

Understanding the Upper Gila River Watershed Resources for Today and Tomorrow

By: Kelly Mott Lacroix of the University of Arizona

Management and planning for water resources is a difficult task. The unpredictable weather patterns of southeastern Arizona make this task especially challenging. One day it is hot and dry and the next day fields are flooded and roads are washed away. The uses for our water are almost endless, and each drop in some way fuels our economy. Without water there are no fields, no copper, no cattle, no restaurants, no fishing, and no trees. While use by one does not necessarily mean the water is unavailable to another, water at the price we are used to paying for it and the quality we are accustomed to is increasingly scarce. In the face of increasing scarcity and overlapping demands, how does a community decide how they will use their water? Can they rely on where their water comes from or how much of it they have?

**When you are dying of thirst it's too late to think about digging a well.
- Japanese Proverb**

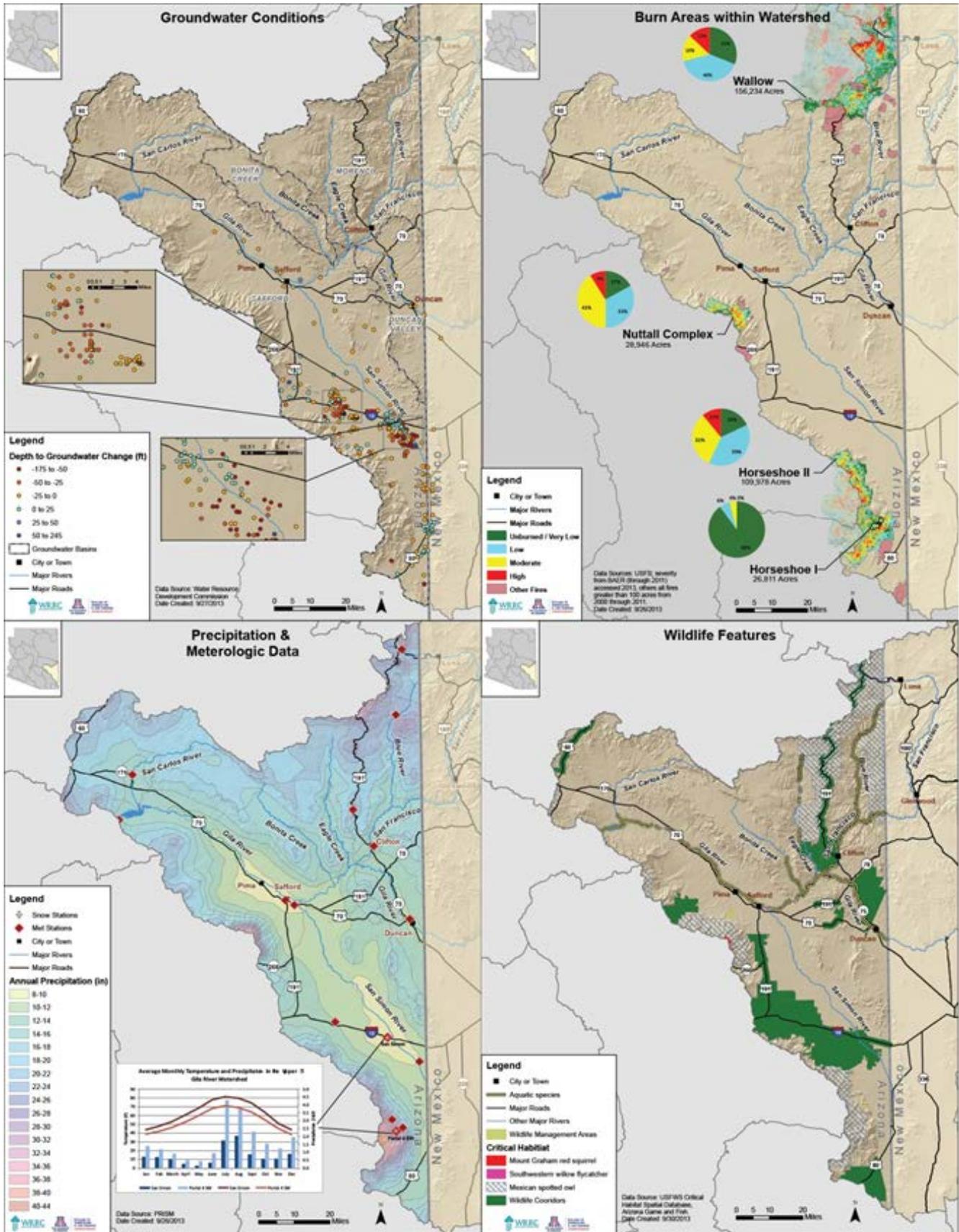
As the proverb goes, once you have run out of water it is too late to think about where more water will come from. Planning for the future of your watershed requires many things. Important issues include: what resources you have now; how water law and policy impact your use of these resources; how those resources

have changed over time; what those resources might look like in the future; and how you want to use those resources to shape your community.



Understanding the Condition of Existing Resources in the Upper Gila River Watershed

In May 2009 the Arizona Department of Water Resources (ADWR) finalized the first of eight “Water Atlases” designed to provide a one stop shop for a review of Arizona’s water resources. Taken



together the eight volume atlas includes over 5,000 pages describing information ranging from water rights settlements to well yields to land ownership for each of the 51 groundwater basins in Arizona. Information for the Upper Gila River Watershed can be found in Volume 3: Southeastern Arizona.

(<http://www.azwater.gov/AzDWR/StatewidePlanning/WaterAtlas/SEArizona/default.htm>)

For example, if you were curious about what the maximum annual flow was at the Gila River near Clifton you could find your answer in Volume 3, page 284. There you'd learn that the maximum annual flow on record between 1910 and 2012 was 480,188 acre-feet (or 156 billion gallons) in 1915. This peak represents more than four times the median annual flow of 114,417 acre-feet (or 37 billion gallons).



The information within the Arizona Water Atlas provides an essential first step in understanding the Upper Gila River Watershed, but did not include additional key information that was only available on a local level, nor did it seek input from citizens of the watershed for



its content, both of which are critical components to understand for watershed planning. For the last year the GWP, Arizona Cooperative Extension and the Water Resources Research Center (WRRRC) have been working together to develop a more complete *Atlas of the Upper Gila River Watershed* to: 1) display key information identified by stakeholders; 2) present current conditions of natural and water resources; 3) investigate where possible how these resources have changed over time; and 4) identify some of the challenges the watershed faces in the future based on current conditions.

To create the maps for the *Atlas of the Upper Gila River Watershed* the WRRRC built a geospatial database that contains 62 unique spatial datasets ranging from soil erodibility to instream flow rights. We have also built an Automated Geospatial Watershed Assessment (AGWA) model to show how the Upper Gila

River Watershed functions (water flows, sediment movement, etc.). The model can be used to look at how those functions have changed in the past and how they might change in the future. Perhaps most importantly, each topic in the Atlas discusses the challenges the watershed may face in the future based on current resource conditions.

Box 1: Atlas of the Upper Gila River Watershed Maps and Information

- Watershed History based on the April 10th, 2013 Shared History Exercise
- Ecology
 - Biotic Communities
 - Wildlife Corridors
 - Critical Habitat
- Geology and Soils
 - Soils and Soil Erodibility
- Precipitation
- Groundwater Conditions
 - Groundwater Level Change and Depth to Water
 - Well Yields
- Surface Water Conditions
 - Perennial/Intermittent Streams
 - Springs
 - Dams and Stream Gages
- Infrastructure
- Population and Water Use
 - Population Growth
 - Water Adequacy Reports
 - Surface Water Rights
 - Wells by Use Type
 - Water Demand and Supply Gap 2006, 2050, 2100
- Water Quality
 - Impaired Streams
 - Well Water Quality
 - Contamination Sites
- Land Use
 - Land Ownership
 - Land Use
- Fire
 - Burn Areas
 - Fire Regime
- Modeled Changes in Water and Sediment Yield 1996-2006
- Land Cover Change 1992-2006

Next Steps: Using Today's Information for Tomorrow

Discussion of the current conditions shown on the Atlas maps and the challenges associated with them will form the backbone for developing a set of scenarios describing the potential future condition of the Upper Gila River Watershed under different management and development conditions.

The goal of scenario development is to provide you information about the potential long-term effects of particular decisions about water management, land management, development, and other major changes that will impact natural resources. Over the next year we look forward to working with you to create several plausible scenarios of future conditions resulting from different management choices over time. These alternate future scenarios can be used to aid the Upper Gila Watershed community in making informed choices regarding how they would like their region's future to proceed.

A draft of the Atlas of the Upper Gila River Watershed results will be presented to the GWP's Watershed Advisory group on October 9th, 2013, and discussed in the October 9th evening meeting. The final Atlas will be available on both the GWP and WRRC's web page in November.



Current Project Updates

FOR MORE INFO, SEE WWW.GILAWATERSHEDPARTNERSHIP.COM

ONGOING GRANTS:

Apache Grove Project

...funded by the Arizona Water Protection Fund (AWPF) and the U.S. Fish and Wildlife Service (USFW)

- removed levies in order to restore optimal river flow, control erosion, and manage invasive species, while preserving agricultural land
- the new pipeline to a deeper well is complete
- in continuous monitoring, need to replace regrowing invasives

Clifton Restroom Project

...funded by the Arizona Department of Environmental Quality (ADEQ)

- will install restroom facilities in a recreational area along the San Francisco River where there are none
- we are about to order the restroom unit and start the permitting process

Eagle Creek Riparian Restoration at Filleman Crossing Project

...funded by the Arizona Water Protection Fund (AWPF) and the U.S. Fish and the USFW Partners program

- will construct a river crossing to stop frequent wash-outs, benefiting both residents and wildlife
- Implementation will begin soon!

Ely Fence Replacement

...funded by the Arizona Water Protection Fund (AWPF)

- replaced the fence between the San Carlos Apache Reservation and the U.S. Forest
- the fence is complete and we are working on education and outreach and the final report

Friends of the Frisco

...funded by Freeport McMoRan Copper & Gold, Inc., Graham County United Way and other businesses

- upcoming event – Fall Lower Eagle Creek cleanup

Master Watershed Steward Program

...funded by the Arizona Department of Environmental Quality (ADEQ) in Graham County and by Freeport-McMoRan Copper & Gold Foundation in Greenlee County

- Classes began, September 10 at the Greenlee County Board of Supervisors meeting room

Upper Gila Watershed Riparian Restoration Project

...funded by The Walton Family Foundation (WFF)

- will replace invasive tamarisk with native species to restore natural habitats
- the greenhouse has been completed and we are busy outfitting it and ordering planting material
- the science team is almost finished with the assessment of the river, and we are looking at some possible demonstration sites

Youth Pathway Project

...from the National Fish and Wildlife Foundation (NFWF) Great American Outdoors Grant, and USFW Partners program

- to encourage careers in conservation and land management on public lands, through on-the-ground activities for school age kids high school through college
- funding for youth crews for our native plant nursery and for restoration of the Gila River
- key entities have been engaged and planning is underway

Water Conservation Project

... funded by Freeport McMoRan Copper & Gold, Inc.,

- a newly-awarded grant to continue with the home and business water evaluations to help the community save water and money

NEW GRANT APPLICATIONS:

Menges Ranch Water System Maintenance

... applications pending with the Arizona Department of Environmental Quality (ADEQ) and the Arizona Water Protection Fund

- a project that will replace diesel pumps with

solar pumps and add a telemetry system that will send a message to the landowner when the water system has a problem.

San Francisco River Restroom

... applications pending with the Arizona Department of Environmental Quality (ADEQ) and the Arizona Water Protection Fund

- a project that will install a restroom at a heavily-used recreation site on the San Francisco River road in Greenlee County to reduce the *E.coli* levels on the river.



My fake plants died because I did not pretend to water them.

- Mitch Hedberg

Calendar of Events

Wednesday, October 9, 7 p.m. – The Gila Watershed Partnership’s regular monthly meeting at the Graham County general services building. Kelly Mott LaCroix, with the U of A Water Resources Research Center, will be speaking about Understanding the Upper Gila River Watershed Resources for Today and Tomorrow.

Wednesday, November 13, 7 p.m. – The Gila Watershed Partnership’s regular monthly meeting at the Graham County general services building. Dr. Mike Crimmins, Associate Professor with the U of A, who runs the Climate Science Applications Program in Cooperative Extension will be speaking to us about the important subject of drought cycles.

Saturday, October 26, 2013 – The Water Counts program will have a booth at the Harvest Festival. Come by and see how you can conserve water!



Our partners include:

Arizona Department of Agriculture	Eastern Arizona College
Arizona Department of Environmental Quality	Farm Bureau
Arizona Department of Transportation	Gila Valley NRC
Arizona Game and Fish Department	Freeport McMoRan Copper and Gold Inc.
Arizona Geological Survey	Graham County
Arizona State Land Department	Greenlee County
Bureau of Land Management	Gila Valley Irrigation District
City of Safford	Natural Resource Conservation Service
Town of Thatcher	University of Arizona Cooperative Extension
Town of Pima	University of Arizona NEMO Project
Town of Clifton	U.S. Fish and Wildlife Service
Town of Duncan	U.S. Forest Service – Apache-Sitgreaves and Coronado Forests
	U.S. Bureau of Reclamation
	And many community members

Get involved in your watershed

For more information, contact Jan Holder at the Gila Watershed Partnership, 711 S. 14th Avenue, 85546, or email gilawatershed@gmail.com
Join us on Facebook “[Facebook.com/gilawatershedpartnership](https://www.facebook.com/gilawatershedpartnership)”

www.gilawatershedpartnership.com