

KDA-DWR Summary

Wichita Aquifer Storage and Recovery project proposed changes

June 28, 2018

Background

- Aquifer Storage and Recovery (ASR) projects generally allow for the diversion, treatment, and storing of source water into an aquifer for later recovery for a beneficial use. In Kansas, such projects require permitting under the Kansas Water Appropriation Act and corresponding regulations, with two permits required: one to divert, treat and inject (i.e. store) the source water and a second permit to recover the stored water.
- The City of Wichita has the state's only active ASR project, which was developed and approved in two phases within the Equus Beds Aquifer.
- Phase I of Wichita's ASR project was approved in August 2005, to allow the recharge of treated surface water from the Little Arkansas River and bank storage water from three bank storage wells immediately adjacent, for the purpose of developing recharge credits and slowing the migration of salt water contamination moving toward the wellfield from the Burrton area. Phase I permits allow recharge of up to 10 million gallons per day. The surface water intake (File No. 46,578) is authorized to divert 6,000 AF at 5,000 gpm, and was last operated in 2009. The bank storage wells (File Nos. 45569, 45570, 45571) are each authorized to divert 1,500 AF at 1,000 GPM. There were five recharge recovery permits approved.
- Phase II of the ASR project was approved in September 2009 to allow the recharge of treated surface water from the Little Arkansas River into the Equus Beds wellfield and accumulate recharge credits for subsequent use by the City. Phase II is designed to permit recharge of up to 30 million gallons per day. The surface water intake (File No. 46,627) is authorized to divert 45,230 AF at 41,667 gpm. There are 30 recharge recovery permits approved based on the initial Phase II approval and additional permits approved in September 2010.
- With water levels dropping in both Cheney Reservoir and the Wichita well field area during 2011-12 drought, the City became concerned that ASR permit limits for the minimum index level might prevent the City from accessing their recharge credits during drought periods when they are most needed.
- With the on-going recovery of the Equus Beds Aquifer in the Wichita well field area, much of it driven by the City shifting its demand base to Cheney Reservoir, recharge activities are being hampered by limited recharge capacity.
- DWR has been working with the City to develop proposals to address the City's concerns with ASR operational restrictions in a way that meets the public interest.
- The Equus Bed GMD No. 2 (GMD 2) has provided draft input at several points in response to the City's and DWR's requests, including most recently a series of legal and technical questions and comments GMD 2 provided on April 27, 2018 during the initial review period.

The City of Wichita's Proposals

- **New applications for additional recovery wells:** On July 23, 2013, the City filed a series of new-permit applications, File Nos. 48,704 through 48,733, to allow the City to recover recharge credits at its existing production wells not currently authorized to do so. Each application is requesting 500 AF at 1,500 gpm for the recovery of recharge credits.

- **Requested changes in the terms & conditions for Phase II approvals:** On March 12, 2018, the City forwarded to DWR a detailed proposal for changes to the conditions associated with the City's existing permits for Phase II of its ASR project, requesting:
 - **the lowering of the minimum index levels** used to determine when the City can withdraw its recharge credits, and
 - authorization for **a new type of recharge credit** from project operations, **Aquifer Maintenance Credits (AMCs)**, including specific accounting methods, and terms and conditions associated with such credits. AMCs would be accumulated during times of limited aquifer recharge capacity, where the City would receive recharge credits for treating surface water diverted from the Little Arkansas River and sent directly to town for municipal use, instead of injecting the treated surface into the aquifer, offset by reduced Equus Bed Aquifer use. Existing Physical Recharge Credits (PRCs) will be developed and accounted for pursuant to the existing methods.
- Based on initial review comments by GMD 2, the City supplemented its submittal on May 22, 2018.

Draft, Proposed Terms and Conditions Contemplated by DWR

To facilitate a better understanding of the terms and conditions under which the City's requests are being considered, DWR developed a set of draft, proposed approval documents, initially on March 22, 2018, and amended on June 1, 2018, as a result of input from GMD 2. Built on the established conditions for the current ASR appropriations and the Memorandums of Understanding between the City and GMD 2, the draft proposed permit conditions include the following proposed modifications and additions:

1. The locations of the index wells and the index water levels for the basin storage area (BSA) shall remain as set forth in Attachments 3 and 4 to the original ASR order of August 2005, **except for lower minimum index cell levels** that will be changed to those indicated in Table 2-11 of the City's proposal.
2. **Physical recharge activities will continue** to occur when there is adequate recharge capacity within the aquifer.
3. The **AMCs may be accumulated only when** index cell water levels are at elevations that **limit physical recharge** into the BSA as provided in the ASR's operating plan.
4. The **AMC accumulation rate** will be dependent on the **quantity of water treated and sent to the City** within the authorization of File No. 46,627.
5. **AMC accounting:** AMCs will be assigned to index cells annually through the following accounting methodology, unless otherwise modified by formal written approval of the Chief Engineer.
 - AMCs will be assigned by dividing the total volume of water diverted from the Little Arkansas River treated as needed to meet or exceed KDHE water quality criteria and sent to the City's Main Water Treatment Plant, by the total number of points of diversion within the Equus Beds wellfield in service that year (excluding Phase I recharge and recovery infrastructure).
 - A one-time, five percent (5%) initial loss will be deducted from the total number of AMCs applied in each index cell.

- In addition, a recurring loss to AMCs, as provided in Figure 15 of the City's proposal, would be applied annually across the BSA to account for the migration of recharge credits and losses from the BSA as illustrated by the model and historic data.
6. The **total accumulation of recharge credits** through PRCs and AMCs combined cannot exceed **120,000 acre-feet**, which represents the documented amount of aquifer storage available within the ASR project area in 1993.
 7. The City will develop an **annual ASR Operations Plan** that will be used to evaluate groundwater levels in the wellfield and the aquifer's physical recharge capacity. This information will determine when AMCs can be accumulated. The ASR Operations Plan shall be submitted to the Chief Engineer and GMD 2 for review and comment.
 8. If **water quality in an existing domestic well, within 660 feet of an existing or new ASR well** meets the current drinking water standards and the water quality is subsequently changed by the ASR project such that it no longer meets the current drinking water standards, then the City will remedy the problem without additional cost to the resident.
 9. If a **domestic water well**, existing before the filing of these permit applications and within 660 feet of an existing or new ASR well, is **adversely impacted** by drawdown from such ASR well, then the City will re-drill or take other appropriate, affirmative action to restore productivity of such domestic well to the same rate and quality as existed before.
 10. The draft, proposed approval documents include additional details on conditions when AMCs may be withdrawn, as well as metering, reporting, and accounting related to AMCs.

Process Ahead

- The Chief Engineer has made no decision with respect to the City's requests. The remaining process will determine if and under what conditions one or more of the City's requests can be approved.
- The City's proposal and pending new applications will be subject to a formal public hearing in late summer 2018, as well as a recommendation by GMD 2. While GMD 2 has a statutory role in the consideration of the City's requests, the hearing will provide an opportunity for others to provide their input, on the record, for the Chief Engineer's consideration. GMD 2 is still reviewing the proposal and has not made an official recommendation yet. A decision will be made based on the record established at the hearing. It will be subject to administrative and judicial review.
- A prehearing conference will be set in the coming weeks to determine the public hearing date, location and procedures.

For More Information

Details can be found on DWR's web site at: <http://www.agriculture.ks.gov/WichitaASR>.

Wichita ASR Project Area and New Applications (File Nos. 48,704 through 48,733)

