Using Recharge and Recovery to Meet Water Management Objectives in Arizona

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Overview and Relationship to Water Planning

1. Regulatory context and recharge and recovery framework
2. Treating surface water and effluent
3. Facilitating meeting 100-year assured water supply requirements
4. Preparing for Colorado River shortage

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1. Arizona’s regulatory framework
1980 Groundwater Management Act

- Created the Arizona Department of Water Resources
- Established Active Management Areas
  - Hydrologic boundaries
  - Stringent regulations
  - Long-range management goals
- Ensured completion of the Central Arizona Project (CAP)
  - In 1968, grand bargain struck for funding CAP: *Low priority in times of shortage*
- www.azwater.gov
Recharge & Recovery Framework (last major revision, 1994)

The Arizona Department of Water Resources administers a system of permits and accounts:

- Allows storage and recovery while protecting other land and water users
- Requires extensive monitoring and annual reporting
- Stored water retains its legal character
  - i.e., recovered CAP water \( \approx \) ‘wet’ CAP water
Accounting System

- Arizona’s recharge & recovery program uses a “paper water” accounting system that relies on a “mass balance” approach
  - Recharging a volume of water allows an equal, or nearly equal, volume to be recovered
  - Generally, anywhere within the same AMA
- Recharge & recovery can occur within the same year, or a Long-Term Storage Credit is issued for future use
  - Credits can be transferred among users, with some restrictions
Recharge Facility Types

Underground Storage Facilities (USF)
- “Direct” recharge
- Water is delivered to spreading basins, trenches, injection wells or natural channels

Groundwater Savings Facilities (GSF)
- “Indirect” or “in lieu” recharge
- Water is delivered to agricultural user that would otherwise have pumped groundwater
2. Treating surface water, effluent

wrrc.arizona.edu; tucsonaz.gov/water
Photos from field trips to Tucson Water facilities with my graduate Arizona Water Policy Class
3. Mechanism for meeting 100-year Assured Water Supply

- Assured Water Supply Rules are critically important requirement of the Groundwater Management Act
  - Physically, continuously, and legally available water for 100 years
  - Water meets water quality objectives
  - Water meets consistency with the Management Goal for the Active Management Area (AMA), which is safe-yield in most AMAs

- Central Arizona Groundwater Replenishment District (CAGRD) was established in 1993 to assist in meeting consistency with the management goal for the three Central Arizona AMAs. [www.cagrd.com](http://www.cagrd.com)
• CAGRD policy is to have replenishment occur close to the groundwater use sites, but there is no requirement that replenishment occur in the same local area, only within the AMA.
4. Colorado River Shortage Conditions and the role of the Arizona Water Banking Authority

- 4.0 MAF in storage
  - 3.4 MAF for AZ
  - 0.6 MAF for NV

- In the Phoenix, Pinal and Tucson Active Management Areas
  - 10 Underground Storage Facilities (USFs)
  - 14 Groundwater Savings Facilities (GSFs)

- www.azwaterbank.gov
Shortage Impacts

- Other Excess 175 KAF
- Ag Pool 300 KAF
- NIA Priority 222 KAF
- Indian Priority 326 KAF
- M&I Priority 448 KAF
- Priority 3 - 68 KAF

Excess

Firmed by AWBA

Long-Term Contracts
Shortage Impacts – Tier 1

- Indian Priority: 326 KAF
- M&I Priority: 448 KAF
- NIA Priority: 222 KAF
- Ag Pool: 300 KAF
- Other Excess: 175 KAF
- Ag Pool Shortage: 143 KAF
- Excess: 320,000 acre feet
- M&I Priority: 448 KAF
- Indian Priority: 326 KAF
- Priority 3: 68 KAF

CAP Delivery Priority:
- Low
- High

Long-Term Contracts

Excess
Recovery Needs
2014 Joint Recovery Plan

Recovery of Water Stored by the Arizona Water Banking Authority
A Joint Plan by AWBA, ADWR and CAP
Concluding Points

• Arizona’s groundwater regulations and storage and recovery framework have facilitated meeting important state and regional groundwater management objectives.

• There remain many implementation and management challenges, including:
  – Location of replenishment by the CAGRD relative to pumping by CAGRD members.
  – Uncertainties about Colorado River shortage conditions (how long and deep?)
  – Groundwater management outside of the AMAs.
  – Projected gaps between supply and demand.

• Efforts to address these and to engage and educate the public continue.
  – See BeyondtheMirage.org as one example.
We tackle key water policy and management issues, empower informed decision-making, and enrich understanding through engagement, education, and applied research.

Thank you!

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