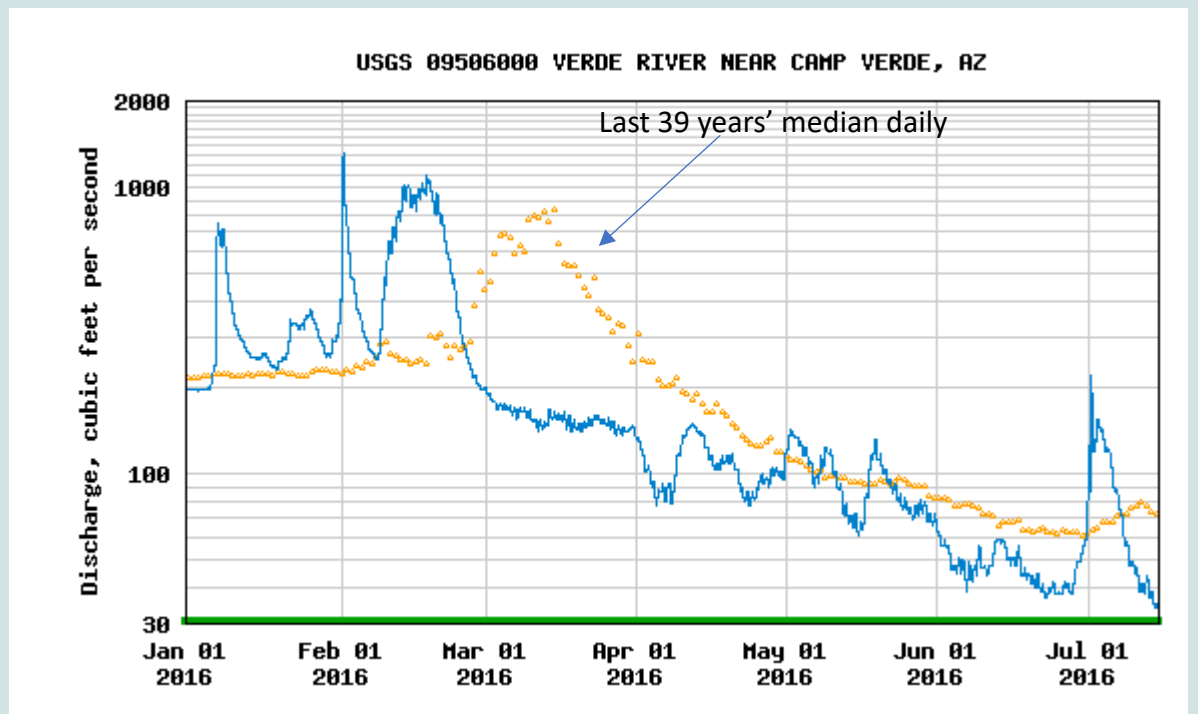
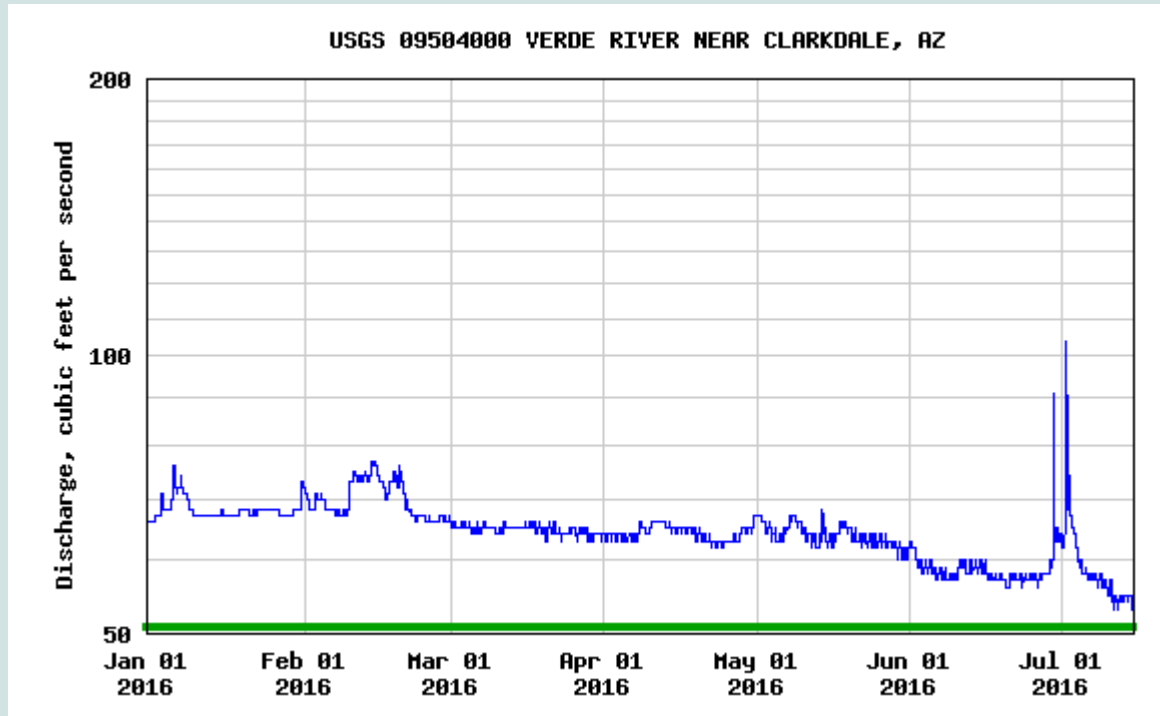
Gaining Stretch from Mormon Pocket to Salt River

Summer Base Flows at Clarkdale Gauge: About 55 CFS

Summer Base Flows at Camp Verde Gauge: About 35 CFS

Winter Base Flows at Clarkdale Gauge: About 80 CFS

Winter Base Flows at Camp Verde Gauge: About 110 CFS







# Assets

1. River-centric NGOs and Agencies
2. Cooperative, conscientious communities
3. Verde Front/String of Pearls, National Geographic Ecotourism
4. Creative and innovative conservation programs
5. Very healthy biodiversity
6. Recreational flows and opportunities
7. Progressive and improving water management
8. Viticulture
9. High water quality
10. Public awareness and support





# Challenges

1. Capital needs of conservation
2. Growth (65M to 200+M in 35 years)
3. Increasing water consumption
4. Inefficient diversions
5. Archaic and arcane legal framework, lack of adjudication, lack of groundwater management
6. Lack of conjunctive surface water law
7. Political will to conserve and political inertia and recalcitrance
8. Impact of increased recreational use
9. Lack of Legislative and congressional support





# Water Quality

Overall, the water quality is very good  
but

ADEQ recently declared the Middle Verde an Impaired Waterway, due to low D.O. and high E.coli in a few samples

## Challenges are:

Agricultural runoff and tail water

Livestock in and near the river

Inefficient diversions that lower D.O.

Pondweed (Potamogeton spp.) and other invasive infestations

Septic Tanks near or in the subflow zone

ADEQ is actively engaged in the impairments and work is ongoing to identify the sources and create a TMDL that will guide a recovery plan.

Thursday, April 13, 2017	726	Otter Island, south fork	60.0	15.6		-17.8	52.0	11.1								cool, hi thin o'cast		
Thursday, April 13, 2017	1245	Otter Island, south fork	65.9	18.8	✓		81.2	27.3	✓							warm, windy, clear		
Thursday, April 13, 2017	1718	Otter Island, south fork	66.6	19.2	✓	63.3	17.4	77.7	25.4	✓	64.2	17.9	81.7	46.7		warm, windy, clear	13.01	
Friday, April 14, 2017	802	Otter Island, south fork	61.2	16.2				57.4	14.1							cool, calm,hazy		
Friday, April 14, 2017	1256	Otter Island, south fork	66.9	19.4	✓			78.2	25.7							windy, warm,clear		
Friday, April 14, 2017	1720	Otter Island, south fork	66.8	19.3	✓	64.1	17.8	75.8	24.3	✓	62.4	16.9	79.4	45.3		breezy, clear,warm	13.04	
Saturday, April 15, 2017	658	Otter Island, south fork	59.1	15.1				49.0	9.4							breezy,clear,cool		
Saturday, April 15, 2017	1435	Otter Island, south fork	67.6	19.8	✓			79.0	26.1	✓						breezy,warm,clear		
Saturday, April 15, 2017	1738	Otter Island, south fork	67.2	19.6	✓	63.4	17.4	77.6	25.3	✓	63.5	17.5	80.7	46.3		calm, clear,warm	13.08	
Sunday, April 16, 2017	735	Otter Island, south fork	61.5	16.4				52.6	11.4							calm, cool, hi thin o'cast		
Sunday, April 16, 2017	1224	Otter Island, south fork	69.5	20.8				78.8	26.0							warm,clear,calm		
Sunday, April 16, 2017	1642	Otter Island, south fork	67.8	19.9	✓	65.5	18.6	80.8	27.1	✓	65.2	18.4	83.4	47		warm,clear,calm	13.11	
Monday, April 17, 2017	753	Otter Island, south fork	61.0	16.1				52.8	11.6							cool,hi sctrd,calm		
Monday, April 17, 2017	1153	Otter Island, south fork	68.7	20.4	✓			76.7	24.8	✓						warm, hi sctrd,calm		
Monday, April 17, 2017	1730	Otter Island, south fork	68.3	20.2	✓	64.9	18.3	83.0	28.3	✓	66.4	19.1	86.3	46.4		warm, hi sctrd,calm	13.14	
Tuesday, April 18, 2017	717	Otter Island, south fork	62.7	17.1			-17.8	53.7	12.1							cool, calm, clear		
Tuesday, April 18, 2017	1630	Otter Island, south fork	69.7	20.9			-17.8	87.1	30.6							warm,clear,breezy		
Tuesday, April 18, 2017	1732	Otter Island, south fork	69.0	20.6	✓	66.2	19.0	84.8	29.3	✓	68.5	20.3	88.1	48.9		warm,clear,breezy	13.18	
Wednesday, April 19, 2017	705	Otter Island, south fork	62.6	17.0				57.3	14.1							cool, clear,calm		
Wednesday, April 19, 2017	1132	Otter Island, south fork	69.6	20.9				78.6	25.9							warm, clear,light winds		
Wednesday, April 19, 2017	1730	Otter Island, south fork	69.0	20.6	✓	66.1	18.9	78.4	25.8	✓	68.8	20.4	84.9	52.6		warm, breezy, hi o'cast	13.21	
Thursday, April 20, 2017	700	Otter Island, south fork	64.7	18.2				55.4	13.0							cool, calm,clear		
Thursday, April 20, 2017	1155	Otter Island, south fork	70.3	21.3	✓			80.6	27.0	✓						warm,breezy,clear		



# The Future of the Middle Verde

Improved water and wastewater management can stabilize or improve flows

Innovative programs, such as the Verde River Exchange, can help new development conserve

Increasing sustainable recreation will provide the vital link between the economy and the health of the Verde River

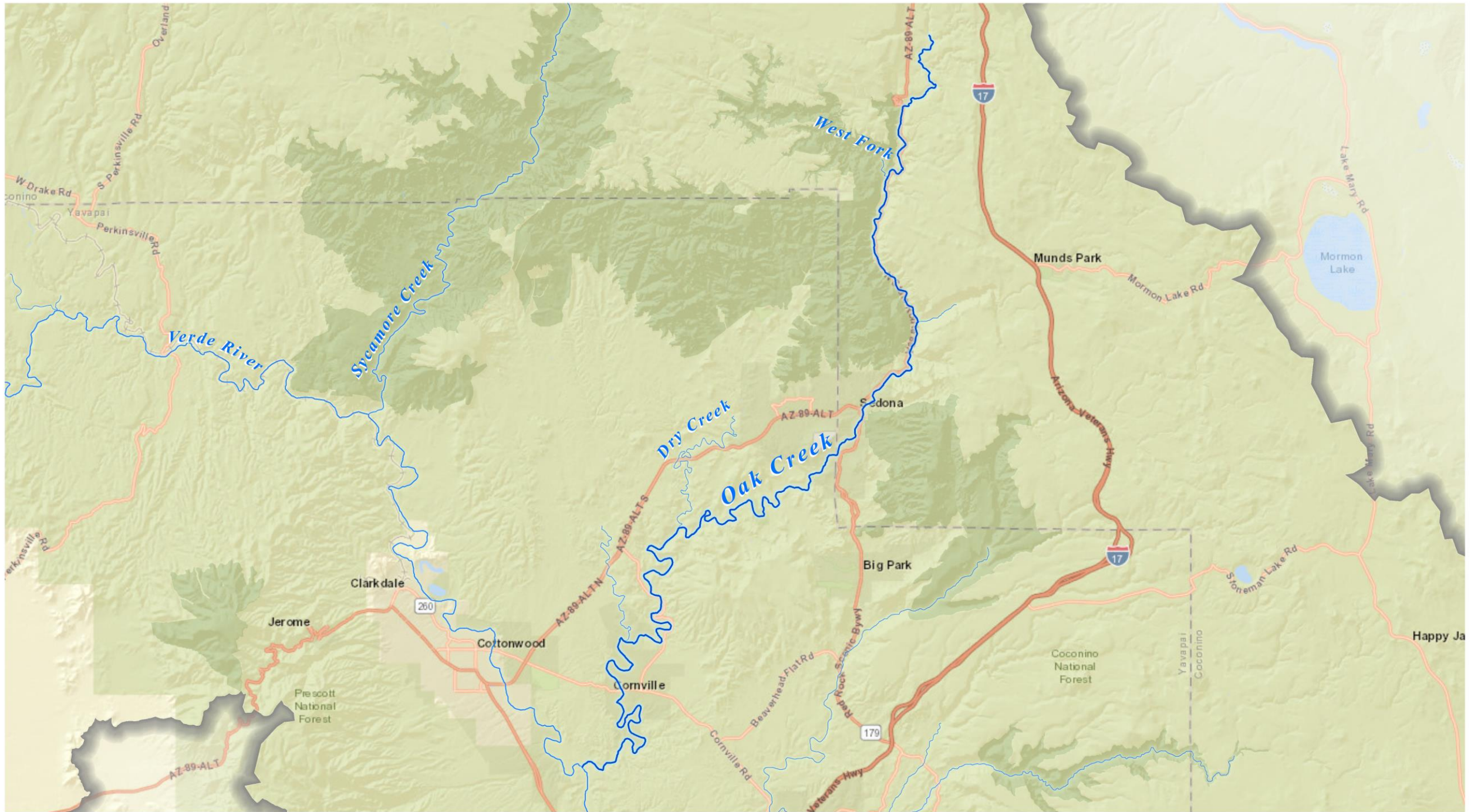
Public awareness and concern will nurture a new political will to conserve and nurture the river

New technologies, such as “Direct Potable Reuse,” and irrigation efficiencies will help meet future water needs and management goals

20 years ago, I gave the Verde a 10% chance of survival, today I say 85%! That's progress!

# Is Bright!















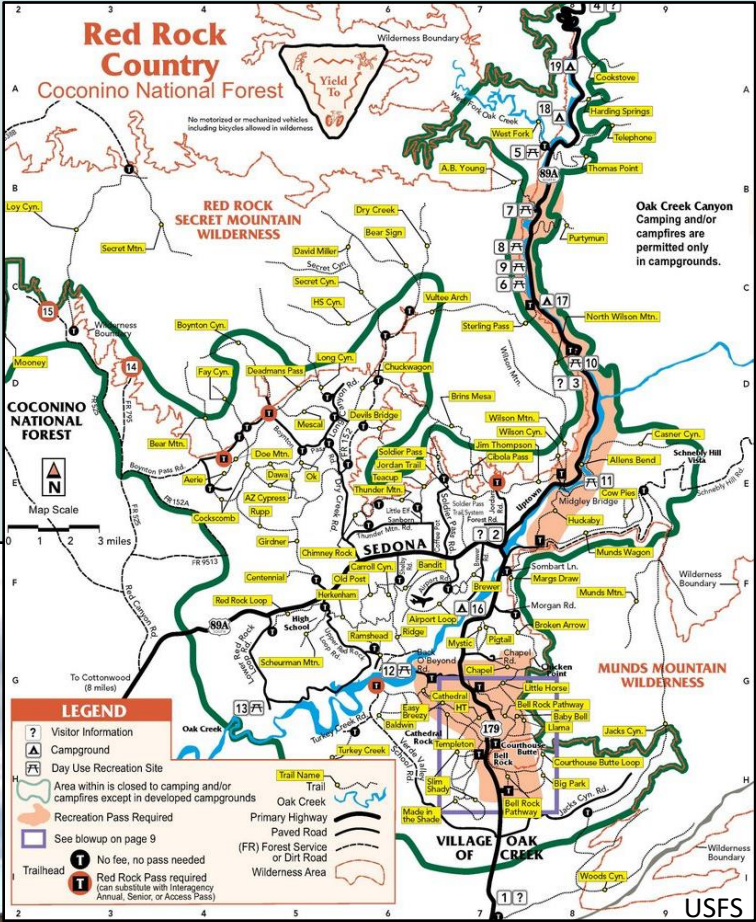
# Oak Creek Upland - Recreation



Sedonabest

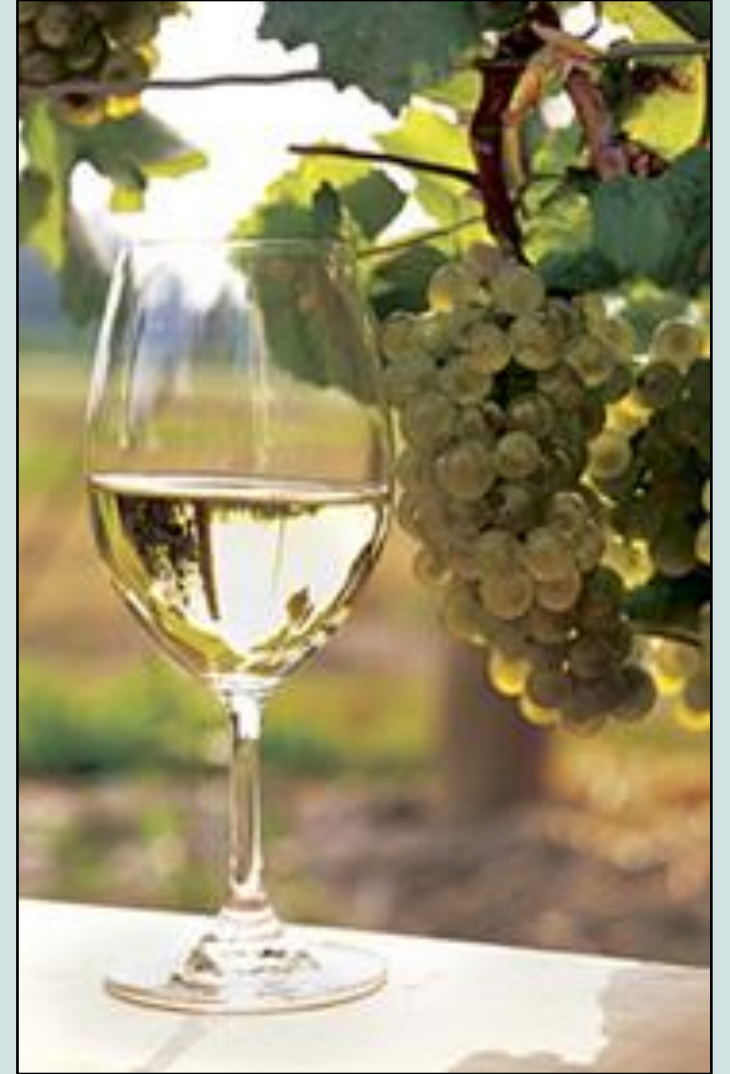


Absolutebikes





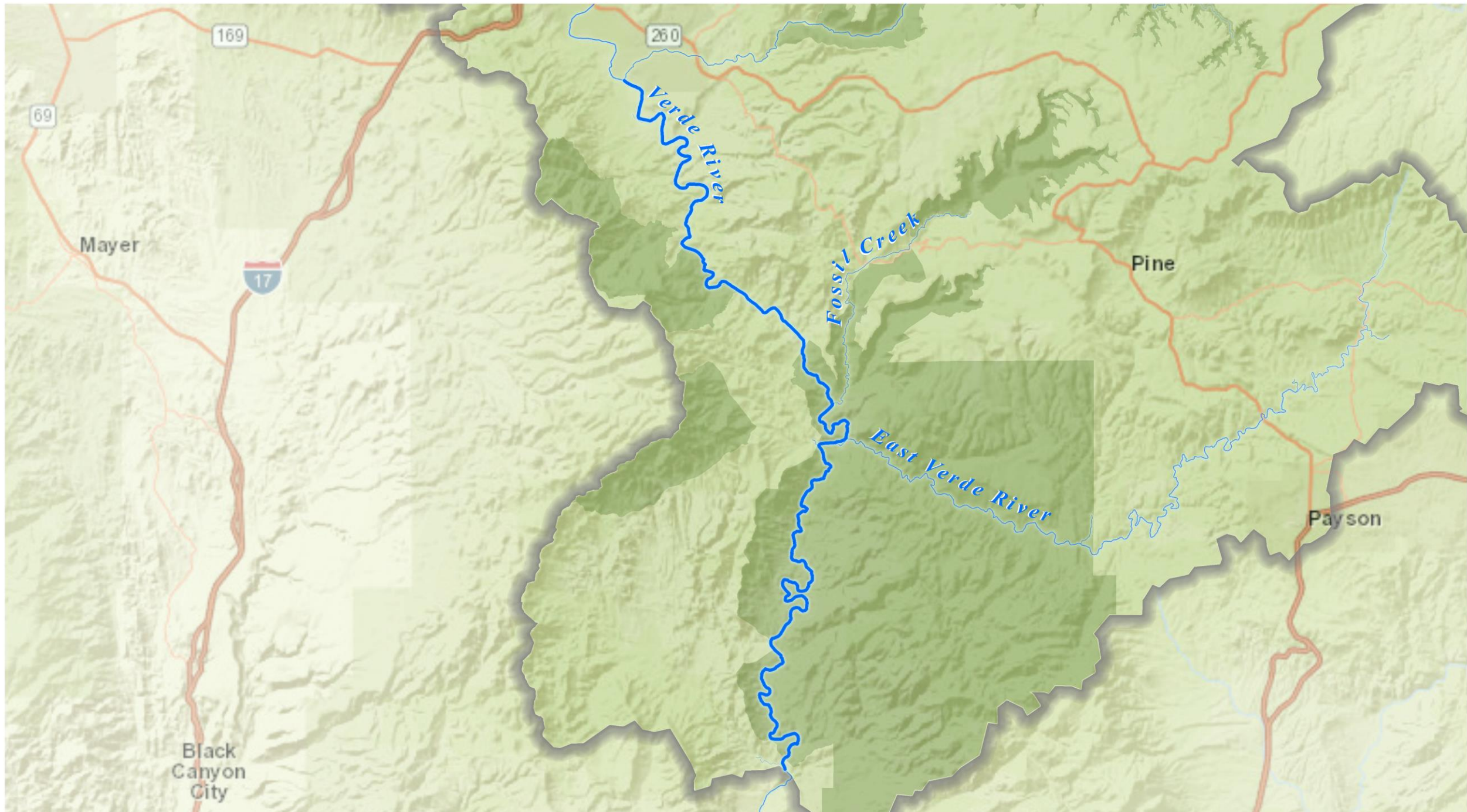
# Oak Creek Upland – Agriculture & Tourism





















# Preserving Fish and Wildlife Habitat Invasive Plant Control

- Invasive plant control
- 10 year project on 3 Forests
- Continual maintenance needed.



Before





# Wild and Scenic Verde River



Class III & IV  
Rapids





# Plan Ahead and Prepare



- The Verde is unique and ever changing; channels can be difficult to distinguish, impossible to scout, and clogged with vegetation and/or strainers.
- Over 20 wrecked boats have been removed by river rangers in the Wild and Scenic corridor.

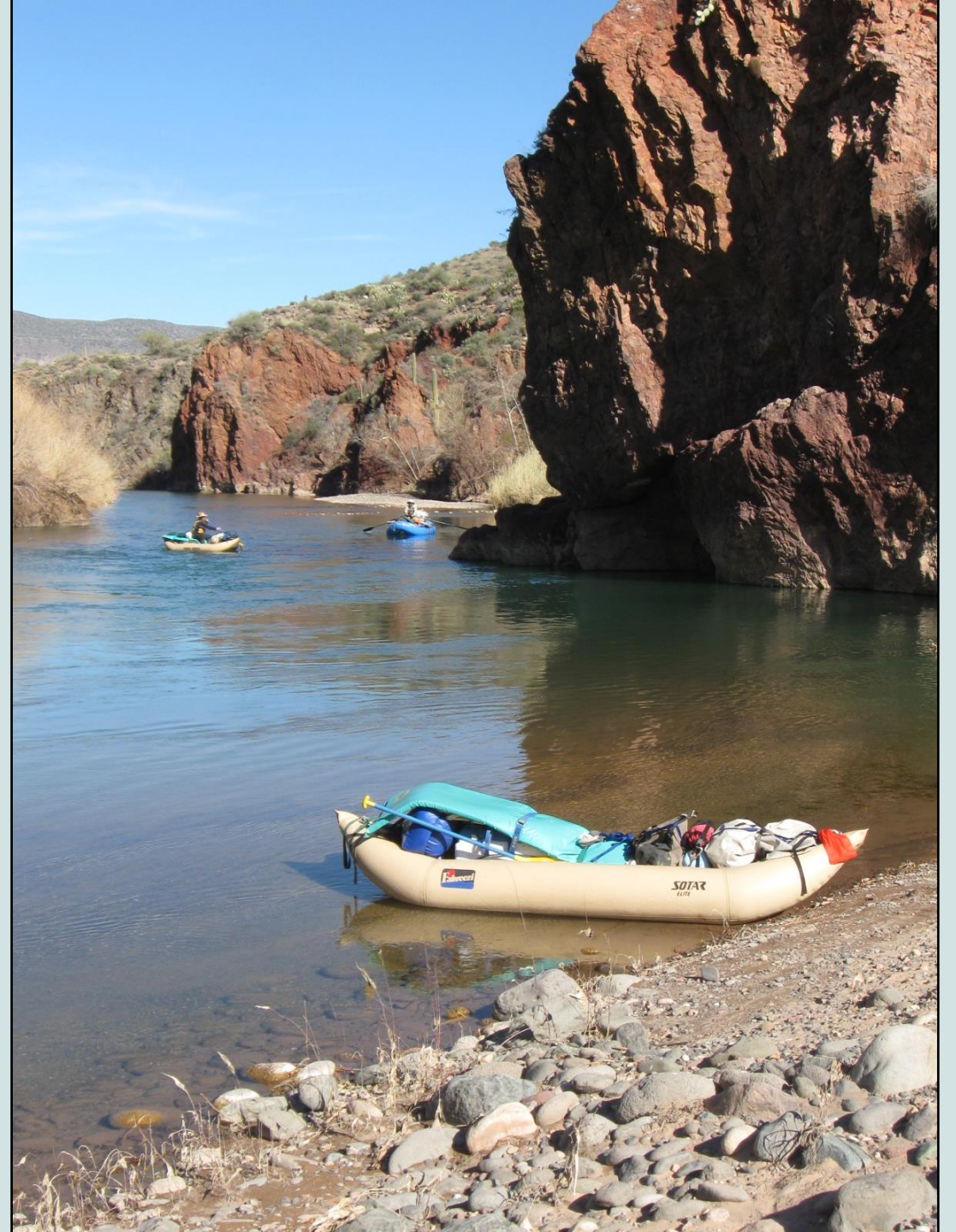




# Cultural and Historical Preservation & Protection



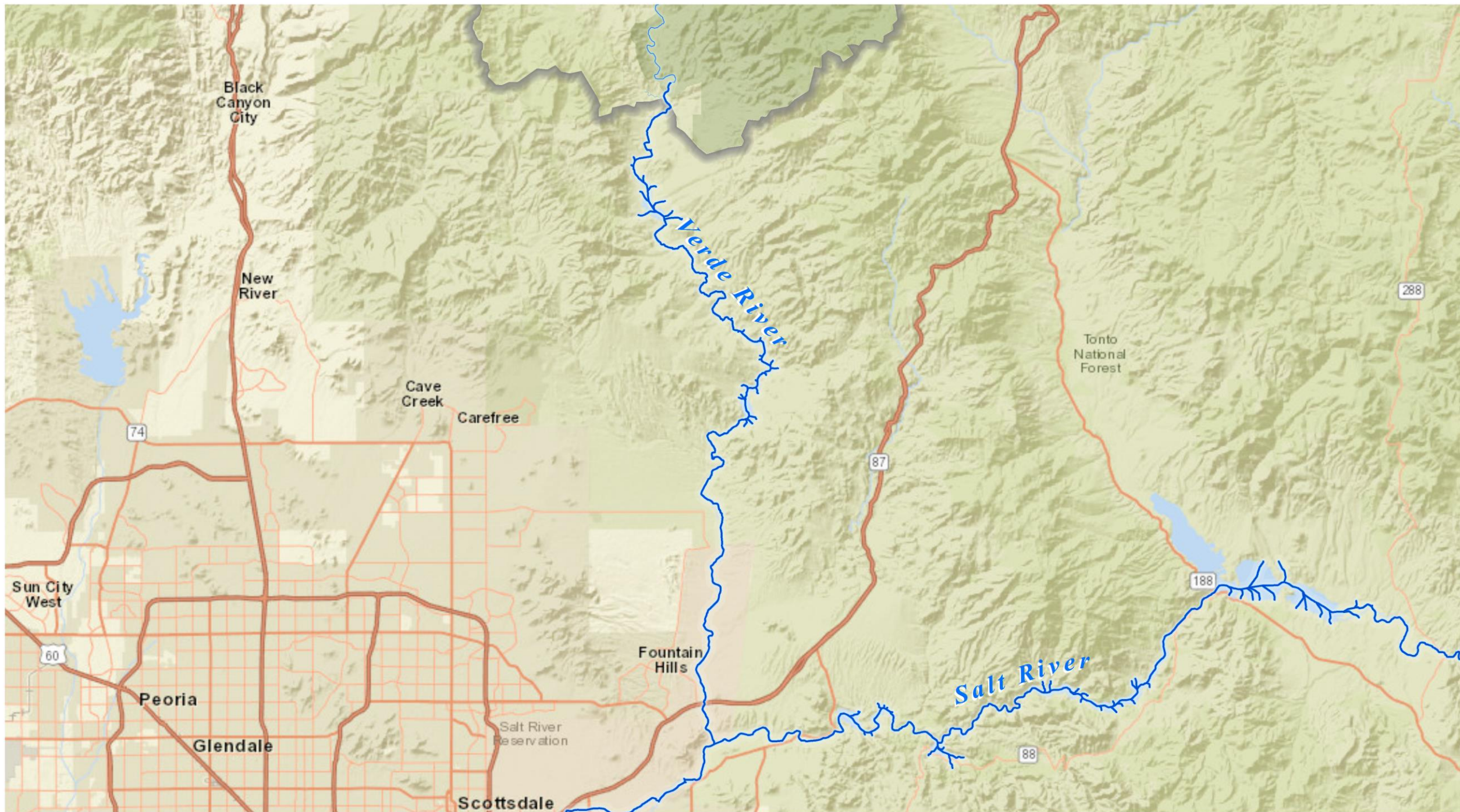














# Verde River: Phoenix Area Perspective

An aerial photograph of the Salt River Dam on the Verde River. The dam is a long, low concrete structure with multiple spillways. Water is cascading over the spillways, creating a large plume of white foam and spray. The river is a muddy, brownish color. The surrounding landscape is arid, with green desert shrubs and cacti in the foreground. In the background, there are rolling hills and mountains under a cloudy sky.

May 11, 2017  
Greg Kornrump  
Salt River Project

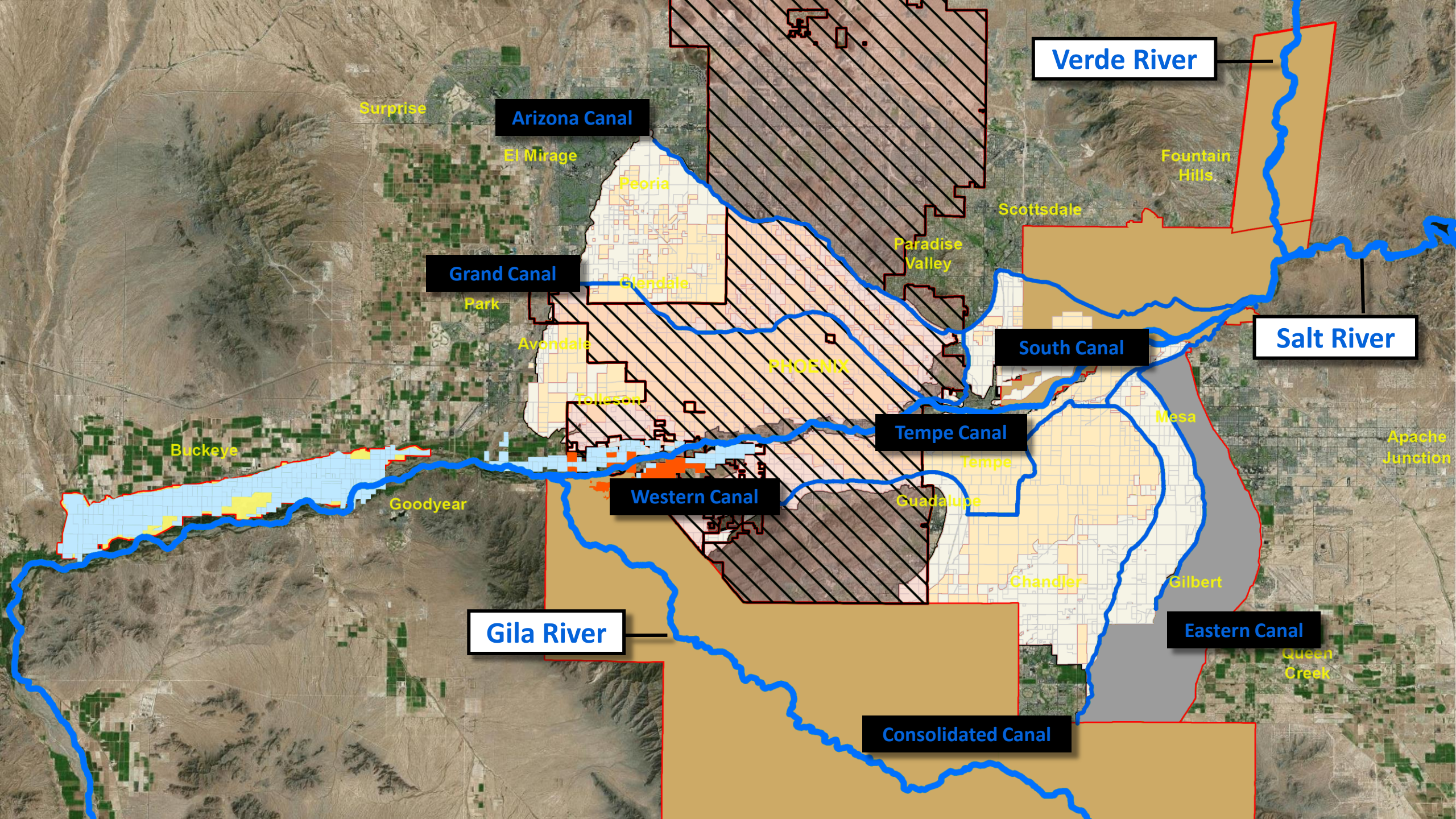












Verde River

Arizona Canal

Grand Canal

Salt River

South Canal

Tempe Canal

Western Canal

Gila River

Eastern Canal

Consolidated Canal



# Creating Dependability from Variability

