Aquifer Storage and Recovery: Its State in the State

Texas Groundwater Protection Committee

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Texas Water Development Board

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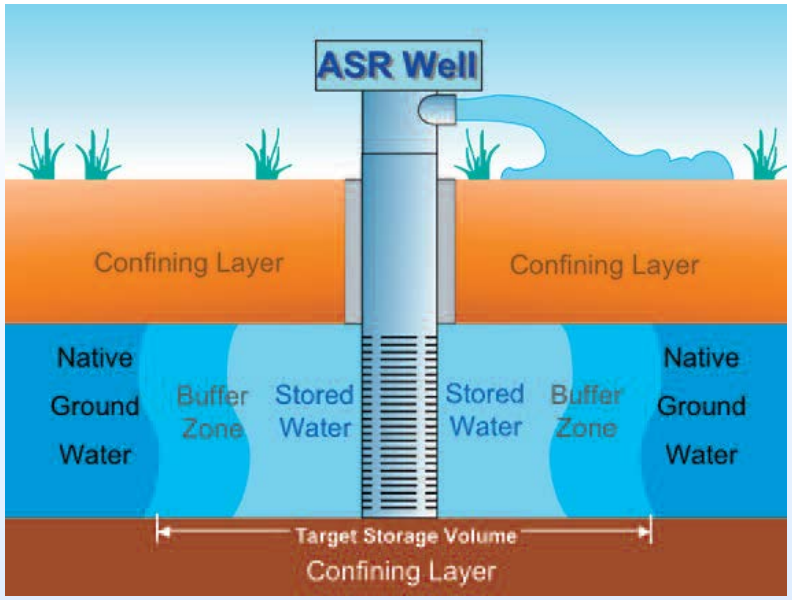
The following presentation is based upon professional research and analysis within the scope of the Texas Water Development Board's statutory responsibilities and priorities but, unless specifically noted, does not necessarily reflect official Board positions or decisions.

What is ASR?

- Aquifer Storage and Recovery
  - "The injection of water into a geologic formation, group of formations, or part of a formation that is capable of underground storage of water for later retrieval and beneficial use." (30 TAC §331.2)
  - Or more simply - storage of water in a suitable aquifer and recovery of that water during times of need for beneficial use
  - Source water can be reclaimed, groundwater, or surface water; surface is most prevalent



Source: NGWA

Benefits (partial)

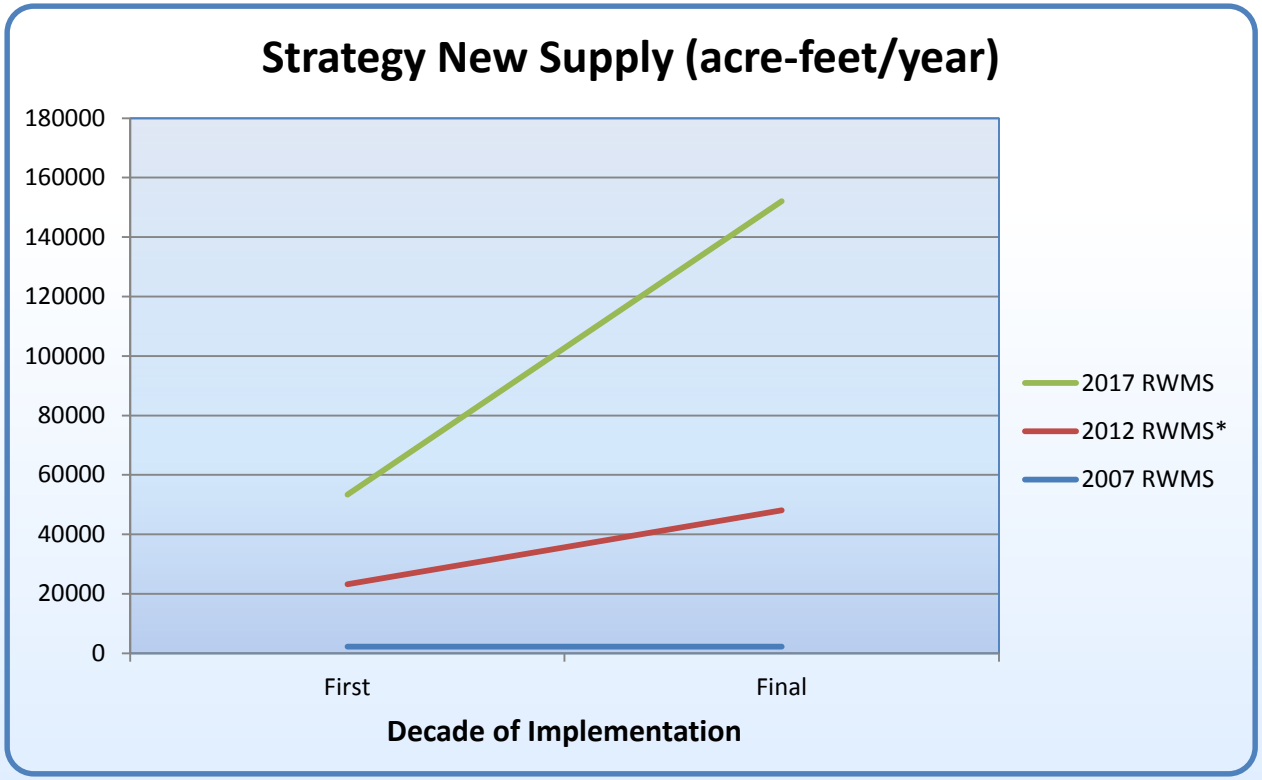
- Eliminates evaporative losses
  - Compare to 33.8M acre-feet of surface storage
  - Compare to 18.4M ac-feet total state demand in 2020
  - 7.2M acre-feet lost in average year (20% of storage, 40% of demand)
- Mitigates surface inundation effects
  - Mid-size ASR of 37k ac-feet would require 2,500 acre surface reservoir
  - Texas average; greater area likely needed on the coastal plain
- Maximize existing resources
  - Junior surface rights – Texas operates under prior appropriation
  - Transmission pipelines/Water treatment/desalination plants
    - Run at average rather than peak in many cases

Limits/Challenges (partial)

- Requires appropriate geology
- Offers no flood control
- Offers no recreational benefits
- Hydraulic migration
  - Movement of stored water away from recovery well
  - Function of gradient, conductivity, and storage duration
  - Easier to manage with higher well counts
- Stored water protection – Texas applies Rule of Capture
  - Surface pumping right ownership – San Antonio
  - Municipal ordinance - Kerrville
- Chemical interaction
  - Well plugging
  - Chemical mobilization – arsenic of particular note
  - Early-study formation geochemical testing highly recommended

Growth in Interest

- 2017 State Water Plan Recommended ASR strategies
  - 53,341 ac-ft decade 2020; 152,000 ac-ft decade 2070
  - Triple the final decade volume from the 2012 SWP



* Excludes infiltration basin projects

Funding Background

- 84th Texas Legislature, House Bill 1, Rider 25
  - $1,000,000 from General Revenue Fund
  - For innovative storage approaches, including but not exclusively, ASR
  - One-for-one matching grant funds
  - Competitive grant application process
    - Request for application notice – September 22, 2015
    - Application deadline – November 3, 2015
    - Grant approval – January 7, 2016

Application Summary

- Six applications received
  - Four ASR field studies
  - One ASR desktop/planning study
  - One enhanced recharge field study
- Three grants awarded

Recipient	Funding		
	Total	Requested	Awarded
Edwards Aquifer Authority	$563,000	$281,500	$281,500
Victoria County Groundwater Conservation District	$570,226	$285,112	$285,112
Corpus Christi Aquifer Storage and Recovery Conservation District	$1,000,000	$500,000	$433,388

- City of Bryan moving forward with Class V request

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