Water Resources Research Center

College of Agriculture and Life Sciences, The University of Arizona

Meeting Growing Water Demands in Central Arizona

21st Arizona Agribusiness Forum

November 16, 2006

Sharon B. Megdal, Director
Water Resources Research Center
350 N. Campbell
Tucson, AZ 85721
520-792-9591, ext 21
fax 520-792-8518
email smegdal@cals.arizona.edu
web site: www.cals.arizona.edu/azwater/

WaterSustainability
The University of Arizona

Two questions often asked…

1. Are water supplies sufficient to meet projected demands?
2. What about the Central Arizona Groundwater Replenishment District (CAGRD)? Is it workable over the long term?

For Central Arizona, the two are related. This presentation will focus on recent analyses of the CAGRD (with Avery, Consoli and Glennon) and of the question of water sufficiency for the Tucson region, respectively.

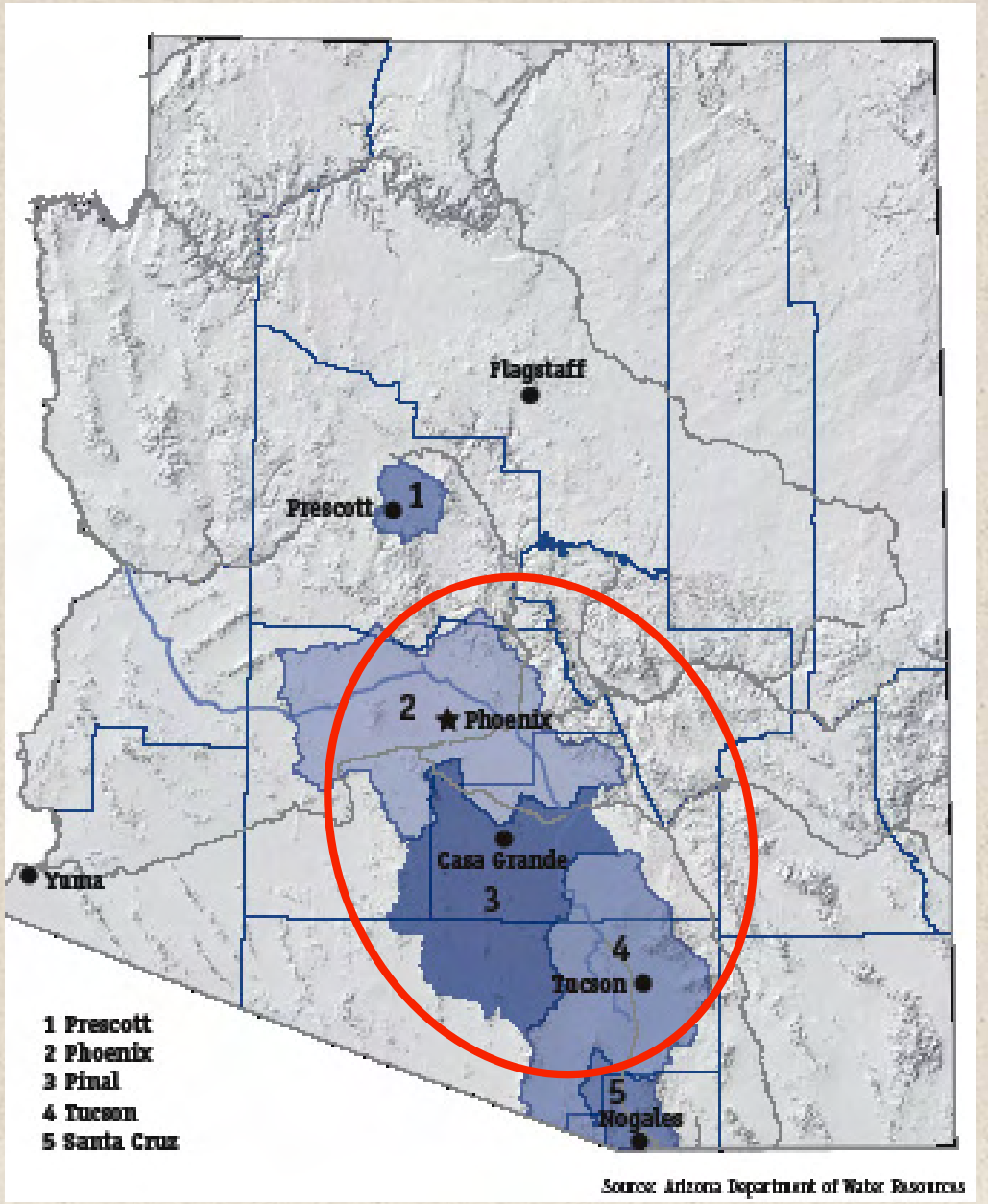
Providing the Context: 1980 Groundwater Management Act

- Created Active Management Areas (AMAs)
- Quantified rights for existing groundwater users, with some rights transferable
- Restricted new groundwater uses but grandfathered in most uses.
- Footprint of agriculture could not expand.
- Management Plans with Conservation Programs.
- Placed burden of using renewable supplies on new residential uses through requiring an assured water supply program (AWS).

5 Active Management Areas in Arizona

Focus on three Central Arizona AMAs

Management Goal of Phoenix and Tucson AMAs is Safe-yield. Pinal AMA goal relates to use of water by the ag sector while preserving supplies for future municipal use.



1995 Assured Water Supply Rules

- 1988: Attempted rule-making failed.
- Early 1990s, a renewed effort at AWS rule-making; the proposed AWS Rules required that renewable water supplies be used.
- Those without access to CAP water argued that a mechanism was required to facilitate use of renewable supplies.
- 1993: The CAGRD was authorized by statute as a mechanism to enable compliance with the proposed AWS Rules
- 1995: AWS Rules certified by Secretary of State

Assured Water Supply Rules Provisions

- Certificate versus designation
- Differ by AMA
- Key demonstrations
  - New water use is physically, legally and continuously available for 100 years
  - Water supply meets water quality standards
  - Proposed water use is consistent with the management goal – Role for the CAGRD
  - Water use must be consistent with the management plan
  - Financial capability to construct water storage, treatment and/or delivery system

CAGRD Operated by the CAP Board

- Member Lands
- Member Service Areas
- Enrollment contracts
- Members can utilize groundwater if 100 year supply demonstrated to be legally and physically available
- Replenishment of excess groundwater, per the AWS Rules, within three years of groundwater reporting, in the same AMA
- Obligation is on the part of the CAGRD

Note: What is called the CAGRD is not a “district”.

Key Considerations

- The CAGRD does not have to show it has water supplies in hand to meet the replenishment obligation for its members for 100 years.
  - AWS Designations and Certificates granted based on non-firm supplies
- To date CAGRD has relied on excess CAP water to meet its obligations.
- Replenishment must occur in the AMA of the groundwater use, but does not have to occur in close proximity to the pumping.

CAGRD Policy: CAGRD Replenishment "will be accomplished at reasonably priced facilities in consideration of water resource management goals, with preference for us of state demonstration projects when appropriate." (Plan, p.18)

Lower Santa Cruz Replenishment Project

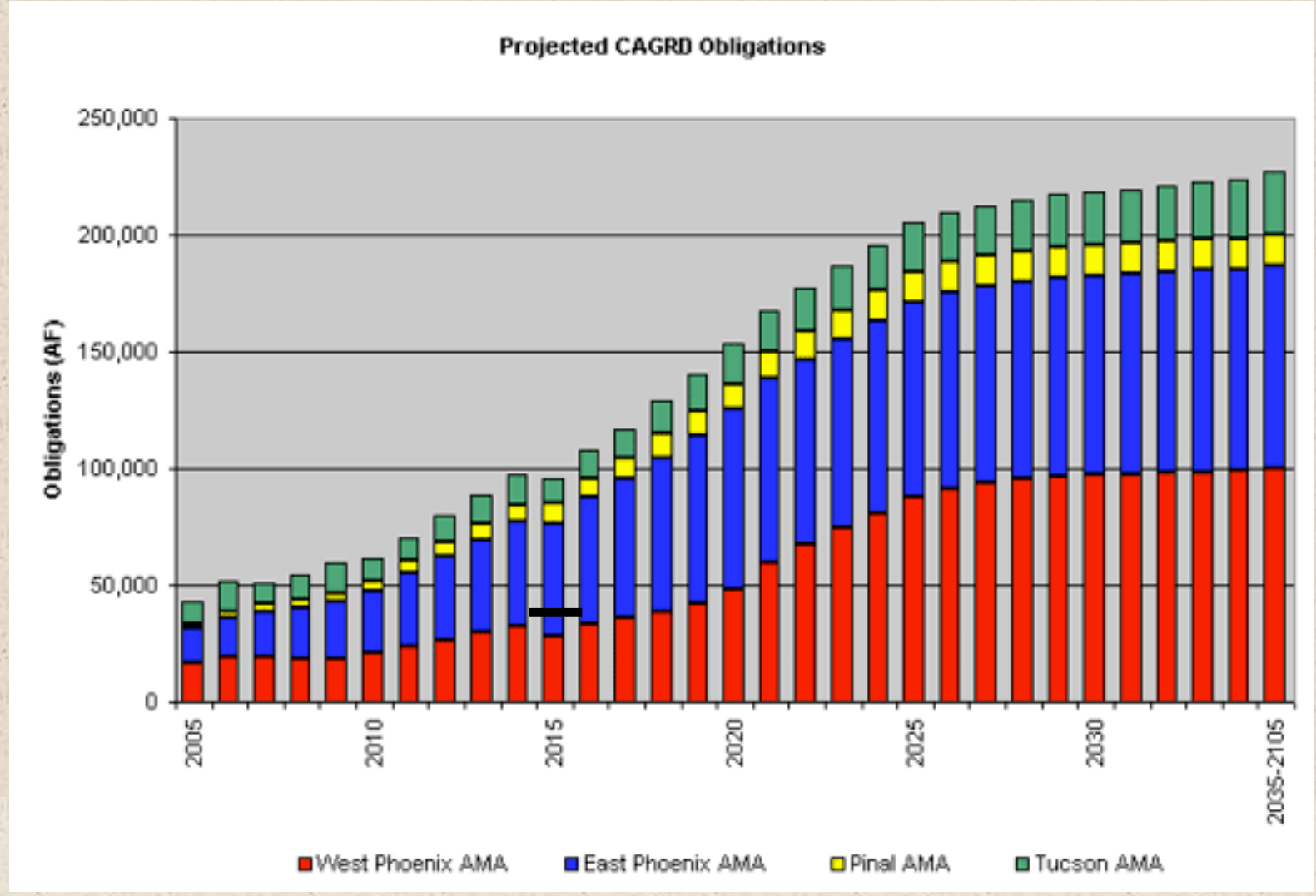
Agua Fria Recharge Project

Photos courtesy of CAP

Growth in Membership has Exceeded Expectations

2004 Plan: Through 2030 based on membership projected through 2015

1994 Projection for 2015: 37,500 af



Issues Related to Growth in Membership

- Sources of supply to meet replenishment obligations long-term
  - Cost associated with the supplies
    - Members pay whatever the costs
      - Member service areas – water bills
      - Member lands – assessments through property tax bills
  - Competition for supplies
- Location of replenishment relative to pumping

Challenges and Possible Solutions

- Need for Water
  - Connect CAGRD with Renewable Water Supply (Effluent)
- Disconnect Between Pumping and Replenishment
  - Replenish closer to the pumping
  - Show that groundwater decline as a result of member pumping will be less than 400 feet over 100 years
- Competition Issues Associated with the Need for Additional Supplies
  - Cooperate with others seeking additional supplies
  - Limitations on enrollment based on replenishment obligations for which the CAGRD has not secured firm supplies
  - Limitations on replenishment obligations for new or modified replenishment contracts
- Monitoring Growth in Replenishment Obigation
  - More frequent updates to the Plan (membership and replenishment obligation
  - More frequent scrutiny of the Plan of Operation
  - Report on use of Replenishment Reserve

Additional Considerations

- Spectrum of implementation issues
  - More frequent scrutiny of the Plan of Operation (easy)
  - Effluent as source of replenishment water (moderately easy)
  - Cooperate in seeking new supplies (moderately hard)
  - Limitations on enrollment or replenishment obligations (hard)
- In the near term, work should begin on developing the types of agreements for water supplies to carry the CAGRD beyond the current plan.
- Although reliance on non-firm supplies for growth may have exceeded expectations, it can be argued that the AWS Rules would not be in place were it not for the CAGRD.

Placing the CAGRD in the larger context of Growth and Policy Discussions

- Some key questions:
  - Will the CAGRD perform as anticipated in an age of tighter water supplies?
  - Will water be a limiting factor to the growth of Arizona? If it is, that will have implications well beyond the CAGRD. Not all water providers depend on the CAGRD.
- Discussing options/solutions is part of the policy evaluation process. At the time of the CAGRD's formation, it was known that future modifications would be necessary.

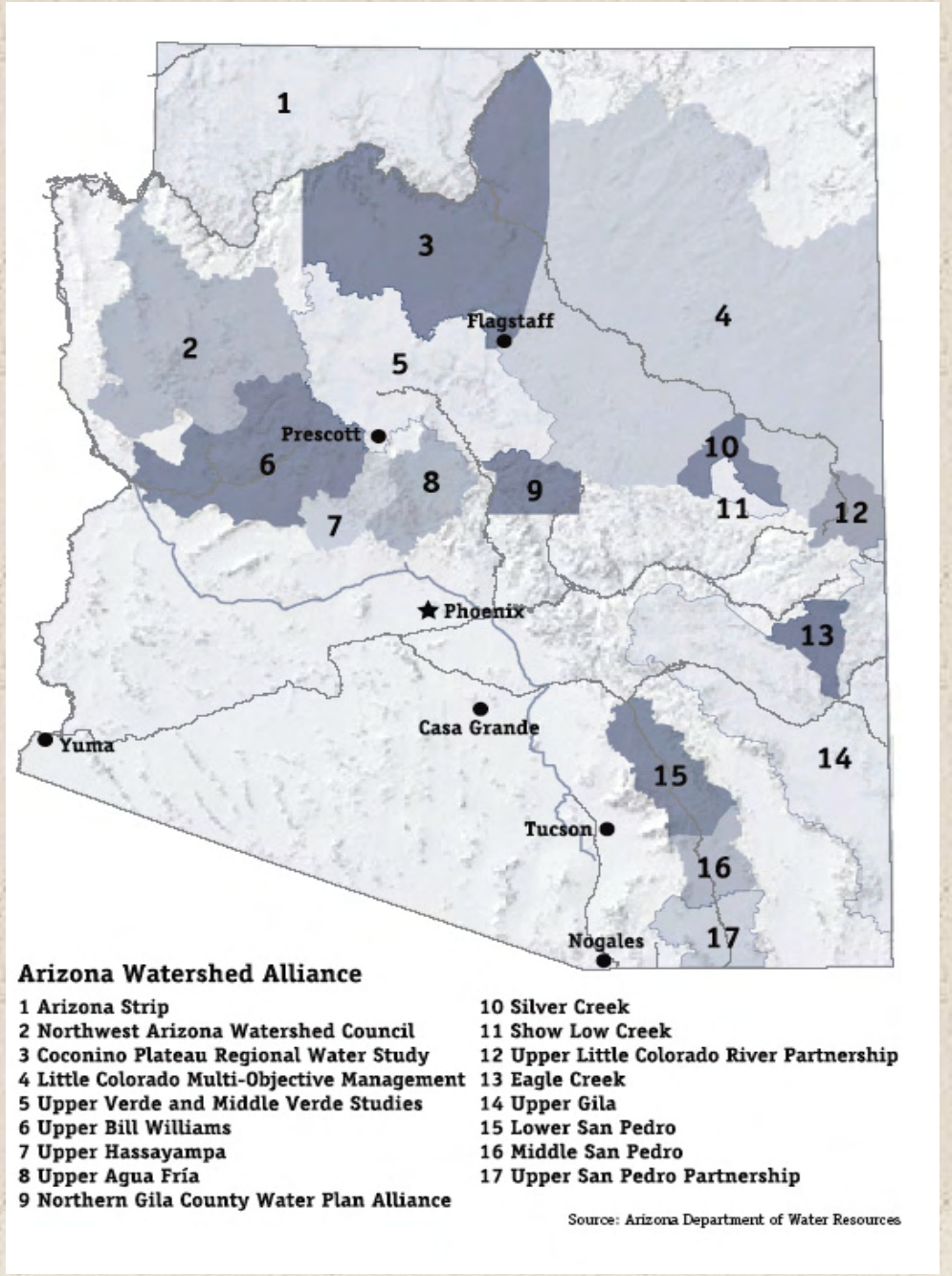
Water Resource Availability for the Tucson Metropolitan Area

- See one-page handout in your folders regarding this study, which was funded by Metropolitan Pima Alliance, Southern Arizona Leadership Council, Tucson Association of REALTORS, Southern Arizona Homebuilders Association, Marana Chamber of Commerce, Tucson Metropolitan Chamber of Commerce, and Tucson Regional Water Council.
- Water Availability Scenarios Work Sheet, with sensitivity analysis
- Regional Water Management Considerations
- Recommendations Regarding Potential Role for the Business Community

What's happening in the non-AMA Parts of the State?

In the non-Active Management Areas, watershed groups and others are actively involved in water resources planning.

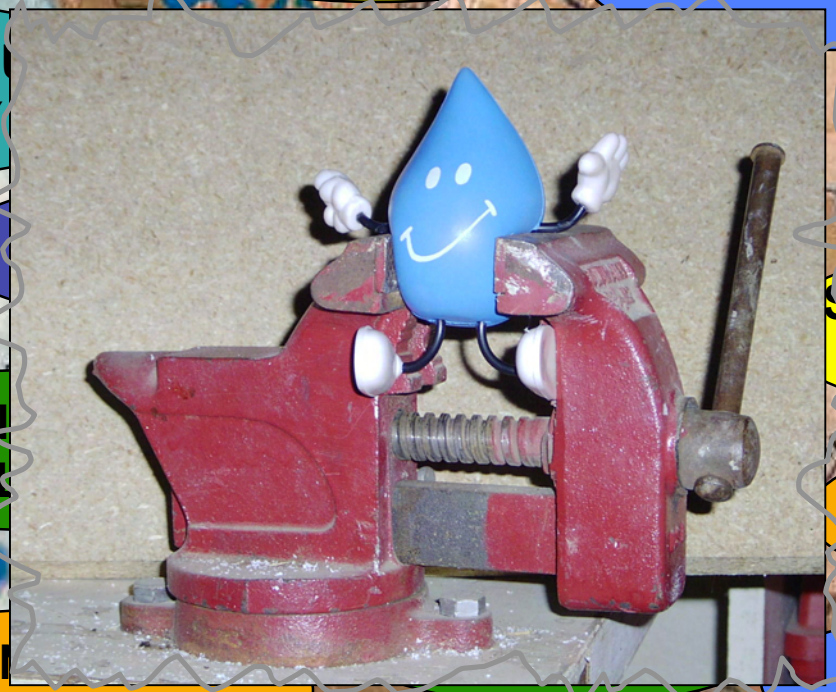
Statewide Water Advisory Group (SWAG)



The Next Bucket of Water

- What after the CAP water is fully utilized?
  - Effluent
  - Desalting seawater
  - Water exchanges/transfers
  - Conservation
- Implications of Drought
- Water Quality

Regional and Statewide Water Challenges



UPPER BASIN DEVELOPMENT

ARSENIC STANDARD

INFRASTRUCTURE FINANCING

LAWSUITS

INFRASTRUCTU CAPACITY

"FOREST HEALTH"

COLO. RIVER SHORTAGE SHARING

SURFACE WATER ADJUDICATION

GROUN DEPL

ENDANGERED SPECIES

SALINITY

GROU CONTAMINATION

INDIAN SETTLEMENTS

LAND SUBSIDENCE

COST OF WATER/ RATES

GROUNDWATER RIGHTS

ENVIRONMENT

CONSERVATION

INTERNATIONAL TREATIES

MEXICO

Steve Rossi
City of Phoenix

Concluding Thoughts

- When the well's dry, we know the worth of water. – *Benjamin Franklin, Poor Richard's Almanac, 1746*

•The frog does not drink up the pond in which he lives. – *American Indian Proverb*