CWAG Bulletin #6B

The Endangered Upper Verde River

Tables and References

by John Zambrano

Natural Contributions

Item	Acre Feet Per Year
Big Chino Subbasin, Natural Recharge to Verde River	
USGS Blasch et al. (Table 22) [1]	23,420
US Bureau of Reclamation (Appendix D) [3]	23,660
AZ Dept. of Water Resources (Section 5) [4]	25,260
Average of Above Determinations	**24,000**
Little Chino Subbasin, Predevelopment Groundwater Discharge to Verde River (Table 3) [2]	**7,500**
Combined Discharge from Big and Little Chino Subbasins to Verde River	**31,500**

Potential Losses of Verde River Flow from PAMA Actions

Item	Acre Feet Per Year
Expected Loss of Little Chino Subbasin Discharge	**7,500**
Potential Importation of Groundwater from the Big Chino Subbasin to PAMA[5]	
Prescott (with Prescott Valley) Exemption	8,067
Historically Irrigated Acres (HIA)	9,923
Total Potential Importation	**17,990**
Total Potential Losses	**25,490**

Remaining Discharge from Big and Little Chino Subbasins After PAMA Potential Actions

Item	Acre Feet Per Year
Maximum Discharge from Big and Little Chino Subbasins to Verde River	31,500
Potential Losses	25,490
Remaining Discharge to Verde River	**6,010**

Potential Remaining Base Flow in Upper Verde River

Item	Acre Feet Per Year
Potential Uses within Big Chino Subbasin	>> 6,010
Discharge from Aquifer Near Big Black Mesa[6]	0-1,080
Potential Base Flow in Upper Verde River	0-1,080

Introduction

Bulletin Number 6A is a companion to this bulletin and presents a narrative description of a threat to the River from the likely exportation of Water from the Big Chino sub-basin to the Prescott Active Management Area (PAMA) and from development within the Big Chino itself. This Bulletin, 6B, presents similar information, but in a tabular form including references. The reader is encouraged to read Bulletin 6A for a fuller understanding of the issue.

The studies cited in this paper used water budgets or modeling techniques to determine natural recharge. These methods are typically limited by insufficient information and the need for simplifying assumptions. Consequently, readers should consider the results to be approximations.

Included on the following page are a series of tables that provide a determination of the natural recharge in the Big and Little Chino sub-basins, potential losses or reductions in natural discharge for both sub-basins from actions of the municipalities in the PAMA, the flow remaining after potential PAMA actions, and the flow remaining after expected residential growth in the Big Chino sub-basin.

Conclusion

The Tables show that the Upper Verde River has the potential to become an ephemeral or nearly ephemeral stream if the municipalities in the PAMA import the legally allowed amount of groundwater and if a relatively small amount of development occurs in the Big Chino sub-basin itself. The population growth rates in the PAMA and the growth-at-any-cost views of many elected officials in the region would seem to make this a likely event.

References:

[1] Blasch et al., 2006. Hydrology of the Upper and Middle Verde River Watersheds, Central Arizona. USGS.
[2] Nelson, Keith, 2002. Arizona Department of Water Resources, Modeling Report No. 12.
[3] Ewing D. B., J.C. Osterberg, W.R. Talbot, 1994. Groundwater study of the Big Chino Valley: Technical Report, United States Bureau of Reclamation.
[4] ADWR, 2000. Verde River Watershed study: Arizona Department of Water Resources.
[5] McCormack et al., 2006. Identification of Historically Irrigated Acres in the Big Chino Sub-Basin: Policy Statement, Arizona Department of Water Resources.
[6] Wirt et al., 2005. Geologic Framework of Aquifer Units and Ground-Water Flowpaths, Verde River Headwaters, North Central Arizona. USGS.

~ Those interested in learning more about local water issues and how our citizen based group is working with area officials are encouraged to visit our website at **www.cwagAZ.org.** Please join with us by attending our meeting held on the second Saturday of each month, 10am-Noon at the Granite Peak Unitarian Universalist Congregation, 882 Sunset Avenue in Prescott.

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