What goes down must (mostly...) come up:

Aquifer Storage and Recovery in Texas

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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.
McDonald Irrigation Well, 1200 Gallons per Minute, Hereford, Texas.
BULLETIN 5701

ARTIFICIAL-RECHARGE EXPERIMENTS AT
MCDONALD WELL FIELD, AMARILLO, TEXAS

By
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Prepared in cooperation with the Geological Survey,
United States Department of the Interior,
and the
City of Amarillo
January 1957
“good ole boy” ASR off the Canadian River Municipal Water Authority’s pipeline 1960s
SCHEMATIC DIAGRAM OF THE TEXAS WATER SYSTEM
(Includes major conveyance facilities and related reservoirs)

EXPLANATION
- Trans-Texas Division
- Eastern Division
- Coastal Division
- Surface Water Reservoir Projects
- Other Import Possibilities

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1968 State Water Plan
Effects of Artificial Recharge on the Ogallala Aquifer, Texas

United States Geological Survey Water-Supply Paper 2251

Figure 21. Recharge operations, showing details of pressure recharge system, Dunlap site.
House Bill 1989, 74th

- Authorized use of Texas Water Development Board funds for aquifer storage and recovery
- Authority not used until 1996-1997 when four feasibility studies were funded with ~$900,000 of state funds
  - ASR feasible at all sites, including in San Antonio
- Allowed state water (surface water) to be placed underground
San Antonio’s project

Volume in storage on 7/31/14 = 69,537 af


Figure 2. Twin Oaks Aquifer Storage and Recovery facility’s cumulative storage from 2004 to 2014 (af = acre-feet).
Why isn’t there more ASR in Texas?

Primary concerns:
- Ability to recover stored water
- Quality of recovered water
- Cost effectiveness
- Potential for others to recover the stored water
Intensity:
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

October 4, 2011
Let's make better use of our water resources

MANAGED AQUIFER RECHARGE

How Texas can maximize water resources by adopting aquifer recharge strategies for water supply storage and for water management flexibility

TEXAS (ASR)

Aquifer Storage Recovery

American Ground Water Trust – July 24, 2013, Austin, Texas

NORRIS CENTER, Austin • Northcross, 2525 West Anderson Lane, Ste. 365, Austin, TX 78757
House Bill 655, 84th

• Cleaned up archaic language
• Permitting with Texas Commission on Environmental Quality, not local groundwater conservation district
• Can be permitted by rule or general permit
• Regional management goals (desired future conditions) do not apply to ASR project
• Allows a loss of injected water
• Can pull out what you put in (minus a predetermined loss)
• Reporting requirements
• Budget rider for $1 million for demonstration and feasibility projects
What can we do?

- **Other surface water**: 34%
- **New major reservoirs**: 17%
- **Irrigation conservation**: 17%
- **Reuse**: 10%
- **Municipal conservation**: 7%
- **Other conservation**: 0.3%
- **Groundwater**: 9%
- **Desalination**: 3.4%
- **Conjunctive use**: 1.5%
- **Aquifer storage & recovery**: 0.9%
- **Weather modification**: 0.2%
- **Brush control**: 0.2%
- **Drought management**: <0.1%

Data from the 2011 regional water plans summary.
ASR in the
2012 State Water Plan

~81,000 acre-feet by 2060
Cost of $1,035,000,000
groundwater use in Texas (1937 to 2003)

Total volume pumped: 530,000,000 acre-feet

Texas Water Development Board data

U.S. Geological Survey data

Groundwater withdrawals (millions of acre-feet)

Total water-level declines in the major aquifers
To conclude:

• ASR is a great tool to conjunctively manage water resources
• Remove unnecessary requirements and restrictions
• Create incentives to get the water flowing
Questions?

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