Colorado River Shortage Impacts for Central Arizona Agriculture

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Central Arizona Project Agricultural Users
2004 Arizona Water Settlements Act

- Comprehensive settlement of Indian water rights claims and CAP repayment issues
- Irrigation Districts relinquished long term CAP subcontract rights to provide CAP water for the tribes and municipal and industrial users in return for:

  - **Federal Distribution System Debt Relief.** (approx. 70-80% of cost of construction of CAP water distribution systems)
  - **Relief from the Reclamation Reform Act of 1982** (restricted number of acres eligible to receive CAP water)
  - **Dedicated pool of CAP water at energy cost only through 2030 (Ag Pool)**
    - 400,000 AF from 2004-2016
    - 300,000 AF from 2017-2023
    - 225,000 AF from 2024-2030

  - Ag Pool is the highest priority within the “Excess” pool of the CAP supply, but the “Excess” pool is junior to NIA, M&I, Indian, and Priority 3 CAP supplies
2007 Interim Guidelines for Lower Basin Shortages

- Established framework for Secretary to determine whether “Normal,” “Surplus,” or “Shortage” conditions exist in the Lower Basin based on projected January 1 Lake Mead water elevation
  - Normal Conditions – 1,075’-1,145’
  - Surplus Conditions – generally at/above 1,145’
  - Shortage Conditions – Tier 1: 1,075’-1,050’; Tier 2: 1,050’-1,025’; Tier 3: below 1,025’
    - Tier 1 Reductions – Arizona: 320,000 AF; Nevada: 13,000 AF
    - Tier 2 Reductions – Arizona: 400,000 AF; Nevada: 17,000 AF
    - Tier 3 Reductions – Arizona: 480,000 AF; Nevada: 20,000 AF
- Arizona reductions borne by CAP
- Guidelines run through 2026
Lower Basin Drought Contingency Plan

- LBDCP builds upon the 2007 Guidelines and remains in effect through 2026
  - Additional shortage Tiers with cumulative reductions under LBDCP and 2007 Guidelines
    - Tier 0: 1,090’-1,075’
    - Tier 1: 1,075’-1,050’
    - Tier 2a: 1,050’-1,045’
    - Tier 2b: 1,045’-1,025’
    - Tier 3: 1,025’
End of Calendar Year 2022 Projections
September 2022 24-Month Study Most Probable Inflow Scenario

Lake Powell

- Physical: 23.3 maf
- Effective: 3,703 ft, 26.1 maf
- 3,675 ft
- 3,575 ft
- 8.9 maf
- 5.6 maf
- 0.0 maf
- Dead Storage: 1.7 maf
- 3,370 ft

Lake Mead

- Physical: 16.2 maf
- Effective: 1,219.6 ft
- 1,145 ft
- 1,075 ft
- 1,025 ft
- 1,090 ft, Tier 0
- 1,050 ft, Tier 2a
- 1,045 ft, Tier 2b
- 1,049.9 ft
- 1,043.14 ft
- 7.20 maf
- 28% capacity
- 9.6 maf
- 6.0 maf
- Dead Storage: 2.5 maf
- 895 ft
## 2007 Interim Guidelines, Minute 323, Lower Basin Drought Contingency Plan, and Binational Water Scarcity Contingency Plan

### Total Volumes (kaf)

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<td>480</td>
<td>20</td>
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The Secretary of the Interior will take affirmative actions to implement programs designed to create or conserve 100,000 acre-ft per annum or more of Colorado River System water to contribute to conservation of water supplies in Lake Mead and other Colorado River reservoirs in the lower basin. All actions taken by the United States shall be subject to applicable law, including availability of appropriations.
Shortage Impacts to CAP Pools

2023 Pre-Mitigation Shortage Impact

- Current projections indicate the likelihood of Tier 2a in 2023
  - 1050' <= Mead Elevation > 1045'
- Tier 2a shortage volume = 592 KAF
  - 400 KAF per 2007 Guidelines
  - 192 KAF per LBDCP
    - +80 KAF compared to 2022 (Tier 1)
- Pre-mitigation pool level impacts:
  - 100% reduction to Ag Pool
  - 100% reduction to NIA Pool
  - No reduction to Indian and M&I Pools
Arizona DCP Mitigation

AZDCP Mitigation Commitments - 2023

Ag Pool Parties
- 105 KAF - Tier 1
- 70 KAF - Tiers 2a/2b

NIA Contractors & Subcontractors
- 100% - Tiers 1/2a/2b

Groundwater Infrastructure Program
- 70 KAF / Yr

Mitigation Resources: Credits, Wet Water and Money
Agricultural Water Use
Irrigation Infrastructure Improvements

- Original goal was to make $50m available for improvements to expedite access to 70,000 AF of groundwater
  - Approximately $25 million contributed by combination of state appropriation, CAWCD, irrigation districts, and Pinal AMA groundwater withdrawal fee collections for 2019-2026
  - Additional $20 million made available after 2021 AZ legislative session
Infrastructure Issues

• Existing district systems designed and built to transport CAP water diverted at headworks
  • As currently configured, some districts cannot effectively move groundwater
  • Some districts lack groundwater infrastructure entirely and must start from scratch

• Distribution system limitations, geology, groundwater protection zones around neighboring reservations threaten to leave some areas with no viable source of irrigation water

• Siting wells and delivery infrastructure has been challenging
  • Much of district infrastructure is federally owned/in federal rights-of-way

• Supply chain issues have slowed progress.

• Additional infrastructure necessary to effectively distribute available water to farms. Higher costs and need for more/different infrastructure than originally anticipated means more funding still is required
“I don’t eat alfalfa or cotton”
We grow produce also

Pinal County has significant and expanding produce operations and a variety of specialty crops, including vegetables/leafy greens, peppers, potatoes, durum wheat, melons, roses, nuts, etc.
Alternative Crops?
Irrigation Systems
On Farm Impacts

- Farmers have adopted highly-efficient irrigation practices, but many depend on flow rates districts no longer can deliver
  - Adapting field layout, management, cropping, irrigation practices underway. Farmers are innovative and have spent their lives looking for ways to buy less irrigation water
  - Installing new irrigation systems at scale (e.g. drip) often cost prohibitive, but farmers have been adopting such systems for years and likely will continue to do so where feasible
  - Farmers explore alternative/“low water use” crops, but ultimately must grow what someone will buy
  - Pinal County agriculture supports large cattle feeding and dairy industries – cows still need to eat, hauling feed is expensive
- Immediate water supply limitations will require significant fallowing. Pinal County ranks in the top 2% of all US counties for total value of agricultural production. Few places have the conditions necessary to grow what we grow/when we grow it
- Costs have been escalating for virtually all farm inputs
- Pinal County agriculture remains a cornerstone of the regional economy and is a major supplier of food and fiber. It is critical to keep enough land in production in the near term to sustain supporting industries and communities
Questions