Aquifer Storage and Recovery in Oklahoma: A State Comparison

Presentation to Ground Water Protection Council’s 2016 Annual Forum

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Why ASR Now?

TravelOK
http://www.travelok.com/maps/view.parks
ASR in Oklahoma

- Series of prolonged droughts in the state (2011 – 2015)
- Oklahoma climate is diverse, ranging from humid subtropical in the east to semi-arid in the west
- ASR system could store a surplus of water in ‘wet’ years without the loss through evaporation that occurs in above-ground reservoirs
U.S. Drought Mitigation Center
Percentage of Oklahoma in Drought (2000 – 2016)

The National Drought Mitigation Center
http://droughtmonitor.unl.edu/MapsAndData/Graph.aspx
Oklahoma’s Diverse Climate

Oklahoma Climatological Survey
When the Water Dries Up

PBS: The Dustbowl
http://www.pbs.org/kenburns/dustbowl/photos/
Oklahoma Water Resources Board regulates water quality and quantity.

Senate Bill 1410 required OWRB to conduct a feasibility study for potential aquifer recharge sites.

ASR was one of several suggestions. Alternatives include:
- New reservoirs
- East-west conveyance of water
- Smaller basin transfers
Recharge in Oklahoma
Another Tool in the Tool Belt
- Final report issued in 1997
- Recharge project in Blaine aquifer (SW corner)
- Water has been successfully injected since the 1980s
- Permitted by rule
- Primarily agricultural use
Obstacles for ASR in Oklahoma
Water Rights & Water Quality
Questions to Address

* How to develop an ASR program that will work within the state’s existing regulations
* Water permitting, rights and quality aspects were some immediate challenges that state agencies faced
ASR Workgroup
Established overall ASR workgroup as well as specialized workgroups (water rights, permitting and water quality) in 2015

- State agencies, USGS, state legislature representative and city manager provided input in the decision making process
- Also invited members of Burns McDonnell and Carollo to attend meetings and advise based on their experience with ASR in Kansas, Texas, etc.
Oklahoma Senate Bill 1219

* Oklahoma water rights did not consider ASR
* Not clear who had right to injected water

* SB1219 paves way for future ASR regulations
  * Signed by Governor Fallin on April 21, 2016
* Gives OWRB ability to create rules and establish permit process for citizens to take and/or use water stored in an aquifer via ASR

Oklahoma State Legislature
http://www.okhouse.gov/information/CapitolTours.aspx
State Survey
State Survey

Developed a survey
19 states surveyed
Mainly western and central parts of the U.S.
All but a few have ASR programs in place

*Full survey results will be available online soon*
Survey Questions
State Comparison Spreadsheet
Water Rights and Permitting

How to:

* Obtain the rights to take and store water
* Legally withdraw water after it has been stored
* Ensure existing water rights aren’t injured
* Permit ASR projects (individually, by rule, both)
* Determine how much water can be withdrawn over different lengths of time (accounting mechanism)
Groundwater is classified as public in most surveyed states

- Texas is private
- Wyoming is not public but is considered “waters of the state”
- Colorado is allocated by land ownership for non-tributary water

Groundwater in Oklahoma is private and allocated based on land ownership

- Must be withdrawn for a beneficial use, but it does not require the landowner to have an established need
Water Permitting

Separate Water Rights and Water Quality Permit

- Yes: 10
- No: 4
Water Quality

- Determine what type of source water to store
- Decide what standards water must be treated to both before storage and post recovery
- Address anti-degradation in terms of ASR
Next Steps

* Involve more players from various groups, agencies
* OWRB will have two-tiered regulation change process:
  * Water rights
  * Standards and anti-degradation
* DEQ rule changes in one year, with four permits:
  * UIC – ASR permit and infiltration basins
  * Water quality implementation (construction of water treatment facility and water recovery)
Thank You

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