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DWR regs + Wichita's project summary

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Aquifer Storage and Recovery

DWR's Regulations, K.A.R. 5-12-1 through 5-12-4 apply.

http://www.accesskansas.org/kda/dwr/Laws-Rules/KWAA-2000RegsArt5-12.htm

K.A.R. 5-12-1

- Applications filed for source water for artificial recharge.
- Define horizontal and vertical extent of basin storage area (BSA) where water will be stored.
- Describe methodology for accounting for water stored in BSA. Determines recharge credits available for subsequent withdrawal.
- Recharge credits may be accumulated for more than one year.
- Recharge pits, trenches or wells must comply with KDHE rules.
- Separate applications needed for withdrawal of recharge credits.

K.A.R. 5-12-2

- Annual report of accounting due to Chief Engineer on June 1.
- Must account for all water entering and leaving the BSA in the previous calendar year, e.g., natural and artificial recharge, ET, groundwater inflow/outflow, all non-domestic groundwater diversions, infiltration from/discharge to streams. Must show calculated recharge credits available.
- If in GMD, report must also go to GMD by June 1. GMD has 30 days from receipt of report to submit comments to Chief Engineer.

K.A.R. 5-12-3

- Hearing held in general vicinity (within GMD if any part of BSA is in GMD) before any applications can be approved.

K.A.R. 5-12-4

- GMD may recommend rules and regulations to the Chief Engineer pertaining to monitoring and accounting requirements for any portion of BSA within GMD boundaries.

Current status of Wichita's project.

- No applications have been filed yet.
- Discussions between DWR and Wichita concerning form of applications and matters pertaining to accounting methodology have been taking place in anticipation of filings. Since this is the first time this kind of thing has been done, these discussions are for clarification only.
- Applications will likely be filed for Phase I of the project.
- When applications are filed and are in proper form, a hearing will be scheduled at a location within GMD2. Concerned parties, including GMD2, may offer testimony and GMD2 could make recommendations at this time.
- Chief Engineer makes decision on approval, modification or denial of applications as appropriate based on applications and testimony from hearing.

Aquifer Storage and Recovery

Definitions from K.A.R. 5-1-1 which relate to aquifer storage and recovery:

(a) "Above-baseflow stage" means streamflow that is in response to a significant runoff event during which period the water level elevation of the stream is greater than the elevation of the adjacent water table.

(b) "Acceptable quality surface water" means surface water that will not degrade the quality of the groundwater source into which it is discharged.

(e) "Aquifer storage" means the act of storing water in the unsaturated portion of an aquifer by artificial recharge for subsequent diversion and beneficial use.

(f) "Aquifer storage and recovery system" means the physical infrastructure that meets the following conditions:

(1) Is constructed and operated for artificial recharge, storage, and recovery of source water; and
(2) consists of apparatus for diversion, treatment, recharge, storage, extraction, and distribution.

(g) "Artificial recharge" means the use of source water to artificially replenish the water supply in an aquifer.

(i) "Bank storage" means water absorbed by and temporarily stored in the banks and bed of a stream during above-baseflow stage.

(j) "Bank storage well" means a well used to divert or withdraw water from bank storage.

(k) "Basin storage area" means the portion of the aquifer's unsaturated zone used for aquifer storage that has defined horizontal boundaries and is delimited by the highest and lowest index water level elevations.

(l) "Basin storage loss" means that portion of artificial recharge naturally flowing or discharging from the basin storage area.

(r) Conjunctive use" means the safe-yield management and operation of an aquifer in coordination with a surface water system to enhance the use of the total water supply availability in accordance with the provisions of the water appropriation act.

(mm) "Index water level" means water level elevations established spatially throughout a basin storage area to be used to represent the maximum volume of a basin storage area, and storage available for recovery based upon accounting methodology, and conditions of the permit.

(fff) "Recharge credit" means the quantity of water that is stored in the basin storage area and that is available for subsequent appropriation for beneficial use by the operator of the aquifer storage and recovery system.

(ooo) "Source water" means water used for artificial recharge that meets the following conditions:

(1) Is available for appropriation for beneficial use;
(2) is above base-flow stage in the stream;
(3) is not needed to satisfy minimum desirable streamflow requirements; and
(4) will not degrade the ambient groundwater quality in the basin storage area.

Rules and Regulations
Water Appropriation Act

Division of Water Resources
Kansas Department of Agriculture

September 22, 2000

Article 5-12

K.A.R. 5-12-1. Aquifer storage and recovery permitting. (a) An operator may store water in an aquifer storage and recovery system under a permit to appropriate water for artificial recharge if the water appropriated is source water. The requirements of article 12 of the rules and regulations adopted by the Kansas department of agriculture, division of water resources are in addition to any requirements of the Kansas department of health and environment concerning underground injection wells, including article 46 of the rules and regulations adopted by the Kansas department of health and environment.

(b) Each application for a permit to appropriate water for artificial recharge shall describe the horizontal and vertical extent of the basin storage area in which the source water will be stored.

(1) The horizontal extent shall be determined by a closed boundary within which the recharge system used to store the water will be physically located. The recharge system may include recharge pits, recharge trenches, recharge wells, or other similar systems that cause source water to enter the storage volume of the basin storage area, either by gravity flow or by injection. The basin storage area may be subdivided into smaller areas representative of the areas that may be recharged by the individual recharge systems.
(2) The vertical extent shall be defined by a minimum and a maximum index water level for the basin recharge storage area, or for each subdivided area within the basin storage area if the basin storage area is subdivided. The minimum index water level shall be the lowest water level within the basin storage area, or smaller subdivided area if the basin storage area is subdivided, that occurred within the 10 years before the filing of the application for a permit to appropriate water, or a period of time longer than 10 years demonstrated by the applicant to reflect the lowest water level. If the basin storage area is subdivided, measurements from the same year shall be used to determine the minimum index water level for each subdivision. The maximum index water level shall represent the maximum storage potential for the basin storage area.

(c) An application for a permit to appropriate water for artificial recharge shall set forth the maximum annual quantity and maximum rate of diversion of source water.

(d)

(1) Each application for a permit to appropriate water for artificial recharge shall include a methodology for accounting for water stored in a basin storage area both on an annual

basis and on a cumulative basis so that recharge credits can be calculated. If more than one application for a permit to appropriate water for artificial recharge relates to the same aquifer storage and recovery system, each application shall use the same methodology for accounting for water stored in the basin storage area. The accounting of the water balance of all water entering and leaving the basin storage area shall be determined by using sound engineering methods based on actual measurements, generally accepted engineering methodology, or a combination of both.

(2) Approval of any application for a permit to appropriate water for artificial recharge shall be contingent upon the chief engineer's approval of the method for accounting for the basin storage area.

(e) An applicant for recovery of water stored by the holder of a permit to appropriate water for artificial recharge to store water in a basin storage area shall obtain a permit separate from the aquifer storage permit to appropriate water for beneficial use for each well used to recover the water stored. The maximum annual quantity of water that may be appropriated for this purpose shall be no more than the maximum cumulative recharge credits available to the operator of the aquifer storage and recovery system. These credits shall be determined by the accounting methodology approved under a permit to appropriate water for artificial recharge pertaining to the aquifer storage and recovery system. In determining whether diversion of the annual quantity impairs other water rights, the following data may be considered by the chief engineer:

(1) The maximum storage volume available in the basin storage area;
(2) the spatial distribution of recharge and withdrawal systems;
(3) the maximum rate of diversion at which the water will be withdrawn; and
(4) any other relevant information.

Recharge credits may be accumulated over more than one year, and any amount of recharge credits available may be withdrawn in accordance with the permit if the withdrawal does not impair other water rights.

(f) The approval of application, if the water to be diverted is the water artificially recharged into the basin storage area, shall be conditioned upon the following:

(1) Generally accepted engineering methodology;
(2) a maximum annual quantity that does not exceed the recharge credits; and
(3) an annual reporting that complies with K.A.R. 5-12-2. (Authorized by K.S.A. 82a-706a; implementing K.S.A. 1999 Supp. 82a-711 and K.S.A. 82a-712; effective Sept. 22, 2000.)

K.A.R. 5-12-2. Aquifer storage and recovery accounting. (a) In addition to annual water use reporting requirements pursuant to K.S.A. 82a-732, and amendments thereto, on June 1 of each year the permit holder of an aquifer storage or recovery system shall report an accounting of water in the basin storage area to the chief engineer and to any groundwater management district identified in subsection (c) of this regulation. The annual report for the preceding calendar year shall account for all water entering and leaving the basin storage area and shall specifically compute the amount of recharge credits held in the basin storage area.

(b) The report shall be in the form prescribed by the chief engineer and shall address the items in the water balance for the basin storage area, which may include the following amounts:

(1) Natural and artificial recharge;
(2) groundwater inflow and outflow;
(3) evaporation and transpiration;
(4) groundwater water diversions from all nondomestic wells;
(5) infiltration from streams;
(6) groundwater discharge to streams;
(7) the calculated recharge credits; and
(8) any other information that in the opinion of the chief engineer is pertinent to the basin storage and surrounding areas.

The annual accounting shall specifically take into account the amounts of natural recharge, artificial recharge, groundwater inflow, groundwater outflow, evapotranspiration, and groundwater pumpage. Groundwater pumpage shall include recharge credits withdrawn as well as pumpage from all nondomestic wells in the basin storage area. The annual accounting shall include any additional items within a basin storage area that would be necessary to determine the amount of recharge credit available for recovery.

(c) If any part of the basin storage area is within the boundaries of a groundwater management district, the permit holder of any aquifer storage or recovery system shall furnish a copy of the annual report to the district board for comments by June 1 of each year.

(d) If a groundwater management district receives an annual report, the district may provide comments to the chief engineer if the comments are submitted to the chief engineer within 30 days of the district's receipt of the report identified in subsection (c) of this regulation.

(e) The permit holder may be required by the chief engineer to submit additional information pertinent to the system. (Authorized by K.S.A. 82a-706a; implementing K.S.A. 1999 Supp. 82a-711 and K.S.A. 82a-712; effective Sept. 22, 2000.)

K.A.R. 5-12-3. Hearings. (a) A hearing shall be held by the chief engineer in the general vicinity where an applicant proposes aquifer storage and recovery before approval of any such application for aquifer storage and recovery.

(b) If any part of a proposed basin storage area is within the boundaries of a groundwater management district, the hearing required by subsection (a) of this regulation shall be held within the groundwater management district. (Authorized by K.S.A. 82a-706a; implementing K.S.A. 1999 Supp. 82a-711 and K.S.A. 82a-712; effective Sept. 22, 2000.)

K.A.R. 5-12-4. Aquifer storage and recovery systems in a groundwater management district. A groundwater management district may recommend rules and regulations pertaining to monitoring and accounting requirements for that portion of the basin storage area that falls within the district's boundaries. (Authorized by K.S.A. 82a-706a; implementing K.S.A. 1999 Supp. 82a-711, K.S.A. 82a-712, and K.S.A. 82a-1028(o); effective Sept. 22, 2000.)