

Water supply in Greater Phoenix: Improving regional decision making through University partnerships

Redman, C. L.¹, G. Gammage², N. Jones¹, E. Corley³, J. Holway⁴, J. Keane⁵, S. Megdal⁶, and R. Quay⁷.

¹Center for Environmental Studies, ASU; ²Morrison Institute for Public Policy, ASU; ³School of Public Affairs, ASU; ⁴Department of Water Resources, State of Arizona; ⁵Salt River Project; ⁶Water Resources Research Center, University of Arizona; and ⁷Department of Water Services, City of Phoenix.

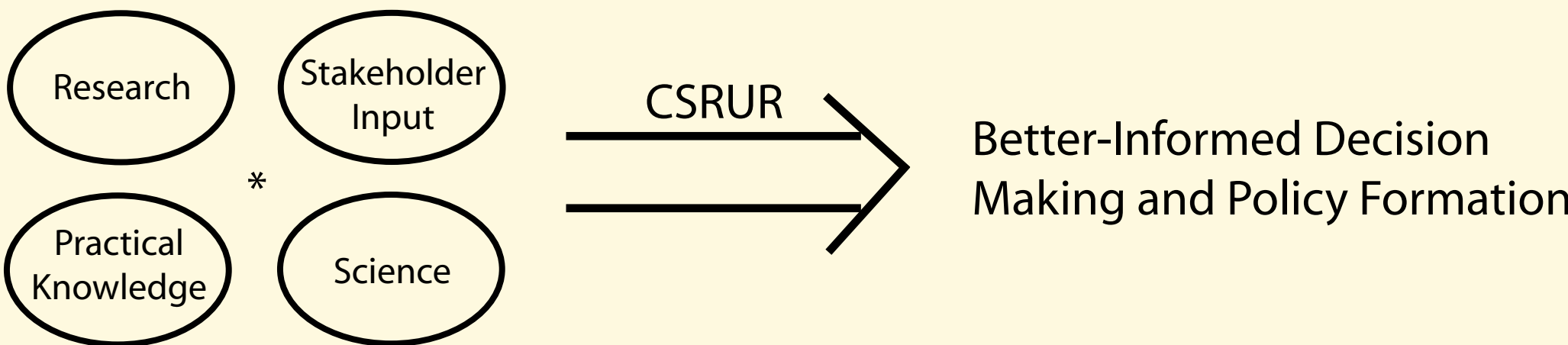
Will there be sufficient water for the growing Greater Phoenix region?

As the region enters its sixth year of drought, any response is plagued with uncertainty. Throughout the past century, creative legislation and banking actions have confirmed a belief that water will always be available. Yet, growth continues to put pressure on the best-laid plans. As a result, the Consortium for the Study of Rapidly Urbanizing Regions (CSRUR) has begun a dialogue with local decision makers to identify water policy information and research needs and to build linkages among water policy decision makers and ASU, the University of Arizona and state and local agencies.

CSRUR Water Dialogue

On October 31st, 2003, individuals representing water interests in Arizona met to discuss water policy and its future implications. Two primary questions drove the dialogue:

1. What are the unmet research needs related to water policy decisions?
2. Are we communicating with the public in an effective way about future water supplies, current and future potential drought conditions, and the public's role?



Participants

Arizona Audubon Society
Arizona Center for Public Policy
Arizona Department of Environmental Quality
Arizona Department of Water Resources
Arizona House of Representatives
Arizona Municipal Water Users Association
Arizona Republic
Arizona Water Banking Authority
Arizona Water Company
Bureau of Reclamation
Central Arizona Project
Central Arizona Water Conservation District
City of Goodyear
City of Mesa
City of Peoria
City of Phoenix
Gila River Indian Community
Institute for the Study of Planet Earth, UA
Morrison Institute for Public Policy, ASU
Nature Conservancy

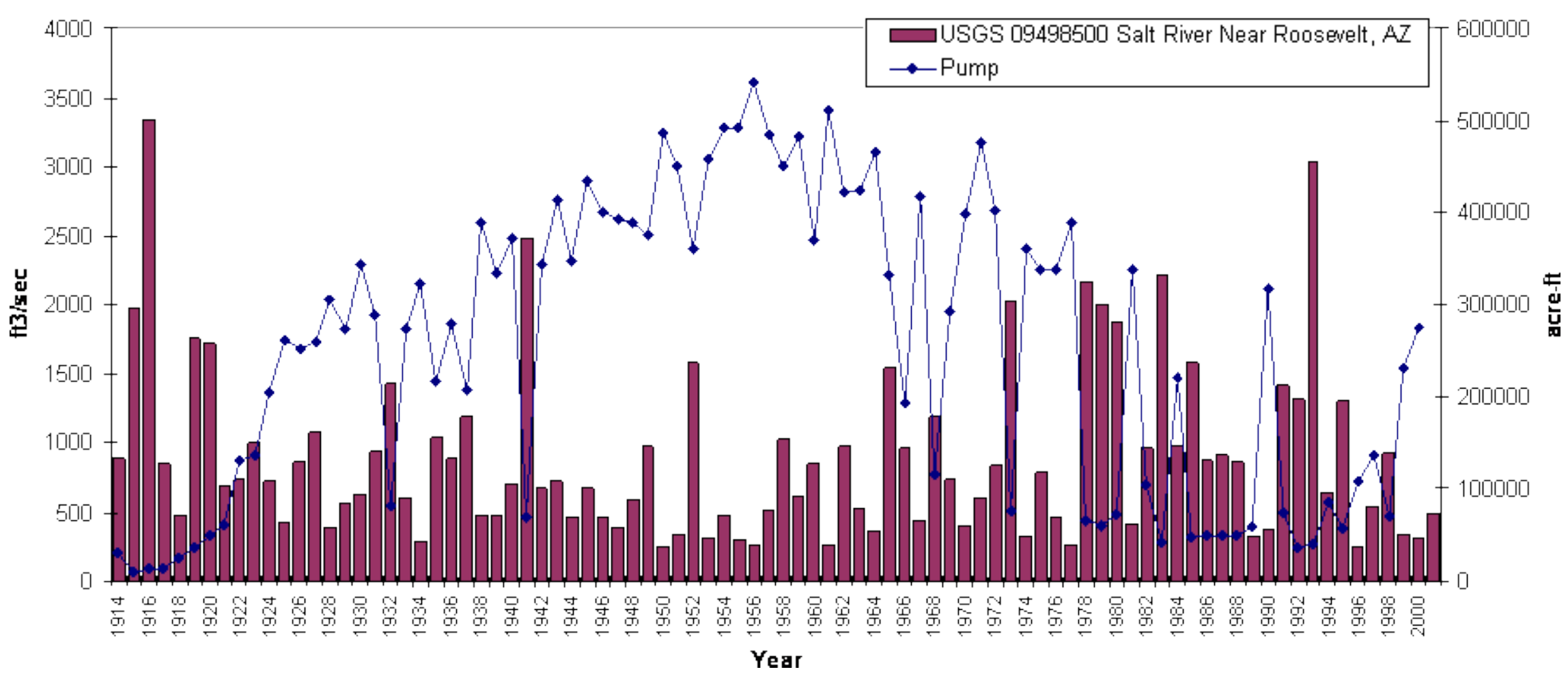
Office of the Governor of Arizona
Pinal County Irrigation District
Private Developers
Queen Creek Water Company
Salt River Pima Maricopa Indian Community
Salt River Project
Various Attorneys at Law
Water Resources Research Center, UA

Arizona State University

Center for Environmental Studies
College of Architecture and Environmental Design
College of Law
Department of Geography
Department of Civil and Environmental Engineering
Department of Geological Sciences
School of Life Sciences
School of Public Affairs

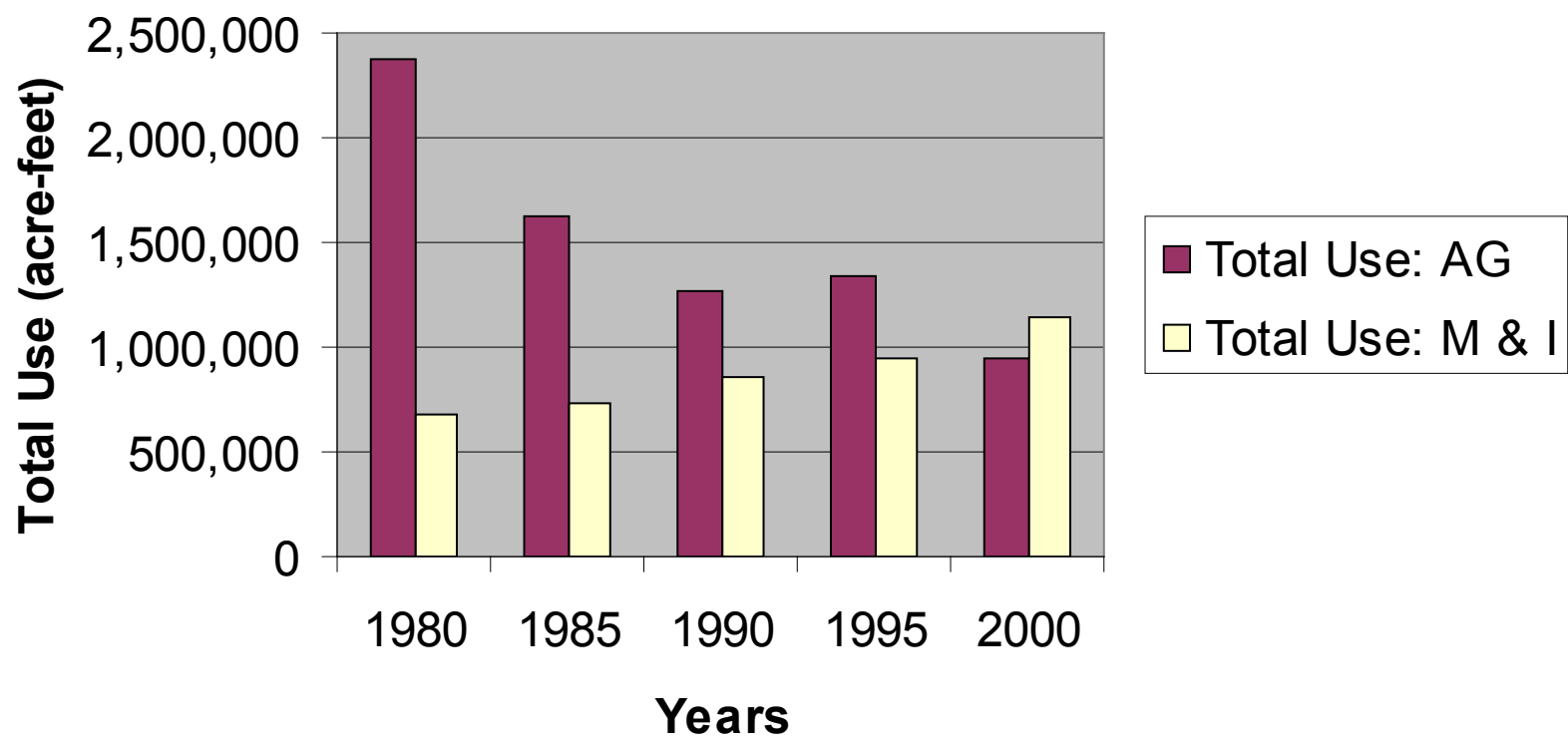
Data Examples:

Annual mean streamflow (ft³/s) vs. groundwater pumping for SRP



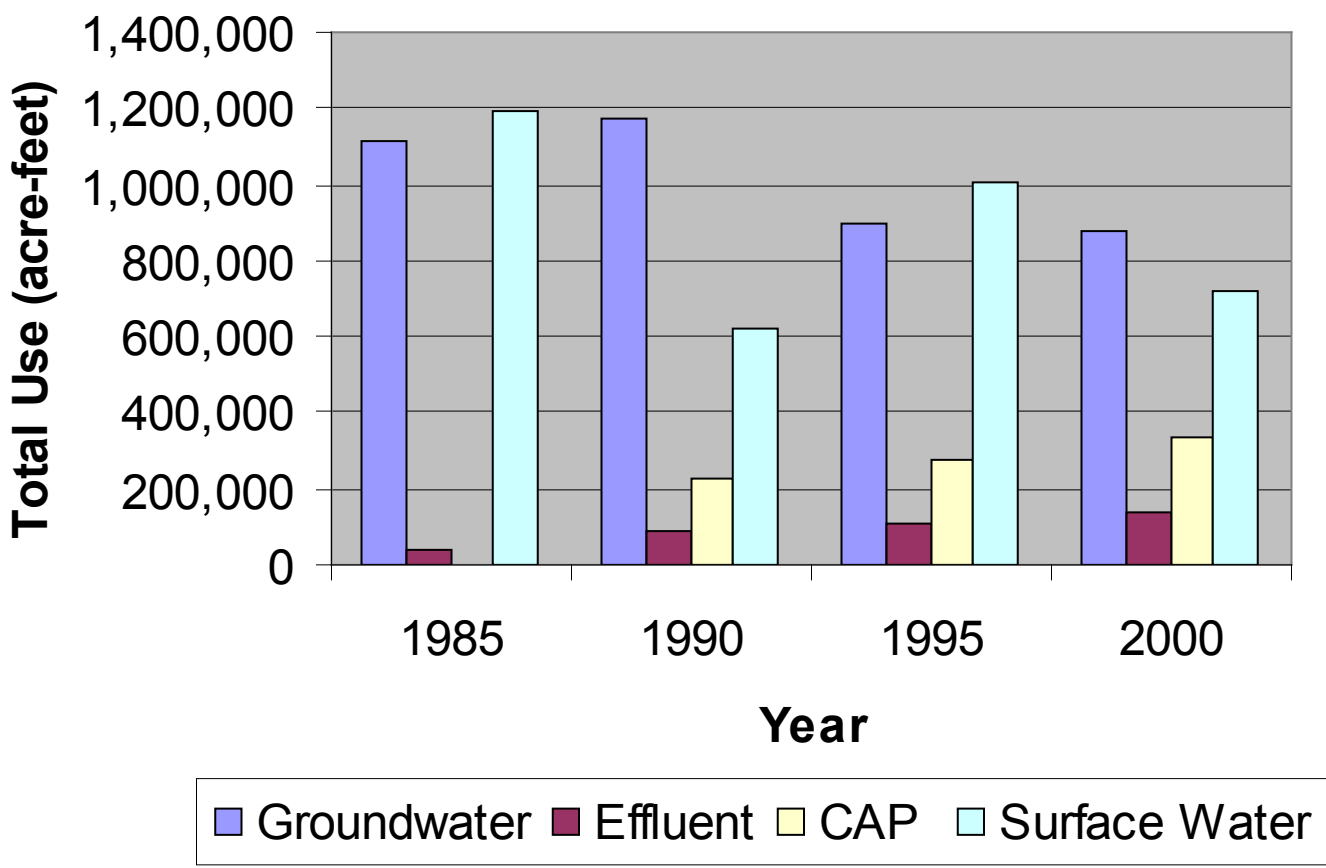
Annual mean streamflow (ft³/s) of the Salt River is shown here against regional groundwater pumping for the years 1914 through 2000. The Groundwater Management Act was passed in Arizona in 1980.

Water Demand by Sector 1980-2000: Phoenix AMA

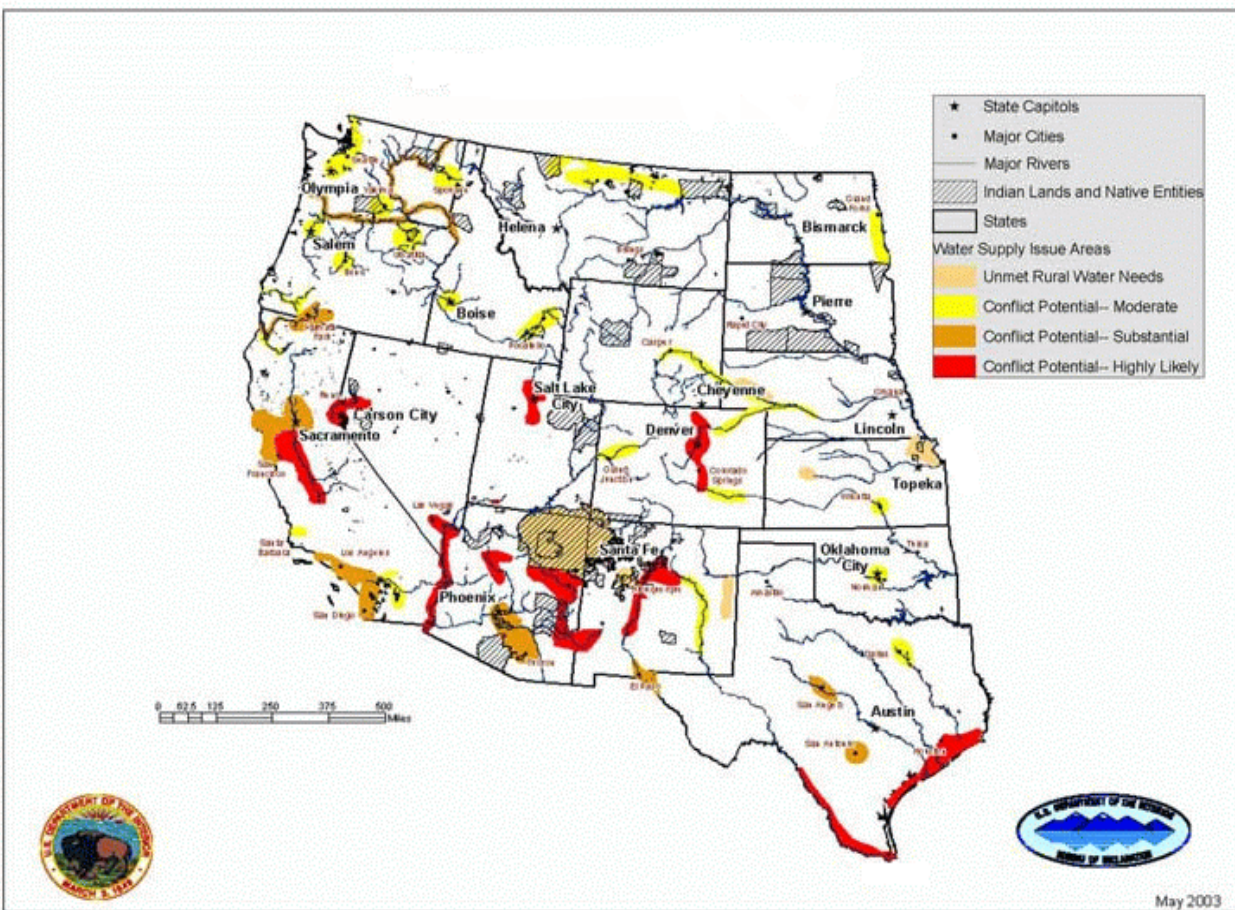


Agricultural water use in the Phoenix Active Management Area is on the decline while municipal and industrial demand is rising. Arizona Department of Water Resources.

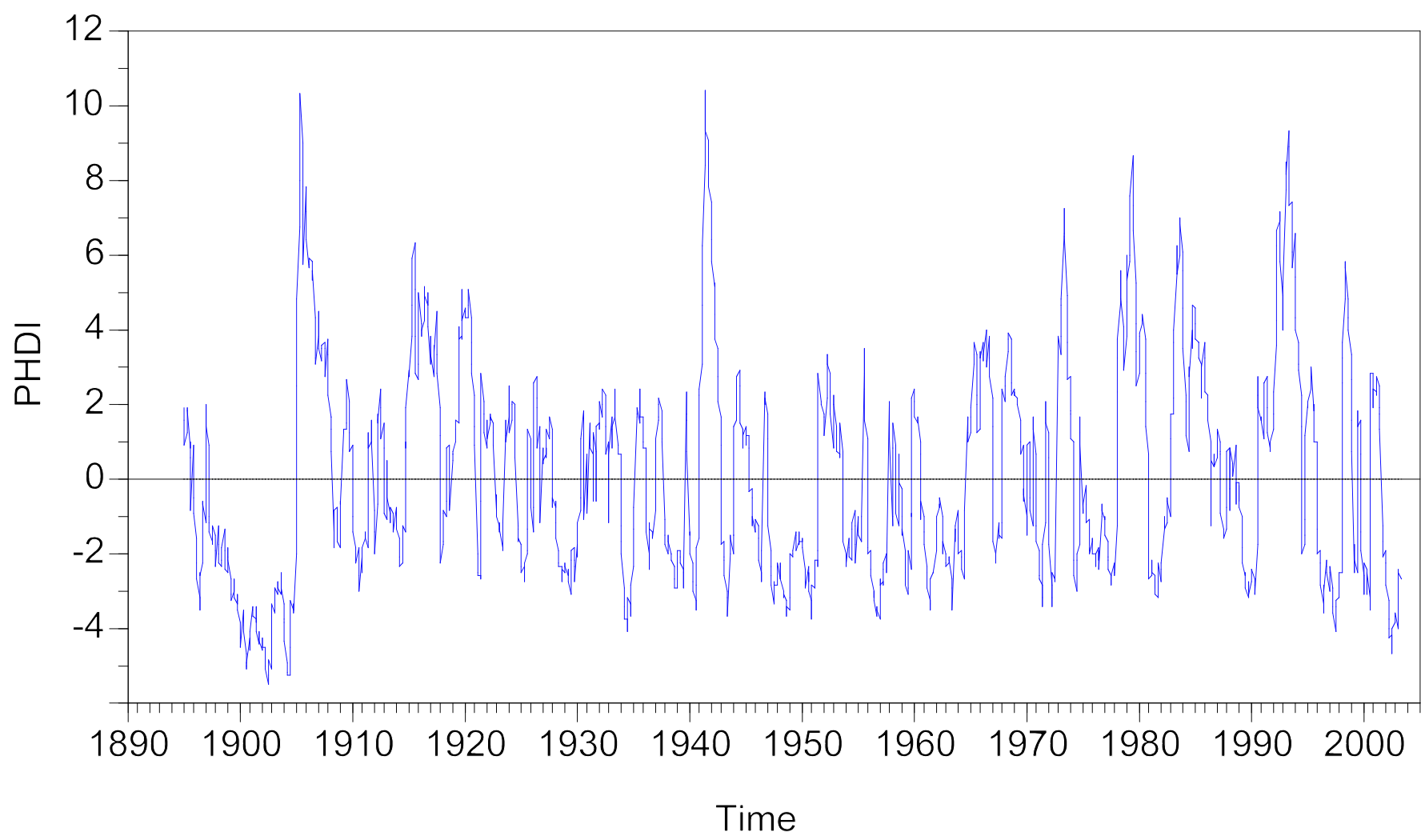
Water Use by Source: Phoenix AMA



Four water sources are available in the Phoenix Active Management Area: groundwater, surface water, Central Arizona Project/Colorado River (CAP) water, and effluent. CAP usage is increasing, as is effluent; however, this does not appear to correlate with a decrease in groundwater and non-CAP surface water withdrawals. Arizona Department of Water Resources.



Potential water supply crises by 2025. Areas where existing supplies are inadequate to meet water demands for people, farms, and the environment. US Department of the Interior, Bureau of Reclamation.



Plot of the Palmer Hydrological Drought Index (PHDI) from Jan 1895 to May 2003 for the Phoenix area. High negative values indicate severe drought; high positive values indicate extreme flooding.

Water Dialogue Findings

Participants identified the following areas of future research:

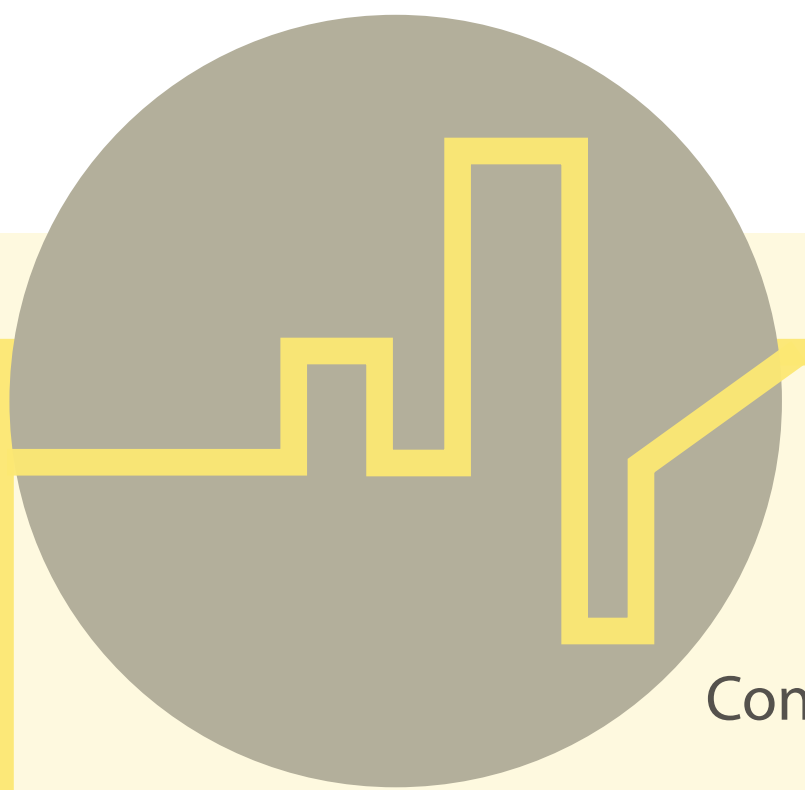
- Water Supply & Quality
 - Data Integration and Modeling
 - Recharge, Replenishment and Reuse
 - Water Quality and Salinity
 - Land-Use Impacts on Water
 - Drought Impacts
 - Urbanization and Growth
 - Regional-Specific Concerns
 - Conservation
 - Water in Ecosystems
 - Water Economics
 - Water Security
- Bridging Science & Policy
 - Communication and Bridging
 - Public Perception and Behavior

Action Items

Participants identified two priority tasks for academic/community partnerships:

1. Create a dynamic database of water supply, water demand, and future water obligations for Greater Phoenix;
2. Create comprehensive model(s) on water supply, water demand, groundwater, climate variability, and growth scenarios.

CSRUR has begun a Task Force to address these items. Currently, a master database of known datasets is being generated. The Center for Environmental Studies Informatics Lab will be developing a data network that will allow participating agencies to access these datasets, increasing the knowledge available to decision makers.



Consortium for the Study of Rapidly Urbanizing Regions



Center for Environmental Studies

