

State of Kansas
Department of Health and Environment
Notice of Hearing on Proposed Administrative Regulations

The Kansas Department of Health and Environment (KDHE), Division of Environment, Bureau of Water, will conduct a public hearing at 10:00 a.m. Thursday, May 16, 2024, Azure Conference Room, fourth floor, Curtis State Office Building, 1000 SW Jackson, Topeka, Kansas, to consider the adoption of proposed KDHE Article 45 amended, new, and revoked regulations regarding underground hydrocarbon storage wells and associated brine ponds and to consider the proposed revocation of all of the Article 45b regulations regarding underground crude oil storage wells and associated brine ponds.

A summary of the proposed regulations and estimated economic impact follows:

The proposed amended Article 45 regulations **K.A.R. 28-45-2a, 28-45-3a, 28-45-4a, 28-45-5a, 28-45-6a, 28-45-7a, 28-45-8a, 28-45-9a, 28-45-10a, 28-45-11a; 28-45-12 through 28-45-23; 28-45-28, and 28-45-30** update defined terms, specify permit requirements, clarify requirements for the reentry and conversion of a storage well, clarify and update permit application requirements and the permit renewal process, clarify the public notice process, clarify the process for transfer of a permit and the process for minor modifications to a permit, add signatory authority language and update financial assurance requirements consistent with other KDHE bureau of water programs, specify and update storage well construction and operation requirements, clarify compliance requirements for storage well and cavern monitoring and testing including required plans and reports, specify requirements for groundwater monitoring, specify requirements for records retention, update requirements for plugging and abandonment, specify facility, storage well, and permit application fees, specify requirements for permitting a

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brine pond associated with a storage facility, specify construction requirements for a brine pond, specify requirements for brine pond decommissioning.

The proposed new Article 45 regulation **K.A.R. 28-45-31** specifies the procedure for requesting a variance for determination by the secretary to any requirement of Article 45 regulations.

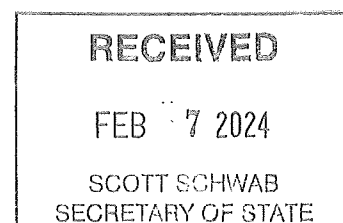
The Article 45 regulations **K.A.R. 28-45-24, 28-45-25, 28-45-26, 28-45-27, and 28-45-29** are proposed for revocation because the requirements of these regulations are combined with other proposed Article 45 amended regulations.

The regulations **K.A.R. 28-45b-1 through 28-45b-28** are proposed for revocation because the current regulations for underground hydrocarbon storage and underground crude oil storage are essentially the same. The Article 45b regulations have been incorporated into the proposed Article 45 regulations that regulate underground hydrocarbon storage wells and associated brine ponds. The proposed Article 45 regulations streamline similar operational needs and processes within the industry and render Article 45b regulations redundant, no longer relevant, and therefore proposed for revocation.

Economic Impact:

Cost to the agency: There are no increased costs to the agency from the proposed Article 45 regulations as they will increase efficiencies and reduce the amount of paperwork and associated costs for the agency. There is no cost to the agency from the revocation of Article 45b regulations as there are no permit applications or permit holders under Article 45b.

Cost to the public and regulated community: Although a specific dollar cost estimate cannot be given, it is anticipated that the long-range economic impact of the proposed Article 45 regulations will positively affect individuals, small employers, and the general public. The



proposed Article 45 regulations will enhance underground hydrocarbon storage business activities and growth that will bring job opportunities to central Kansas and economic benefits to the entire state.

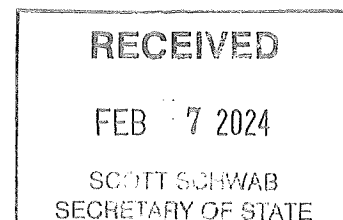
For underground hydrocarbon facilities, the only added cost from the proposed Article 45 amendments will be the cost of renewing a facility permit every 10 years that ranges from approximately \$10,000 to \$30,000, an estimated \$3,000 per year for each facility. Since there are currently 10 permitted facilities, the total annual implementation and compliance costs from the proposed Article 45 regulations will be \$30,000.

There are no costs to affected businesses, local governments, or members of the public resulting from the proposed revocation of the Article 45b regulations.

Costs to other governmental agencies or units: There will be no costs related to the proposed Article 45 regulations and the proposed revocation of the Article 45b regulations that are reasonably expected to be incurred by other governmental agencies or units.

A detailed economic impact is provided in the Economic Impact Statement for the proposed Article 45 regulations and the Economic Impact Statement for the proposed revocation of the Article 45b regulations that are available from the designated KDHE contact staff person or at the KDHE Underground Hydrocarbon Storage Program website, as listed below.

The time period between the publication of this notice and the scheduled hearing constitutes a 60-day public comment period for the purpose of receiving written public comments on the proposed regulations. All interested parties may submit written comments prior to 5:00 p.m. on the day of the hearing to Sue Funk, Kansas Department of Health and Environment, Bureau of Water, Curtis State Office Bldg., 1000 SW Jackson, Suite 420, Topeka,



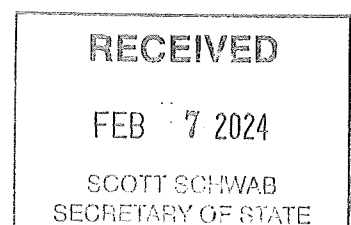
KS 66612 or by email to Sue.Funk@ks.gov. Interested parties are encouraged to participate in the public hearing by submitting written comments.

During the hearing, all interested parties will be given a reasonable opportunity to present their views orally on the proposed regulations as well as an opportunity to submit their written comments. It is requested that each individual giving oral comments also provide a written copy of the comments for the record. In order to give each individual an opportunity to present their views, it may be necessary for the hearing officer to request that each presenter limit an oral presentation to an appropriate time frame.

Complete copies of the proposed Article 45 regulations and the revocations of the Article 45b regulations and the corresponding economic impact statements and environmental benefit statements may be obtained from the KDHE Underground Hydrocarbon Storage Program website at <https://www.kdhe.ks.gov/315/Underground-Hydrocarbon-Storage-Program> or by contacting Sue Funk at Sue.Funk@ks.gov or at 785-296-6803. Questions pertaining to the proposed regulations should be directed to Sue Funk at the contact information above.

Any individual with a disability may request accommodation in order to participate in the public hearing and may request the proposed regulations and the economic impact statements and environmental benefit statements in an accessible format. Requests for accommodation to participate in the hearing should be made at least five working days in advance of the hearing by contacting Sue Funk.

Janet Stanek
Secretary
Department of Health and Environment



28-45-2a. Definitions. As used in this article of the department's regulations, each of the following terms shall have the meaning specified in this regulation:

(a) "Active well" means an unplugged a storage well that is in service or in monitoring status. An active well is considered to be in active status.

(b) "Annular space" means the void area surrounding one cylindrical object placed inside another, including the void area between a casing and a borehole.

(c) "Applicant" means the operator and the owner requesting a facility permit or a permit modification as specified in this article of the department's regulations. If the operator and the owner are not the same person, the owner and the operator and the owner shall jointly submit an application apply for a permit or a permit modification.

(d) "Bedded salt" means a salt formation in which the original structure of alternating salt and nonsalt beds is largely preserved.

(e) "Blanket pad material" means a fluid less dense than water and incapable of dissolving salt that is used during solution mining to protect the cavern roof from the injected water and to prevent dissolving the salt of the roof and around the casing seat.

(f) "Borehole" means an uncased hole drilled into the ground at any angle between vertical and horizontal in which casing is installed to form a well.

(g) "Brine" means saline water with a sodium chloride concentration equal to or greater than 90 percent a solution of water and dissolved solids, generally sodium chloride, measuring 3,000 parts per million or greater total dissolved solids.

(h) "Brine pond" means the excavated or diked structure used for the surface containment of brine used in the creation, maintenance, and operation of an underground

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hydrocarbon a storage well and cavern.

(i) “Brine string” means the uncemented casing that is hung from the wellhead through which highly saline water flows into or out of a storage cavern during product withdrawal or injection operations.

(e) “Cavern” and “storage cavern” mean the storage space created in a salt formation by solution mining.

(j) “Casing” means steel pipe cemented in place inside the borehole to support the sides of the borehole and to act as a barrier to prevent subsurface migration of fluids into or out of the borehole.

(k) “Casing evaluation” means an assessment of the production casing in a well using one or more geophysical logs or tools and engineering calculations to determine the ability of the well to be safely operated at the maximum allowable operating pressure.

(l) “Casing seat” means the location or position of the bottom or lowermost position of a casing.

(m) “Cathodic protection borehole” means a type of borehole that penetrates the water table of an aquifer and is constructed for the intended purpose of installing equipment to prevent the electrolytic corrosion of metallic equipment or facilities.

(n) “Cavern roof” means the uppermost part of a cavern located just below the borehole of the cavern. The shape of the salt cavern roof can be flat or domed.

(o) “Cavern system” means the storage well, storage cavern, borehole, casing, and wellhead.

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(p) "Cement bond log" means a downhole geophysical evaluation survey used to determine the quality and quantity of cement bonding between the casing and rock formations.

(q) "Cemented liner" means the casing installed within the production casing.

(r) "Cementing" means the operation in which a cement slurry is pumped down through the inside of a casing, out the bottom, and upward into the annular space.

(s) "Class V injection well" means a type of well used to inject nonhazardous fluids underground and is regulated by the department.

(t) "Core" means a cylindrical sample of geologic formation, usually reservoir rock, taken during or after drilling a well.

(u) "Creep" means the property of salt to flow slowly and deform permanently under the influence of shear stress.

~~(v)~~ (v) "Department" means ~~the~~ Kansas department of health and environment.

~~(g)~~ (g) "Director" means ~~the director of the division of environment of the Kansas department of health and environment.~~

(w) "Effective casing seat" means the lowest point of the production casing that is bonded to the bedded salt.

(x) "Elevation survey" means the periodic recording of the height of a fixed reference point, or benchmark, used to determine the rate of subsidence.

(y) "Emergency shutdown valve" means a valve or system of valves that meets criteria specified in K.A.R. 28-45-13 and, when activated, initiates a shutdown of a process as specified in K.A.R. 28-45-13.

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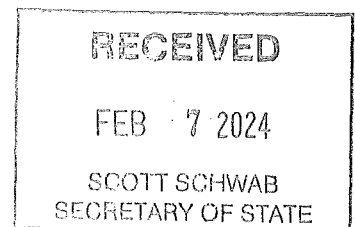
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(z) "Facility permit" and "permit" mean an authorization, license, or equivalent control document issued to the owner and the operator by the secretary to construct and operate a storage facility.

(aa) "Formation" means a body of rock that is distinctive and continuous enough to be mapped.

~~(h) "Draft permit" means a document that is pending approval by the secretary to be issued as a final permit.~~

~~(i) "Existing storage well" means a well authorized or permitted by the secretary before April 1, 2003.~~

~~(j) "Existing brine pond" means a brine pond authorized or permitted by the secretary before April 1, 2003.~~

~~(k) "Fracture gradient" means the pressure gradient, measured in pounds per square inch per foot, that will cause the geological formations to physically fracture.~~

~~(l) (bb) "Freshwater" "Fresh water" means water containing not more than 1,000 milligrams per liter of total dissolved solids.~~

~~(m) "Hydrocarbon storage well," "underground hydrocarbon storage well," and "storage well" mean a well used for the injection or withdrawal of hydrocarbon or liquefied petroleum gas into or out of an underground hydrocarbon storage cavern.~~

~~(n) "Licensed geologist" means a geologist licensed to practice geology in Kansas by the Kansas board of technical professions.~~

~~(o) "Licensed professional engineer" means a professional engineer licensed to practice~~

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~~engineering in Kansas by the Kansas board of technical professions.~~

~~(p) "Licensed professional land surveyor" means a professional land surveyor licensed to practice land surveying in Kansas by the Kansas board of technical professions.~~

~~(cc) "Impermeable synthetic membrane liner" means a commercially manufactured membrane liner composed of synthetic materials commonly identified as being plastic or plastic polymer materials or other synthetic materials.~~

~~(dd) "Intermediate casing" means a pipe placed into the borehole inside the surface casing and cemented in place.~~

~~(e) (ee) "Liner" means the casing normally installed within the production casing any designated barrier in the form of in situ, layered, membrane, or blanket materials utilized or installed to reduce the potential for a significant hydrologic connection between brine that is controlled or retained by a brine pond and waters of the state.~~

~~(ff) "Log" and "logs" mean a recording of a variety of subsurface properties that is made by lowering detectors into a well or cavern.~~

~~(r) "Liquified petroleum gas" and "LPG" mean by products or derivatives of oil and gas, including propane, butane, isobutane, and ethane, maintained in a liquid state under pressure.~~

~~(s) (gg) "Maximum allowable operating pressure" means the maximum pressure authorized by the department and measured at the product side of the wellhead.~~

~~(t) "Maximum allowable synthetic membrane liner leakage rate" means a monitored or a calculated leakage rate of 10 percent of the collection and leak return system capacity.~~

~~(u) "Maximum operating pressure" means the maximum pressure monitored during a 24-~~

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~~hour period and measured at the product side of the wellhead.~~

(hh) "Mechanical integrity" means the quality or condition of a cavern system in being structurally sound with competent pressure seals by application of technical, operational, and organizational solutions that reduce the risk of uncontrolled release of product or brine.

(ii) "Mechanical integrity test" means a procedure verifying that a storage well and a cavern are capable of storing product within design limitations with no significant loss of liquid.

(v) (jj) "Monitoring status" means a temporary status for a storage well that has been placed out of removed from service by removing withdrawing the product and filling the cavern with saturated brine.

(kk) "Monitoring well" means a type of well used to observe or collect groundwater parameters and hydrogeologic data.

(w) "Municipal population center" means an incorporated city.

(x) "Natural gas" means the gaseous form of hydrocarbon consisting primarily of methane.

(y) (ll) "Operator" means "company or operator," as defined in K.S.A. 55-1,117 and amendments thereto, and is the person recognized by the secretary as being responsible for the physical operation of an underground hydrocarbon a storage facility or a brine pond.

(z) (mm) "Owner" means the person owning all or part of any underground hydrocarbon storage facility or brine pond.

(nn) "Packer" means a device that can be used to isolate the cavern from the surface.

(aa) "Permit" means an authorization, license, or equivalent control document issued to

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~~the owner and the operator by the secretary.~~

(oo) "Permanent monitoring status," when used regarding a storage well, means that the storage well is not plugged but has been permanently removed from service and is subject to long-term observation.

(pp) "Permitted well" means any type of well authorized or permitted by the secretary.

~~(bb) (qq) "Permit holder," "holder of a permit," and "Permittee" mean the owner and the operator means the operator and the owner issued a permit, as defined in this regulation, by the secretary.~~

~~(ee) (rr) "Person" means any individual, company, corporation, institution, association, partnership, municipality, township, and local, state, or federal agency.~~

(ss) "Plugged," when used to describe a storage well, means that the storage well has been permanently removed from service under K.A.R. 28-45-21.

~~(dd) (tt) "Porosity storage" and "underground porosity storage" mean the storage of hydrocarbon gas in underground porous and permeable strata that have been converted to hydrocarbon gas storage has the meaning specified for "underground porosity storage" in K.S.A. 55-1,117, and amendments thereto.~~

~~(ee) (uu) "Pressure gradient" means the ratio of pressure per unit depth expressed as pounds per square inch per foot of depth pressure at a given depth divided by the depth.~~

(vv) "Process control system" means an automated surveillance system in which the monitoring and control operations are accomplished at a central or remote location.

~~(ff) (ww) "Product" means any hydrocarbon, including products and by products from~~

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crude oil, derivatives of oil and gas, and liquefied petroleum gas hydrocarbon, including crude oil, and derivatives from crude oil, or oil and gas, that meets the following conditions:

(1)(A) Is liquid under standard conditions of temperature and pressure; or

(B) is liquified under the temperatures and pressures at which the hydrocarbon is stored;

and

(2) is stored under conditions that necessitate the use of displacement fluids to withdraw the hydrocarbon from storage.

(xx) "Production casing" means a pipe placed into the borehole inside the surface or intermediate casing and cemented into place.

(yy) "Professional engineer" means an individual who is qualified to engage in the practice of engineering and is licensed by the state board of technical professions to practice engineering in Kansas pursuant to K.S.A. 74-7001 et seq., and amendments thereto.

(zz) "Professional geologist" means an individual who is qualified to engage in the practice of geology and is licensed by the state board of technical professions to practice geology in Kansas pursuant to K.S.A. 74-7001 et seq., and amendments thereto.

(aaa) "Professional surveyor" means an individual who is qualified to engage in the practice of surveying and is licensed by the state board of technical professions to practice surveying in Kansas pursuant to K.S.A. 74-7001 et seq., and amendments thereto.

(bbb) "Salt roof thickness" means the thickness of the bedded salt measured from the top of salt to the effective casing seat.

(ggg) (ccc) "Saturated brine" means saline water with a sodium chloride concentration

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that is equal to or greater than ~~90~~ 95 percent.

~~(hh) "Secretary" means the secretary of the department of health and environment.~~

~~(ddd) "Shear stress" means the force tending to cause deformation of a material by slippage along a plane or planes parallel to the imposed stress.~~

~~(ii) (eee) "Solutioning" means the process of injecting fluid into a well to dissolve salt or any other readily soluble rock or mineral "Solution mining" means the process of injecting fresh water from the surface through a well to the subsurface to dissolve salt or other soluble rock or mineral. The fluid is returned to the surface as brine.~~

~~(fff) "Sonar survey" means using an acoustic wave tool to measure the internal dimensions of a cavern.~~

~~(ggg) "Storage cavern" and "cavern" mean the underground cavity developed by solution mining and used to store product.~~

~~(hhh) "Storage facility" and "facility" mean the acreage associated with the storage of product in bedded salt, including the cavern system and each brine pond.~~

~~(iii) "Storage well" means a type of well used for the injection or withdrawal of product into or out of a storage cavern.~~

~~(jjj) "Subsidence" means ground movement resulting from natural phenomena.~~

~~(jj) "Supervisory control and data acquisition" means an automated surveillance system in which the monitoring and control of storage activities are accomplished at a central or remote location.~~

~~(kk) "Underground hydrocarbon storage cavern" means the storage of any hydrocarbon,~~

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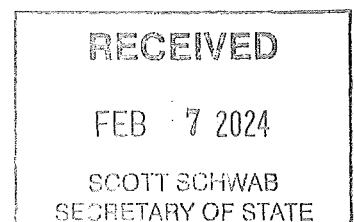
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~~including liquid petroleum gas and excluding natural gas, in caverns formed by solutioning in bedded salt.~~

~~(ll) “Underground hydrocarbon storage facility” and “facility” mean the acreage associated with the storage field with facility boundaries approved by the secretary. This term shall include the brine ponds, wells, wellbore tubular goods, the wellhead, and any related equipment, including any appurtenances associated with the well field.~~

~~(mm) “Unsaturated brine” means saline water with a sodium chloride concentration less than 90 percent.~~

~~(kkk) “Surface casing” means casing placed into the borehole and cemented into place for the purpose of well control and to protect groundwater from damage during drilling and storage operations.~~

~~(lll) “Top salt” means the shallowest vertical depth at which bedded salt is identified.~~

~~(mmm) “Underground communication” means the movement of fluid by a number of methods, including through porous or permeable rock, man-made conduits in the salt, annular movement, or casing leaks.~~

~~(nnn) “Underground injection control well” means a type of well used to inject fluids underground that is regulated by the department.~~

~~(nn) (ooo) “Usable water formation” means an aquifer or any portion of the aquifer that meets any of the following criteria:~~

- ~~(1) Supplies any public water system;~~
- ~~(2) contains a supply of groundwater that is sufficient to supply a public water system~~

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and that currently supplies drinking water for human consumption; or

(3) contains ~~fewer~~ less than 10,000 mg/L total dissolved solids and is not an exempted aquifer.

~~(oo)~~ (ppp) "Variance" means the secretary's written approval authorizing an alternative action to the requirements of ~~these~~ this article of the department's regulations or the standards adopted by ~~these~~ this article of the department's regulations and incorporated into the ~~temporary~~ or final permit.

(qqq) "Water well" means a type of well intended to be used for the location, diversion, artificial recharge, or acquisition of groundwater.

(rrr) "Web thickness" means the closest distance between two storage caverns based on the most recent sonar survey for each cavern.

(sss) "Well" means a bored, drilled, or driven shaft with a depth greater than the largest surface dimension.

(ttt) "Wellhead" means an assemblage of base plates, spools, crosses, valves, and other equipment placed on the surface casing or intermediate casing to control flow.

(uuu) "Workover" means the process of performing maintenance or remedial treatments on a storage well. A workover typically involves removing or replacing some or all of the brine string. (Authorized by K.S.A. 65-171d; implementing K.S.A. ~~65-171d~~ and K.S.A. 2002 2022 Supp. 55-1,117 and K.S.A. 65-171d; effective, T-28-4-1-03, April 1, 2003; effective Aug. 8, 2003; amended P-_____.)

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28-45-3a. Permit required. (a) ~~No person shall create, operate, or maintain an underground storage well for liquified petroleum gas or hydrocarbon in bedded salt without obtaining a permit from the secretary. The requirements for permit issuance shall be as follows: No person shall construct or operate a storage facility, storage well and cavern, or brine pond without first obtaining a facility permit or a permit modification issued by the secretary.~~

~~(1) Each operator and owner of an existing underground hydrocarbon storage facility shall initially obtain a temporary facility permit as specified in K.A.R. 28-45-5a.~~

~~(2) Each operator and owner of an existing underground storage well shall obtain a final permit as specified in K.A.R. 28-45-6a.~~

~~(3) The existing permit or authorization for the underground hydrocarbon storage facility shall remain in effect until a temporary facility permit is issued.~~

~~(4) The storage of liquified hydrocarbons in caverns constructed in any rock formations other than bedded salt shall be prohibited.~~

~~(b) A variance may be granted by the secretary if both of the following conditions are met:~~

~~(1) The variance is protective of public health, safety, and the environment.~~

~~(2) The applicant or permittee agrees to perform any additional testing, monitoring, or well improvements, or any combination, if required by the secretary.~~

~~(c) Each applicant or permittee seeking a variance shall submit a written request, including justification for the variance and any supporting data, to the secretary for review and consideration for approval.~~

~~(b) No person shall store product in any cavern constructed in any formation other than~~

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bedded salt. (Authorized by and implementing K.S.A. ~~2002~~ 2022 Supp. 55-1,117; effective, T-28-4-1-03, April 1, 2003; effective Aug. 8, 2003; amended P-_____.)

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28-45-4a. Well conversions and reentry. ~~(a) The conversion of an existing well to underground hydrocarbon storage shall be prohibited if the well was not originally designed for hydrocarbon storage, unless the secretary determines that the conversion is protective of public health, safety, and the environment.~~

~~(b) The conversion of an underground hydrocarbon storage well for other purposes shall be prohibited, unless the secretary determines that the conversion is protective of public health, safety, and the environment.~~

~~(c) The reentry of a plugged liquified petroleum gas or hydrocarbon storage well for the purpose of reactivating activities associated with the underground storage of natural gas, liquified petroleum gas, or liquid hydrocarbons shall be prohibited.~~

~~(d) A permittee may convert an unplugged underground hydrocarbon storage well to monitoring status if the following requirements are met:~~

~~(1) Each permittee shall verify the integrity of the storage well and cavern by conducting a mechanical integrity test before converting the well to monitoring status.~~

~~(2) Each permittee shall run a gamma density log to verify the roof thickness prior to converting the well to monitoring status.~~

~~(3) Each permittee shall meet the requirements specified in the department's document titled "procedure for converting a hydrocarbon storage well to monitoring status, procedure #:UICLPG-4," dated June 2003, which is hereby adopted by reference.~~

~~(4) Each permittee of an underground storage cavern that is in monitoring status shall conduct a casing inspection evaluation before placing the cavern into service if a casing evaluation has not been conducted in the last five years. (a) No person shall reenter a well~~

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that is a plugged well for the purpose of reactivating activities associated with the storage of product, unless authorized by the secretary in writing.

(b) Any permittee may convert any permitted well to a storage well if all the following conditions are met:

(1) The permittee submits a completed permit application as required by K.A.R. 28-45-5a and K.A.R. 28-45-6a.

(2) The permitted well meets the construction, monitoring, and testing requirements specified in this article of the department’s regulations.

(3) The conversion is authorized by the secretary in writing.

(c) Any permittee may request the conversion of a solution mining well to an active well or the conversion of a storage well in monitoring status to an active well, if the permittee meets the following requirements:

(1) Submits a written plan to the department for the secretary’s review and consideration for approval, at least 30 days before conversion;

(2) meets the requirements specified in the department’s document titled “conversion of a storage well,” dated June 24, 2021, which is hereby adopted by reference; and

(3) meets the monitoring and testing requirements for an active well specified in this article of the department’s regulations.

(d) Any permittee may request the conversion of a storage well that is not plugged to monitoring status, permanent monitoring status, or to a status not specified in this article of the department’s regulations if the permittee meets the following requirements:

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(1) Submits a written plan to the department for the secretary’s review and consideration for approval, at least 30 days before conversion; and

(2) meets the requirements specified in the department’s document titled “conversion of a storage well,” which is adopted by reference in paragraph (c)(2).

(e) Any permittee may request the conversion of a storage well that is not plugged to a class V injection well if the permittee submits a class V injection well permit application to the secretary on a form provided by the department, at least six months before the conversion.

(Authorized by and implementing K.S.A. ~~2002~~ 2022 Supp. 55-1,117; effective, T-28-4-1-03, April 1, 2003; effective Aug. 8, 2003; amended P-_____.)

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28-45-5a. Temporary facility permit ~~Storage facility permit application; renewal.~~ (a) ~~Each operator and owner of an existing underground hydrocarbon storage facility shall be required to have a temporary facility permit issued by the secretary~~ Each person that wants to construct and operate a new storage facility shall submit a completed application for a permit to the secretary on a form provided by the department, at least six months before construction begins. Facility construction shall not begin until the secretary has issued the permit.

(b) ~~The temporary facility permit shall supersede any authorization or permit previously issued by the secretary~~ Each permittee of an existing storage well or brine pond that is not authorized by a facility permit shall submit a facility permit application within one year of the effective date of this article of the department's regulations.

(c) ~~Each temporary facility permit application shall include the following information:~~

(1) ~~The name and location of the facility;~~

(2) ~~a site map of the facility showing the following:~~

(A) ~~The facility boundaries and the location and well number of each well, including storage, observation, disposal, and any abandoned wells; and~~

(B) ~~the location of buildings, roads, railways, right of ways, utilities, and any other appurtenances;~~

(3) ~~the following information for each cavern:~~

(A) ~~The depth of the top of the salt formation;~~

(B) ~~the depth of the top of the underground storage cavern;~~

(C) ~~the total depth of the underground storage cavern;~~

(D) ~~a schematic of the well construction;~~

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~~(E) the storage capacity;~~

~~(F) the type of product stored;~~

~~(G) the operating pressures; and~~

~~(H) a list of dates on which the required tests, logs, or monitoring reports for each underground hydrocarbon storage well were completed; and~~

~~(4) a list of requests for variances from the requirements of this article of regulations.~~

~~(d) Each applicant shall submit a compliance schedule with the temporary facility permit application, subject to the approval of the secretary, for conducting sonar surveys, integrity tests, and casing evaluations and for the installation of equipment. The compliance schedule shall be incorporated into the permit and may be modified as specified in K.A.R. 28-45-8a. The following requirements shall apply:~~

~~(1) The modification or installation of equipment associated with the wellhead, storage well, storage well system, or storage cavern shall be completed within five years after April 1, 2003 for existing underground hydrocarbon storage wells.~~

~~(2) A sonar survey shall be conducted for each underground hydrocarbon storage cavern. The following requirements shall apply:~~

~~(A) A sonar survey shall be conducted within five years after April 1, 2003 for any underground hydrocarbon storage cavern that does not have a sonar survey or that had a sonar survey conducted before January 1, 1998.~~

~~(B) A sonar survey shall be conducted within 10 years after April 1, 2003 for any underground hydrocarbon storage cavern that had a sonar survey conducted on or after January~~

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~~(3) A mechanical integrity test and a casing inspection evaluation for each underground hydrocarbon storage well shall initially be conducted within seven years after April 1, 2003.~~

~~(e) Each temporary permittee for an underground hydrocarbon storage facility either shall be required to have a final permit for each underground hydrocarbon storage well within five years after April 1, 2003 or shall cease well operations and shall comply with abandonment and plugging requirements as specified in K.A.R. 28-45-20.~~

(c) Each application for a permit for a new storage facility shall include the following information:

(1) Certification from a designated signatory, as specified in K.A.R. 28-45-9a;

(2) siting requirements, as specified in K.A.R. 28-45-10a;

(3) an operations and maintenance plan, as specified in K.A.R. 28-45-12;

(4) an emergency response plan, as specified in K.A.R. 28-45-13;

(5) an inventory balance plan, as specified in K.A.R. 28-45-15;

(6) a subsidence monitoring plan, as specified in K.A.R. 28-45-16;

(7) a groundwater monitoring and quality assurance plan, as specified in K.A.R. 28-45-

18;

(8) a report prepared by a professional geologist that provides an evaluation of the local and regional geology and hydrogeology;

(9) a narrative interpretation by a professional geologist of at least one core collected either within a half-mile radius of the proposed storage facility or at another department-

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approved location; and

(10) a plan describing the coring interval, coring procedures, and core testing for review and consideration for approval, at least 60 days before the coring event. The following requirements shall apply:

(A) The core data shall be made available for review by the secretary upon request.

(B) The core shall be made available for inspection by the department upon request for at least two years.

(C) Each permittee shall notify the department, at least 30 days before core disposal.

(d) Upon the secretary's review of each application for a permit for a storage facility, the applicant shall receive one of the following:

(1) A facility permit, if the application is approved; or

(2) a notice that the application has been denied, if the applicant has not met the requirements of this article of the department's regulations.

(e) Each permittee that wants to continue any activity regulated by the facility permit shall submit a permit renewal application to the secretary on a form provided by the department, at least six months before the permit expires. Each renewal of a facility permit shall be authorized for a period not to exceed 10 years. (Authorized by and implementing K.S.A. 2002 2022 Supp. 55-1,117; effective, T-28-4-1-03, April 1, 2003; effective Aug. 8, 2003; amended P-_____.)

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28-45-6a. ~~Final permit~~ Storage well and cavern permitting requirements. (a) ~~Each applicant shall submit a completed application for a final permit for each existing underground hydrocarbon storage well to the secretary, on a form furnished by the department, within three years after April 1, 2003~~ Each permittee of an existing storage well that is not authorized by a facility permit shall submit a facility permit application within one year of the effective date of this article of the department's regulations.

(b) ~~Each applicant who wishes to construct an underground hydrocarbon storage well shall submit a completed application to the secretary, on a form furnished by the department, at least 180 days before the proposed commencement date for the construction of the new underground hydrocarbon storage well. Well construction shall not begin until the secretary has issued the final permit~~ Each permittee that wants to convert a permitted well to a storage well or to construct and operate a new storage well shall submit a request for a permit modification to the secretary, at least six months before construction begins. Construction shall not begin until the secretary has issued a permit modification.

(c) ~~Upon review of each application, one of the following shall be issued by the secretary:~~

~~(1) A final permit, if the application is approved; or~~

~~(2) a notice that the final permit has been denied if the applicant has not complied with the requirements of this article of regulations. The notice shall include justification for the permit denial~~ Each request for a permit modification for a new storage well and cavern shall include the information specified in K.A.R. 28-45-10a.

(d) ~~Each temporary permit shall terminate on the effective date of the final permit.~~ Upon review by the secretary of each request, the permittee shall receive one of the following:

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- (1) A permit modification, if the request is approved; or
- (2) a notice that the request has been denied, if the permittee has not met the requirements of this article of the department's regulations.

~~(e) Each application for a final permit shall include a report prepared by a licensed geologist and shall include the following:~~

~~(1) An evaluation of the geology and hydrogeology, including cross-sections, isopach and structure maps of the salt formation, and water level or potentiometric maps;~~

~~(2) a regional stratigraphic evaluation;~~

~~(3) local and regional structural analyses, including maps, cross-sections, and available geophysical data;~~

~~(4) a flood assessment identifying floodplain and flood-prone areas, including the following:~~

~~(A) Flood response procedures; and~~

~~(B) design criteria for the well and facility equipment; and~~

~~(5) an assessment of the potential for ground subsidence.~~

~~(f) Each applicant shall submit the following information with the application:~~

~~(1) A plan view map showing locations of all water, solution mining, monitoring, disposal, injection, oil, and gas wells within a one-mile perimeter of the facility's boundary; and~~

~~(2) a plan view map of man-made surface structures and activities within a one-mile perimeter of the facility's boundary.~~

~~(g) (c) Each permittee of an underground storage well shall submit a compliance audit~~

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every 10 years, on a form furnished by the department, for review and consideration for approval for the continued operation of the underground hydrocarbon storage well. Each permittee shall submit a drilling report, including a sample log of well cuttings from any new storage well drilled at the facility, within 90 days of drilling completion. The sampling of well cuttings shall meet all of the following requirements:

(1) Well cuttings shall be collected, described, and logged.

(2) A professional geologist or a professional geologist's designee shall supervise the collection of well cuttings.

(3) A professional geologist shall describe and log the well cuttings.

(h) Each permittee shall submit a sample log of well cuttings from any new well drilled at the facility, including new underground hydrocarbon storage wells, monitoring wells, and stratigraphic test holes.

(1) Cuttings shall be collected at 10-foot intervals from surface to total well depth or at an interval approved by the department.

(2) Well cuttings shall be collected, described and logged as specified in the department's document titled "procedure for sample logging, procedure #: UICLPG-9," dated July 2002, which is hereby adopted by reference.

(3) The collection of cuttings shall be supervised by a licensed geologist or a licensed geologist's designee.

(4) The description and logging of the sample cuttings shall be performed by a licensed geologist.

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~~(5) Each permittee shall submit a sample log and a dry sample set to the department within 45 days after the completion of the well.~~

~~(i) Each permittee shall provide a minimum of one core from each facility. The following provisions shall apply:~~

~~(1) Each permittee shall submit a plan describing the coring interval, coring procedures, and core testing to the secretary for review and consideration for approval, at least 60 days before the coring event.~~

~~(2) Each permittee shall make the core available for inspection upon request by the secretary.~~

~~(3) Any permittee may submit existing core data if the secretary determines that the core is representative of the geology of the area.~~

~~(j) Each permittee shall submit a water analysis for any water-bearing formation encountered in drilling a new monitoring well. The water shall be analyzed for the following parameters:~~

~~(1) Chloride;~~

~~(2) total dissolved solids; and~~

~~(3) any parameter that the secretary determines could pose a potential threat to public health, safety, and the environment.~~

~~(k) Each permittee shall ensure that the stored hydrocarbons, formation water, lithology, and substances used in the solutioning of the storage caverns are compatible.~~

~~(f) Each permittee shall submit open-hole logs for any new underground hydrocarbon~~

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storage well within six months of drilling completion. The logging interval shall be from the surface to 100 feet below the top of the salt section. ~~At a minimum, the following logs shall be run~~ Each permittee shall submit at least the following logs:

- (1) A gamma ray log;
- (2) a neutron log if the source is registered in Kansas, ~~or a sonic log;~~
- (3) a density log; and
- (4) a caliper log.

~~(m) (g) Any permittee may use an alternative log if the secretary determines that the alternative log is substantially equivalent to one of the logs specified in subsection (l)~~ Each permittee shall use logs specified in subsection (f), unless authorized by the secretary in writing to use an alternative log. The Each permittee shall submit the following information for each log:

- (1) ~~A description of the log and the theory of operation for that log~~ information that the log provides;
- (2) a description of the field conditions under which the log can be used;
- (3) the procedure for ~~interpreting the log~~ interpretation; and
- (4) an interpretation of the log upon completion of the logging event.

(h) Each permittee shall submit a written plan for the solution mining of any storage cavern to the secretary for review and consideration for approval, at least 60 days before the solution mining begins. At a minimum, the plan shall include the following information:

- (1) A list of acceptable blanket pad materials; and
- (2) methods for monitoring the solution mining.

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(i) Each permittee shall submit the following monitoring records to the secretary monthly, on a form provided by the department:

- (1) The weekly injection and withdrawal volume for each cavern;
- (2) the weekly injection and withdrawal ratio for each cavern; and
- (3) a summary of weekly minimum and maximum injection pressures for each cavern.

(j) Each permittee shall submit annually the information for each solution mining well specified in K.A.R. 28-45-19.

(k) Each permittee shall complete a sonar survey during the solution mining of each storage cavern, as specified in K.A.R. 28-46-30a.

(l) Each permittee shall ensure that the bedded salt, stored product, and substances used in the solution mining of each storage cavern are compatible.

~~(n)~~ (m) Each permittee of a new underground hydrocarbon any storage well and cavern shall maintain a minimum salt roof thickness of at least 100 feet above the washed storage cavern. Each permittee of a storage cavern with a salt roof thickness of less than 100 feet but more than 50 feet shall comply with additional monitoring requirements specified in K.A.R. 28-45-16. Additional information, including a geomechanical study from core analysis, may be requested by the department to verify cavern integrity. Storage caverns with a salt roof thickness of 50 feet or less shall not be allowed, unless authorized by the secretary in writing.

~~(o) Each permittee of an existing underground hydrocarbon storage cavern with a salt roof thickness greater than 50 feet but less than 100 feet shall meet the following provisions:~~

~~(1) Each permittee shall use only saturated brine to displace product.~~

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~~(2) The permittee shall submit a schedule for monitoring brine salinity.~~

~~(3) The salt roof thickness shall be monitored with gamma ray and density logs, or any other log specified in subsection (m), every three years.~~

~~(4) Additional information, including a geomechanical study from core analysis, may be requested by the secretary to verify the integrity of the salt roof.~~

~~(p) Underground hydrocarbon storage caverns with a salt roof thickness of 50 feet or less shall be prohibited.~~

~~(q) (n) Underground communication between underground hydrocarbon storage caverns in the upper 50 feet of the salt formation shall be prohibited, unless authorized by the secretary in writing.~~

~~(r) Underground communication between underground hydrocarbon storage caverns below the upper 50 feet of the salt formation shall be prohibited, unless the secretary determines that the communication is protective of public health, safety, and the environment. The permittee shall submit the following:~~

~~(1) A sonar survey for each cavern that is in communication with another cavern; and~~

~~(2) a plan describing the monitoring and testing that the permittee will conduct to ensure that the integrity of the underground hydrocarbon storage wells and caverns will be maintained.~~

~~(s) The horizontal distance separating new underground hydrocarbon storage caverns shall be at least 100 feet between cavern boundaries.~~

~~(t) Any existing underground hydrocarbon storage cavern with horizontal separation less than 100 feet may operate if the following requirements are met:~~

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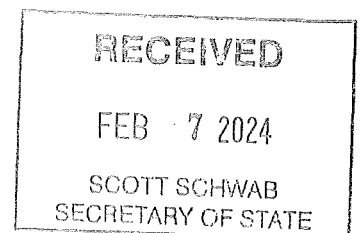
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~~(1) Each permittee shall submit a justification for each existing underground hydrocarbon storage cavern with horizontal separation less than 100 feet. The following requirements shall apply:~~

~~(A) The justification shall include spacing to diameter ratios, cavern pressure differentials, and analyses of cavern shape, size, and depth.~~

~~(B) The horizontal spacing shall be reevaluated every five years.~~

~~(2) Horizontal spacing of less than 50 feet between caverns shall be prohibited.~~

(o) Each permittee of any storage well and cavern shall maintain at least 100 feet of web thickness between adjacent caverns. Any permittee may request approval from the secretary for continued operation of a storage cavern with a web thickness of more than 50 feet but less than 100 feet, according to the following:

(1) The request shall include justification, including an analysis of the following information:

(A) The ratio of web thickness to maximum diameter;

(B) cavern shape and cavern roof configuration;

(C) cavern shape and volume change over the life of the facility due to brine saturation management or creep; and

(D) operating practices, including maximum and minimum operating pressures, rate of pressure changes, and inventory practices of adjacent caverns.

(2) Web thickness shall be reevaluated every five years as specified in K.A.R. 28-45-16.

(3) Web thickness less than 50 feet shall be prohibited, unless authorized by the

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secretary in writing.

(4) Additional information, including a geomechanical study from core analysis, may be requested by the secretary.

(u) (p) Each permittee of any storage well and cavern shall ensure that the maximum horizontal diameter of each cavern shall does not exceed 300 feet, unless authorized by the secretary in writing.

(v) (q) Each permittee shall ensure the mechanical integrity of the underground hydrocarbon storage wellhead, casing, and storage cavern before commissioning any new storage cavern well into service. Storage operations may commence when the following requirements are met:

(1) Each permittee shall submit a notice of completion of construction on a form furnished by the department.

(2) Each new storage well shall be inspected by the secretary before storage operations commence. If the storage well fails the inspection, the permittee shall not commence storage operations. Operations may begin when the permittee notifies the department of completion of the storage well and each new storage well is inspected by the department. If the storage well fails the inspection, the permittee shall not begin operations. (Authorized by and implementing K.S.A. 2002 2022 Supp. 55-1,117; effective, T-28-4-1-03, April 1, 2003; effective Aug. 8, 2003; amended P-_____.)

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28-45-7a. Public notice. (a) ~~Public notice shall be given by the secretary for any of the following permit actions by the department for any of the following:~~

(1) ~~Any final permit application for an underground hydrocarbon storage well~~ A draft facility permit prepared pursuant to K.A.R. 28-45-5a and 28-45-6a;

(2) ~~any modifications that require a draft permit as specified in K.A.R. 28-45-8a~~ the modified portion of a draft facility permit for a new storage well and cavern, a new brine pond, or as specified in K.A.R. 28-45-8a;

(3) ~~any modifications for an existing facility as specified in K.A.R. 28-45-8a~~ a public hearing on a permit action; or

(4) ~~the denial of a permit; or~~

(5) ~~(4)~~ a scheduled hearing.

(b) ~~Public notice and, if applicable, a copy of the draft permit shall be mailed or electronically mailed by the department to the permit applicant~~ Public notice shall not be required if suspension, denial, or revocation, or minor modification of a permit is proposed by the department.

(c) Public notice may describe more than one permit or permit action.

(d) Public notice of the preparation of a draft permit shall allow at least 30 days for public comment.

(e) Public notice of a public hearing shall be given at least 30 days before the hearing.

Public notice of the hearing may be combined with the public notice of the draft permit.

(f) The public notice and, if applicable, a copy of the draft permit shall be mailed or electronically mailed by the department to the applicant.

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(e) (g) The public notice shall be mailed by the department to the following:

(1) Any person who submits a written request for placement on the mailing list;

(2) ~~the official county newspaper of each county in which the lands affected by the application are located, for publication in at least two issues~~ any unit of local government having jurisdiction over the area where the facility is proposed to be located; and

(3) the Kansas register.

(d) (h) The public notice shall include the following information:

(1) The name and address of the department processing the permit action for which the notice is being given;

(2) the name and address of the person ~~or company~~ seeking the permit;

(3) a brief description of the business conducted at the facility or the activity described in the permit application;

(4) the name, address, and telephone number of the departmental contact ~~whom~~ that interested persons may contact for further information, including copies of the application, draft permit, or any other appropriate information;

(5) a brief description of the comment procedures for public notice; and

(6) a statement of the procedure to request a hearing and other procedures that allow public participation in the final permit decision.

(e) (i) Any interested person may submit written comments to the secretary on any permit action during the 30-day public comment period. The following requirements shall apply:

(1) All comments shall be submitted by the close of the public comment period.

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(2) All supporting materials submitted shall be included in full ~~and~~. These materials shall not be incorporated by reference, unless the supporting materials ~~are~~ include any of the following:

- (A) Part of the administrative record in the same proceeding;
- (B) state or federal statutes and regulations;
- (C) state or environmental protection agency documents of general applicability; or
- (D) other generally available reference materials.

(3) Commentators shall make supporting materials not already included in the administrative record available to the secretary.

~~(f) (j) The response to all significant comments concerning any permit actions and the reasons for changing any provisions in the draft permit shall be issued when the final permit decision is issued~~

A response to comments shall be issued by the department when a final permit decision is issued.

The response shall be available to the public and shall include the following:

(1) The changes, if any, that were made to the proposed permit as a result of public comment; and

(2) the response to any comment received during the public comment period.

~~(g) The response to comments shall be made available to the public upon request.~~

(Authorized by and implementing K.S.A. 2002 2022 Supp. 55-1,117; effective, T-28-4-1-03, April 1, 2003; effective Aug. 8, 2003; amended P-_____.)

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28-45-8a. ~~Modification and transfer of a temporary or a final permit~~ Transfer and modification of a facility permit. (a) ~~The automatic transfer of a temporary or final permit shall be prohibited.~~ The requirements for each permit transfer shall be as follows No person shall transfer a facility permit without meeting the following requirements:

(1) Each person requesting a permit transfer shall submit a completed application to the secretary on a form provided by the department, at least 60 days before the effective date of the proposed transfer.

(2) ~~Each owner and each operator person requesting a permit transfer shall comply with the conditions of the existing permit until the secretary reissues the permit.~~

(3) All facility records, as specified in K.A.R. 28-45-19, shall transfer to the new permittee on the effective date of the transfer.

(b) ~~Any temporary or final permit for an underground hydrocarbon storage well may be modified by the secretary~~ Any section of a facility permit may be modified by the secretary under any of the following conditions:

(1) The secretary receives information that was not available when the permit was issued.

(2) The secretary receives a request for the modification of a permit.

(3) The secretary conducts a review of the permit file and determines that a modification is necessary.

(c) Only the permit actions subject to modification shall be ~~reopened~~ placed on public notice as specified in K.A.R. 28-45-7a.

(d) Minor modifications that shall not require ~~public notification~~ notice include the following, except as otherwise specified:

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- (1) Correction of typographical errors;
- (2) requirements for more frequent monitoring or reporting by the permittee;
- (3) a date change in a schedule of compliance;
- (4) a change in ownership or operational control of the facility, unless the secretary determines that public ~~notification~~ notice is necessary to protect the public interest;
- (5) ~~a change in construction requirements, if the secretary determines that the change is protective of public health, safety, and the environment; and a change in the physical location of a storage well before drilling, if the storage well is within the existing permitted facility boundary;~~
- (6) voluntary upgrades to infrastructure, including brine pond relining, casing size or weight, or a type of process control system; and
- ~~(6)~~ (7) any amendments to a facility plugging and abandonment plan or to a decommissioning and abandonment plan.

(e) A draft permit and ~~notification to the public~~ notice shall be required if any one of the following conditions is met:

(1) A permittee proposes an addition to the facility that includes either a new storage well or a new brine pond.

~~(1)~~ (2) A permittee proposes ~~substantial alterations or additions to the facility or proposes~~ an activity that justifies a change in the permit requirements that is different or absent in the existing permit after the issuance, including cumulative effects on public health, safety, or the environment.

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~~(2)~~ (3) Information ~~has become~~ becomes available that would have initially justified different permit requirements.

~~(3)~~ (4) Standards of regulations on which the permit was based have changed due to the promulgation of new or amended standards or due to a judicial decision after the permit was issued.

(f) Any permittee may request a permit modification within ~~180 days~~ six months after any of the following:

(1) The adoption of new regulations or standards;

(2) ~~any deadline to achieve compliance with regulations or standards before the expiration date of the permit~~ any deadline to achieve compliance changes before the permit expires; or

(3) any judicial remand and stay of a promulgated regulation if the permit requirement was based on the remanded regulation. (Authorized by and implementing K.S.A. ~~2002~~ 2022 Supp. 55-1,117; effective, T-28-4-1-03, April 1, 2003; effective Aug. 8, 2003; amended P-_____.)

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28-45-9a. ~~Signatories for permit applications and reports~~ Signatory authority. (a) ~~Each permittee of an existing storage well and each applicant for a permit for a proposed storage well shall designate signatories to sign the permit applications and all reports required by the secretary~~ Each applicant shall designate at least one signatory to sign the facility permit application and all documents required by the secretary.

(b) ~~Positions that may be approved by the secretary to be signatories shall be the following~~ Each signatory designated in subsection (a) shall make the following certification:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

(c) Any of the following positions may be approved to be a signatory by the secretary:

- (1) Plant or operations manager;
- (2) cavern specialist for a storage well and cavern;
- (3) brine pond specialist for a brine pond;
- ~~(3)~~ (4) superintendent; and or
- (4) ~~(5)~~ a position with responsibility at least equivalent to that required by the positions

listed in this subsection.

~~(e)~~ (d) Any signatory may submit written notification to the secretary specifying a

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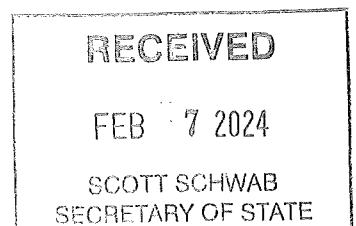
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position having responsibility for the overall operation of the regulated facility or activity to act as a designated signatory.

~~(d) (e) Each signatory and each signatory's designee shall submit a signature statement, on a form furnished by the department, to the secretary with the temporary and the final permit applications~~ Each permittee shall submit updated documentation of signatory authority if a change in signatory authority occurs while the permit is in effect. (Authorized by and implementing K.S.A. 2002 2022 Supp. 55-1,117; effective, T-28-4-1-03, April 1, 2003; effective Aug. 8, 2003; amended P-_____.)

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28-45-10a. Siting requirements for new ~~underground hydrocarbon storage wells and facilities a storage facility or storage well and cavern.~~ (a) ~~Each applicant shall assess the geographical, topographical, and physical data for any proposed underground hydrocarbon storage well location to determine whether siting requirements have been met. The following siting requirements shall be met~~ Each applicant shall submit a map that shows the facility boundary with respect to the following siting requirements:

(1) ~~Each new underground storage facility shall be located at least three miles from the established boundaries of municipal population centers~~ Each storage facility shall be located at least three miles from the established boundaries of each municipal population center.

(2) ~~Each proposed new facility or boundary expansion for an existing facility shall be located as follows:~~

(A) ~~Not less than five miles from an active or abandoned conventional shaft mining operation; and~~

(B) ~~not less than two miles from the facility's boundary of any solution mining operation~~ Each storage facility shall be located at least five miles from current or past conventional subsurface mining activities.

(3) ~~Each applicant shall assess the extent and nature of current or past conventional subsurface mining activities within five miles of the underground hydrocarbon storage facility's boundary to determine any potential impact to public health, safety, or the environment resulting from the proposed activities at the facility~~ Each storage facility shall be located at least one mile from any porosity storage facility.

(4) (b) ~~Each applicant shall identify and assess all wells, including abandoned wells, from~~

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~~available sources of information, within a one-mile perimeter of the facility's boundary to determine if the following conditions exist~~ Each applicant shall submit a map that shows the facility boundary with respect to each water well, oil and gas well, monitoring well, underground injection control well, and storage well within a one-mile perimeter of the facility boundary to determine if the following conditions have been met:

~~(A) (1) The wells have been constructed in a manner to protect public health, property, and the environment~~ Each well has been constructed in a manner protective of public health, safety, and the environment.

~~(B) (2) The abandoned wells, including water, oil, gas, monitoring, and underground storage wells, have been properly plugged~~ Each abandoned well has been properly plugged.

~~(b) Each applicant shall conduct a regional geological and evaluation to determine if the integrity of the proposed storage cavern will be adversely affected by either of the following:~~

- ~~(1) Salt thinning due to any stratigraphic change; or~~
- ~~(2) a dissolution zone in the bedded salt.~~

~~(c) Each applicant shall determine if the facility's location~~ submit a flood assessment for the facility location, including whether the facility is in a floodplain or flood-prone area.

~~(d) No new underground hydrocarbon storage facility's boundary or the expansion of an existing facility's boundary shall be located less than one mile from any existing underground porosity storage facility~~ Each applicant shall submit a report on the potential risks to storage operations from activities conducted at an adjacent facility.

~~(e) Each applicant shall identify potential risks to the storage operation from activities~~

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conducted at adjacent facilities submit a map of the facility that identifies all utilities having a right-of-way, including pipeline, railway, roadway, and electrical lines within a one-mile perimeter of the facility boundary to determine any potential impacts of the utilities on the location or operation of the facility.

~~(f) Each applicant shall identify all utilities having a right of way, including pipeline, railway, roadway, and electrical lines, and shall assess the potential impact of the utilities on the location or operation of the facility. If a facility is exposed and subject to hazards, including vehicular traffic, railroads, electrical power lines, and aircraft or shipping traffic, the facility shall be protected from accidental damage, by distance or barricades.~~

(f) Each applicant shall submit a report prepared by a professional geologist providing an evaluation of the local geology and hydrogeology to determine whether the mechanical integrity of any storage well could be adversely affected by salt thinning due to any stratigraphic change or a dissolution zone in the salt.

~~(g) No outer boundary of an underground hydrocarbon storage cavern shall be less than 100 feet from any of the following~~ Each applicant shall submit a map of the facility boundary with respect to the outer boundary of any new storage cavern to show that each new storage cavern is more than 100 feet from any of the following:

(1) An adjacent storage cavern, unless an alternative action was authorized by the secretary;

~~(1) (2) the property boundary of any owners who have not consented to subsurface storage under their property;~~

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(2) (3) any existing surface structure not owned by the ~~facility's owner~~ applicant; or

(3) (4) any public transportation artery. (Authorized by and implementing K.S.A. 2002
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28-45-11a. Financial assurance for ~~underground hydrocarbon~~ storage facility closure. (a) Each permittee of an ~~underground hydrocarbon~~ a storage facility shall establish financial assurance for the following:

- (1) Closure of the facility; ~~and~~
- (2) the plugging of any hydrocarbon each storage well and cavern; and
- (3) the decommissioning of each brine pond.

~~(b)(1) Each permittee of an existing underground hydrocarbon storage well shall submit proof of financial assurance to the secretary before April 1, 2004 and, thereafter, annually on or before January 31 of each year. Each applicant for a permit for a new underground hydrocarbon storage well shall submit proof of financial assurance with the final permit application and, thereafter, annually on or before January 31 of each year. Each permittee shall submit to the secretary proof of financial assurance using a department-approved financial test mechanism for financial assurance, on or before April 1 of each year. Each permittee that wants to construct a new storage well or a new brine pond shall submit proof of financial assurance with the request for a permit modification and annually thereafter, as specified in this subsection. Each permittee shall meet the following requirements:~~

~~(2) Each permittee and each applicant shall meet the following requirements:~~

~~(A) (1) Submit a detailed written estimate, in current dollars, of the cost charged by a third party to close all underground storage wells and storage wells and caverns, brine ponds, and associated infrastructure at the facility following the closure procedures specified in ~~K.A.R. 28-45-20~~ K.A.R. 28-45-21 and K.A.R. 28-45-30. The estimate shall be reviewed and approved by a ~~licensed professional engineer or licensed professional~~ geologist;~~

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~~(B) prepare an estimate of the closure cost for all storage wells and storage caverns at the facility based on the cost charged by a third party to plug the underground storage wells; and~~

~~(C) (2) increase the closure cost estimate and the amount of financial assurance provided if any change in the facility operation or closure plan increases the maximum cost of closure at any time; and~~

(3) update the financial assurance for closure costs annually by applying an inflation factor approved by the secretary to the plugging and abandonment cost or providing a revised cost estimate as specified in this subsection.

(c) Each permittee shall provide continuous financial assurance coverage for closure until the secretary approves the facility closure.

(d) Each permittee shall comply with the provisions of the department’s document titled ~~“procedure for demonstrating financial assurance for an underground hydrocarbon storage well, procedure #: UICLPG-6,”~~ dated March 2003 “financial assurance for storage facility closure,” dated July 27, 2021, which is hereby adopted by reference. (Authorized by and implementing K.S.A. 2002 2022 Supp. 55-1,117; effective, T-28-4-1-03, April 1, 2003; effective Aug. 8, 2003; amended P-_____.)

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28-45-12. Operations and maintenance plan. (a) ~~Each permittee of an underground hydrocarbon storage facility shall submit a plan for the long-term operation and maintenance of the facility with the final permit application~~ Each applicant shall prepare an operations and maintenance plan and shall submit the plan with the facility permit application. Each permittee shall maintain the operations and maintenance plan at the facility and shall make the plan available for inspection by the department.

(b) ~~Each operation~~ operations and maintenance plan shall include the following information:

(1) A description of the methods ~~to be used to prevent the overpressuring of~~ storage wells and storage caverns;

(2) ~~a plan-view map of the location of any disposal wells and corrosion control wells~~ a map of the location and either a listing of global positioning coordinates, or ground-based survey data for each storage well, underground injection control well, monitoring well, and cathodic protection borehole; and

(3) ~~the location, depth, and well construction for all shallow and deep groundwater monitoring and observation wells.~~ a water well record for each monitoring well;

(c) ~~Each permittee shall maintain at the facility and make available for inspection by the secretary the following information:~~

(1) ~~A location map of all wells within the facility's boundaries and a listing of the global positioning system coordinates for each well;~~

(2) ~~(4) a schematic of the brine and product lines for each cavern~~ storage well; and

(3) ~~(5) a schematic of the gathering line system that connects~~ connecting all storage wells

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within the ~~underground hydrocarbon storage~~ facility to a central distribution point; and

(6) a detailed schematic and description of each brine pond.

~~(d) (c) Each permittee shall submit a plan for solutioning or washing any cavern to the secretary for review and consideration for approval. The plan shall include the following: Each permittee shall update the operations and maintenance plan whenever new construction is completed or whenever new information regarding the plan requirements becomes available.~~

~~(1) A list of acceptable blanket pad materials;~~

~~(2) methods for monitoring the solutioning or washing process; and~~

~~(3) a monitoring schedule.~~

~~(e) Only saturated brine shall be used to displace any product.~~

~~(f) The maximum allowable operating pressure and test pressure shall not exceed 0.8 pounds per square inch per foot of depth measured at the higher elevation of either the casing seat or the highest interior elevation of the storage cavern roof. The following requirements shall apply:~~

~~(1) A maximum allowable operating pressure exceeding 0.75 pounds per square inch per foot of depth shall be prohibited unless the following conditions are met:~~

~~(A) Each permittee submits a justification to the department for exceeding a maximum allowable operating pressure of 0.75 pounds per square inch per foot of depth.~~

~~(B) The well is equipped with a continuous pressure monitoring system, and a pressure history can be maintained.~~

~~(2) The underground hydrocarbon storage cavern shall not be subjected to pressures in~~

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excess of the maximum allowable operating pressure, including pressure pulsations and abnormal operating conditions.

(g) Each permittee shall maintain a minimum operating pressure that is protective of cavern integrity at each underground hydrocarbon storage well.

(h) Each permittee shall meet the notification requirements in the facility's emergency response plan, give oral notification to the department within two hours, and submit written notification within one week to the department if any of the following events occurs:

- (1) The overpressuring or the overfilling of an underground hydrocarbon storage cavern;
- (2) the loss of integrity for an underground hydrocarbon storage well or cavern;
- (3) the release of brine, product, or any other chemical parameter that poses a threat to public health, safety, or the environment;
- (4) any uncontrolled or unanticipated loss of product or brine that is detectable by any monitoring or testing;
- (5) any other condition that could endanger public health, safety, or the environment;
- (6) the establishment of communication between underground hydrocarbon storage caverns;
- (7) the triggering of any alarms verifying that the permit safety requirements have been exceeded; or
- (8) any equipment malfunction or failure that could result in potential harm to public health, safety, or the environment.

(i) Each permittee shall notify the secretary of any change in the type of product stored in

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~~any underground hydrocarbon storage cavern and shall certify that the compatibility of product types and the effect of pressure changes will not adversely affect the wellhead, casing, tubing, and cavern.~~ (Authorized by and implementing K.S.A. 2002 2022 Supp. 55-1,117; effective, T-28-4-1-03, April 1, 2003; effective Aug. 8, 2003; amended P-_____.)

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28-45-13. Emergency response plan and safety and security measures. (a) ~~Each permittee of an existing underground hydrocarbon storage facility and each applicant who wishes to operate a facility shall prepare an emergency response plan. The following requirements shall apply~~ Each applicant shall prepare an emergency response plan and shall submit the plan with the facility permit application. Each permittee shall maintain the emergency response plan at the facility and shall make the plan available for inspection by the department. Each emergency response plan shall include the following information:

(1) ~~Each permittee of an existing underground storage facility shall maintain the emergency response plan at the facility before April 1, 2004 and shall make the plan available for inspection by the secretary. A description of the facility response to the following events:~~

(2) ~~Each applicant for a final permit for a new underground hydrocarbon storage facility shall make the emergency response plan available for inspection by the secretary when the final permit application is submitted to the department.~~

(b) ~~Each permittee shall update the plan annually and also shall update the plan whenever new information regarding the requirements for the emergency response plan becomes available.~~

(c) ~~Each plan shall include a description of the facility's response to the following events:~~

(1) ~~(A) Spills and releases;~~

(2) ~~(B) fires and explosions;~~

(3) ~~(C) cavern subsidence and collapse; and~~

(4) ~~(D) any other activity that endangers public health and safety, or that constitutes a threat to the environment;~~

(d) ~~Each plan shall include the following information:~~

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(1) (2) a description of the warning systems in operation at the facility;

(2) (3) a description of the facility's emergency response communication system that includes the following:

(A) A plat showing the location of all occupied buildings within a two-mile perimeter of the facility's boundaries facility boundary; and

(B) ~~a list of addresses and telephone numbers for all persons to contact within a two-mile perimeter of the facility's boundaries if a release or emergency condition occurs~~ a description of the method for contacting all persons within a two-mile perimeter of the facility boundary if a product release or emergency situation occurs, as specified in the emergency response plan;

(3) (4) the procedures for coordination of emergency response with local emergency planning committees, including emergency notification and evacuation of citizens and employees;

(4) (5) a description of employee training for emergency response;

(5) (6) a plat of the facility, showing the following locations:

- (A) All ~~hydrocarbon~~ storage wells;
- (B) all underground injection control wells;
- (C) all monitoring and water wells;
- (D) all brine and product lines;
- (E) railroad and transportation routes;
- (F) brine ponds; and
- (G) any other appurtenances at the facility; and

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~~(6)~~ (7) a plan map of man-made surface structures and any construction activities within a one-mile perimeter of the ~~facility's boundaries~~ facility boundary.

~~(e)~~ (b) ~~A copy of the plan shall be~~ Each permittee shall ensure that a copy of the emergency response plan is available at the facility, the company headquarters, and any coordinating agencies or committees involved in the emergency response plan.

~~(f)~~ (c) Each permittee shall establish an educational program for community safety and awareness of the emergency response plan.

(d) Each permittee shall update the emergency response plan whenever new construction is complete or whenever new information regarding the plan requirements becomes available.

~~(g)~~ (e) Each permittee of an underground hydrocarbon storage facility shall provide security measures to protect the public and to prevent unauthorized access. These security measures shall include the following:

(1) Methods for securing the facility from unauthorized entry and for providing a convenient opportunity for escape to a place of safety;

(2) clearly visible, permanent signs at all points of entry and along the ~~facility's~~ facility boundary, identifying the storage well or storage facility name, owner, and contact telephone number;

(3) security lighting;

(4) alarm systems;

(5) appropriate warning signs in areas that could contain accumulations of hazardous or noxious vapors or where physical hazards exist; ~~and~~

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(6) a direct communication link with the local control room or any remote control center for service and maintenance crews; ;

~~(h) Warning systems and alarms shall consist of the following:~~

~~(1) (7) combustible gas or hydrogen sulfide detectors, heat sensors, pressure sensors, and emergency shutdown instrumentation integrated with warning systems and alarms audible and visible in the local control room and at any remote control center;~~

~~(2) (8) circuitry designed so that the failure of a detector or heat sensor, excluding meltdown and fused devices, will activate the warning systems and alarms; and~~

~~(3) (9) a manually operated alarm, audible to facility personnel.~~

~~(i) (f) Each wellhead and storage cavern shall be permittee shall ensure that each storage well is protected with safety devices to prevent pressures in excess of the maximum allowable operating pressure from being exerted on the underground hydrocarbon storage well or cavern and to prevent the backflow of any stored hydrocarbon if a flowline flow line ruptures.~~

~~(j) (g) Each wellhead shall be permittee shall ensure that each wellhead is equipped with the following: manual isolation valves. Each port on a wellhead shall be equipped with either a valve or a blind flange. The valve or blind flange shall be rated at the same pressure as that for the wellhead.~~

~~(1) Manual isolation valves; and~~

~~(2) a valve or blind flange on each port of the wellhead that is rated at the same pressure or more than the pressure rated for the wellhead.~~

~~(k) (h) Each permittee shall install a supervisory control and data acquisition process~~

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control system approved by the secretary to monitor storage operations for ~~individual storage wells~~ each storage well. Each of the following instruments shall be connected to an alarm:

- (1) Flow indicators for ~~hydrocarbon~~ product;
- (2) combustible gas ~~detection indicators~~ detectors; and
- (3) detectors for any other ignitable substance as requested by the secretary; and
- (4) pressure indicators on both the product and brine lines of the wellhead.

(4) (i) Each permittee shall install emergency shutdown valves on all ~~hydrocarbon, brine, and water~~ hydrocarbon and brine lines. Criteria for emergency shutdown valves shall include the following:

(1)(A) Be rated at least equivalent to ~~125%~~ 125 percent of the maximum pressure that could be exerted at the surface; or

(B) meet a pressure-rating standard equivalent to that specified ~~to that~~ in paragraph (1)(1)(A) and determined by the secretary to be protective of public health, safety, and the environment;

- (2) fail to the closed position;
- (3) be capable of remote and local operation; and
- (4) be activated by ~~the following:~~ overpressuring and by gas and heat detection.

- (A) ~~Overpressuring;~~
- (B) ~~underpressuring; and~~
- (C) ~~gas and heat detection.~~

(m) Each permittee shall conduct annual inspections of all wellhead instrumentation.

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(~~n~~) (j) Each permittee shall function-test each critical control system and emergency shutdown valve semiannually at least twice annually, not to exceed a 200-day interval between tests.

(~~o~~) (k) Each permittee shall perform trip-testing of each loop, including the instrumentation, valves, shutdown equipment, and all wiring connections, to ensure the integrity of the circuit.

(~~p~~) (l) Each permittee shall ensure that the equipment automatically closes all inlets and outlets to the storage cavern and safely shuts down or diverts any operation associated with the storage cavern, in case of overfilling or an emergency.

(~~q~~) (m) Each permittee shall ensure that the automatic valve closure times meet the valve design limits for closure times.

(~~r~~) (n) Each permittee shall cease operations or shall comply with the instructions from the secretary if the secretary determines that an imminent threat to public health, safety, or the environment exists due to any unsafe operating condition. The permittee may resume operations if the secretary determines that the ~~facility's~~ facility operations no longer pose a risk to public health, safety, or the environment.

(o) Each permittee shall update security measures whenever new construction is complete or whenever new information regarding the requirements for security measures becomes available. (Authorized by and implementing K.S.A. ~~2002~~ 2022 Supp. 55-1,117; effective, T-28-4-1-03, April 1, 2003; effective Aug. 8, 2003; amended P-_____.)

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~~28-45-14. Design and construction of underground hydrocarbon storage wells~~ Storage well and cavern construction requirements. (a) ~~Each permittee shall ensure that each underground hydrocarbon storage well is constructed with surface casing. The following requirements shall apply~~ Each permittee shall ensure that each storage well is constructed with surface casing according to the following requirements:

(1) The surface casing shall be set through all fresh and usable water formations and into competent bedrock.

(2) The surface casing shall be cemented by circulating cement through the bottom of the casing to the surface.

(3) The annular space between the casing and the formation shall be filled with cement.

~~(b) Each permittee of any existing underground hydrocarbon storage well without a surface casing shall perform the following:~~

~~(1) Verify the integrity of the existing casing with a casing inspection tool specified in K.A.R. 28-45-16; and~~

~~(2)(A) Provide double protection by installing either of the following:~~

~~(i) An intermediate casing and a production casing; or~~

~~(ii) a production casing with a tubing and packer assembly; or~~

~~(B) plug the well if double protection cannot be provided.~~

~~(e) (b) Each permittee of a new underground hydrocarbon storage well shall install~~ construct the storage well with double casing protection with an that consists of an intermediate casing and a production casing set into the upper part of the bedded salt formation. The following provisions shall apply: according to the following requirements:

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(1) The intermediate casing shall extend ~~a minimum of~~ at least 105 feet into the salt ~~formation~~ bedded salt. The production casing shall extend at least to the depth of the intermediate casing.

(2) The annular ~~space~~ spaces between the intermediate casing and the production ~~easings~~ casing and between the intermediate casing and the formation shall be filled with cement by circulating cement through the bottom of the casing to the surface.

~~(3) A tubing and mechanical packer assembly may be installed with the production casing as an alternative to the use of cemented intermediate and production casings.~~

~~(d) (c) Each permittee of an existing underground hydrocarbon storage well that does not have double casing protection shall enhance casing monitoring by providing a casing inspection evaluation as specified in K.A.R. 28-45-16~~ complete a casing evaluation as specified in K.A.R. 28-45-17.

~~(e) (d) The~~ For each storage well, the permittee shall install a casing and tubing shall a brine string that meet the performance standards for collapse resistance, internal yield pressure, and pipe body yield strength for the storage well's setting depths using criteria specified in the American petroleum institute's bulletin 5C2, twenty-first edition, dated October 1999, which is hereby adopted by reference.

~~(f) (e) The~~ Each permittee shall ensure that the brine tubing in each underground hydrocarbon storage well shall have string in each storage well is constructed with a weep hole located ~~a minimum of~~ at least one foot above the bottom of the brine tubing string. ~~The following requirements shall apply:~~

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~~(1) The brine tubing in a new underground hydrocarbon storage well shall have a weep hole before storage operations begin.~~

~~(2) The weep hole shall be added to the brine tubing in an existing underground hydrocarbon storage well when the brine tubing is pulled for any well work.~~

~~(g) (f) Only Each permittee shall ensure that only new steel casing shall be installed in a new underground hydrocarbon storage well. Used parts, materials, and equipment that have been tested and certified for continued service may be used for repairs.~~

~~(h) (g) Liners shall extend from the surface to a depth near the bottom of the production casing that allows room for workover operations.~~

~~(i) Each permittee shall meet the following cementing requirements shall be met for each storage well:~~

~~(1) The cement shall be compatible with the rock formation water and the drilling fluids. Salt-saturated cement shall be used when cementing through the salt section.~~

~~(2) The cement across the confining zone and to the surface shall have a compressive strength of not less than at least 1,000 pounds per square inch (psi).~~

~~(3) Remedial cementing shall be completed if there is evidence of either of the following:~~

~~(A) Underground communication between the confining zone and other horizons; or~~

~~(B) annular voids that would allow either fluid contact with the casing or channeling across the confining zone or above the confining zone.~~

~~(4) The following requirements for cement evaluation shall apply:~~

~~(A) Samples shall be obtained at the start and end of the cementing operation for~~

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evaluation of cement properties. All cement samples collected shall be representative of the cement being utilized.

(B) All samples shall be tested for compressive strength.

(C) (5) A cement bond log shall be ~~run~~ completed on the surface casing, intermediate casing, and ~~cemented~~ production casing after the ~~neat~~ cement has cured for a ~~minimum of at~~ least 72 hours.

(j) (h) ~~Casing patches shall be prohibited, unless the secretary determines that the use of casing patches is protective of public health, safety, and the environment. The following requirements shall apply: If available cement bond logging tools cannot be used, the permittee shall submit to the secretary a request for approval for use of an alternative method or information establishing that a successful cement job has been completed. The alternative method or information may be approved if the secretary determines the method or information to be protective of public health, safety, and the environment.~~

(i) No permittee shall use a casing patch, unless authorized by the secretary in writing. The use of a casing patch may be authorized if the secretary determines the use to be protective of public health, safety, and the environment.

(1) (j) Each permittee shall submit a plan for the installation of the casing patch to the secretary. Each permittee shall submit to the department an initial casing evaluation for the entire cased interval for the innermost casing string or for the cemented liner that extends the entire length of the casing when well construction is complete.

(2) ~~Each permittee shall meet the requirements specified in the department's document~~

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titled "procedure for internal casing repair, procedure #: UICLPG-12," dated February 2003, which is hereby adopted by reference.

~~(k)~~ Each permittee shall pressure test each production casing for leaks when the well construction is completed.

~~(l)~~ (k) Each permittee shall submit a casing inspection base log for the entire cased interval for the innermost casing string or for the cemented liner that extends the entire length of the casing after the well construction is completed Each permittee shall verify the mechanical integrity of the production casing seat after well construction is complete, as specified in K.A.R. 28-45-17.

~~(m)~~ (l) Each permittee shall contain, in a tank, all ~~workover wastes, drilling fluids, drilling mud, and drill cuttings,~~ and workover wastes from any drilling operation or workover. Drilling fluids, drilling mud, ~~and drill cuttings,~~ and workover wastes shall be disposed of in a manner determined by the secretary to be protective of public health, safety, and the environment.

~~(n)~~ (m) A licensed professional engineer or a licensed professional geologist, or the licensed professional engineer's or licensed professional geologist's designee, shall supervise the installation of each underground hydrocarbon storage well.

~~(o)~~ (n) Each permittee shall install and maintain a corrosion control system. The following requirements shall apply: Each permittee shall ensure that each storage well meets the safety and security measures specified in K.A.R. 28-45-13.

~~(1)~~ The corrosion control system shall be capable of protecting the well casings.

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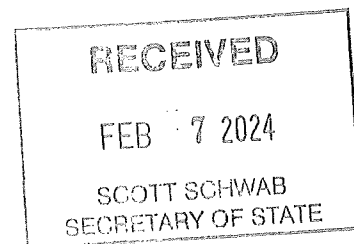
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(2) ~~The corrosion control system shall be assessed according to the protocol and time schedule recommended by the corrosion control system manufacturer, and the results shall be reported to the secretary.~~ (Authorized by and implementing K.S.A. 2002 2022 Supp. 55-1,117; effective, T-28-4-1-03, April 1, 2003; effective Aug. 8, 2003; amended P-_____.)

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28-45-15. Monitoring Storage well and cavern operation and notification requirements. (a) Each permittee shall install pressure sensors to continuously monitor wellhead pressures for both the product and brine sides of the wellhead for each underground hydrocarbon storage well. The following requirements shall apply:

(1) The pressure sensor shall be capable of recording the maximum and minimum operating pressures during a 24-hour period.

(2) The pressure sensor shall be capable of recording operating pressures at an interval approved by the secretary.

(3) Each permittee shall provide pressure data, including historic continuous monitoring, to the secretary upon request.

(4) Each underground hydrocarbon storage well shall have pressure gauges on both the product and brine sides at the wellhead, until continuous monitoring pressure sensors are installed.

(b) Each permittee of an underground hydrocarbon well equipped with a production casing with a tubing and packer assembly shall monitor the annular space. Each permittee shall submit the following to the secretary for review and consideration for approval:

(1) A diagram of the well construction; and

(2) a plan for monitoring the annulus that includes the following:

(A) A diagram of the instrumentation for monitoring the annular pressure and fluid levels;

(B) a description of how the annular pressure and fluid levels will be recorded; and

(C) a description of, and justification for, the testing methods to demonstrate the

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mechanical integrity of the system.

(c) Each permittee shall submit a plan for any monitoring activity, including logging and sonar surveys, to the secretary for review and consideration for approval to ensure the protection of public health, safety, and the environment, at least 60 days before the commencement of these monitoring activities.

(d) Each permittee shall submit a summary and the results of the monitoring activity to the secretary within 30 days after completion of the monitoring activity.

(e) Each permittee shall monitor the thickness of the salt roof for each cavern with a gamma ray log and a density log, or with another log as specified in K.A.R. 28-45-6a(m), as follows:

- (1) Every five years;
- (2) every three years, if the cavern meets criteria specified in K.A.R. 28-45-6a;
- (3) at any time that the secretary determines that cavern integrity is suspect; and
- (4) before plugging the well.

(f) Each permittee shall monitor the cavern storage capacity and the cavern geometry with a sonar survey. The sonar survey shall be conducted as follows:

- (1) Before placing the underground hydrocarbon storage cavern in service;
- (2) every 10 years;
- (3) for determining the stability of the cavern and the overburden if the salt roof thickness and cavern geometry indicate that the stability of the cavern or overburden is at risk;
- (4) after any growth of the cavern that results in a solution volume increase of 20 percent

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or more of cavern capacity; and

(5) before plugging the well if a sonar survey has not been run in the past five years.

(g) Any permittee may use an alternative method for the sonar survey if the secretary determines that the alternative method is substantially equivalent to the method specified in subsection (f). The permittee shall submit the following information for the secretary's consideration:

(1) A description of the proposed method and the theory for its operation;

(2) a description of the storage well and cavern conditions under which the log can be used;

(3) the procedure for interpreting the survey results; and

(4) an assessment of the capacity and stability of the cavern upon completion of the survey.

(h) Each permittee shall submit a ground subsidence monitoring plan to the secretary.

The following requirements shall apply:

(1) Each permittee shall submit the plan at either of the following times:

(A) When the final permit application is submitted; or

(B) when the permittee conducts an elevation survey that is due before submittal of the final permit application.

(2) The ground subsidence monitoring plan shall include the following information:

(A) A description of the method for conducting an elevation survey; and

(B) the criteria for establishing monuments, benchmarks, and wellhead survey points.

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~~(3) The criteria for subsidence monitoring shall be as follows:~~

~~(A) Level measurements to the accuracy of 0.01 foot shall be made.~~

~~(B) Surface elevation changes in excess of 0.10 foot shall be reported within 24 hours to the secretary.~~

~~(C) No established benchmark shall be changed, unless the permittee submits a justification that the change is protective of public health, safety, and the environment.~~

~~(D) If a benchmark is changed, the elevation change from the previous benchmark shall be noted in the elevation survey report.~~

~~(E) Each permittee shall submit the elevation before and after any wellhead work that results in a change in the survey point at the wellhead.~~

~~(4) The elevation survey shall be conducted by a licensed professional land surveyor.~~

~~(5) Biennial survey results, including certified and stamped field notes, shall be submitted to the department within 30 days after completion of the survey.~~

~~(i) Each permittee shall submit an inventory balance plan for measuring the volume of hydrocarbons injected into or withdrawn from each underground hydrocarbon storage well, including methods for measuring and verifying volume, with the permit application to the secretary for review and consideration for approval. (a) Each permittee shall ensure that the maximum allowable operating pressure does not exceed 0.80 pounds per square inch per foot of depth (psi/ft) measured at the higher elevation of either the casing seat, effective casing seat, or the highest interior elevation of the roof of the storage cavern.~~

~~(b) Each permittee shall ensure that the maximum test pressure does not exceed 0.05~~

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psi/ft more than the maximum allowable operating pressure. The maximum allowable operating pressure shall be limited to the pressure gradient for which the well was tested, if the well was tested at a gradient less than 0.80 psi/ft.

(c) Each permittee shall maintain a minimum operating pressure of 0.52 psi/ft measured at the higher elevation of the casing seat, effective casing seat, or the highest interior elevation of the cavern roof, unless a variance is granted by the secretary, as specified in K.A.R. 28-45-31.

(d) Each permittee shall ensure that a storage cavern is not subjected to any pressure in excess of the maximum allowable operating pressure, including pressure pulsations and abnormal operating conditions except during testing, as specified in this article of the department's regulations.

(e) Each permittee shall meet the notification requirements in the emergency response plan, notify the department within 24 hours, and submit detailed written notification to the department within seven days if any of the following events occurs:

- (1) The overpressuring or overfilling of a storage cavern;
- (2) the loss of mechanical integrity;
- (3) any uncontrolled or unanticipated loss of product, brine, or any other chemical parameter that is detectable by any monitoring or testing;
- (4) the establishment of underground communication between storage caverns;
- (5) the triggering of any alarms verifying that the permit safety restrictions were exceeded; or

(6) any equipment malfunction, failure, or any other occurrence that could endanger

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public health, safety, or the environment.

(f) Each applicant shall submit an inventory balance plan for measuring the volume of product injected or withdrawn from each storage cavern, including methods for measuring and verifying volume, with the facility permit application.

(g) Each permittee shall ensure that only saturated brine is used to displace product. Each permittee shall notify the department if the salinity of the brine being used to displace product falls below the saturated limit.

(h) Each permittee shall submit a listing, by storage well number, of the maximum allowable operating pressure associated with each product to be stored in a storage cavern, based upon the specific gravity of the product, casing seat or effective casing seat depth, and most recent test pressure gradient. Each permittee shall maintain and update the listing and shall submit the listing to the department annually or whenever more than one change has occurred.

(i) Each permittee shall visually inspect the wellhead monthly for any leakage of product or brine and for physical damage to wellhead equipment. A written record of the inspection shall be kept on file at the facility and made available to the department upon request.

(j) Each permittee shall cease operations or shall comply with instructions from the secretary if the secretary determines that an imminent threat to public health, safety, or the environment due to any unsafe operating condition exists. The permittee may resume operations if authorized by the secretary. (Authorized by and implementing K.S.A. 2002 2022 Supp. 55-1,117; effective, T-28-4-1-03, April 1, 2003; effective Aug. 8, 2003; amended P-_____.)

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28-45-16. ~~Testing and inspections~~ Storage well and cavern monitoring. (a) ~~Each permittee shall submit a plan to the secretary for review and consideration for approval to ensure the protection of public health, safety, and the environment, before conducting any underground hydrocarbon storage well or cavern testing. Testing shall not commence without prior approval from the secretary.~~

(b) ~~Each permittee shall submit a summary of the testing to the secretary within 45 days after completing the test. The summary shall include the following:~~

- ~~(1) A chronology of the test;~~
- ~~(2) copies of all logs;~~
- ~~(3) storage well completion information;~~
- ~~(4) pressure readings;~~
- ~~(5) volume measurements; and~~
- ~~(6) an explanation of the test results.~~

(c) ~~Each permittee shall test each unplugged underground hydrocarbon storage well and cavern for mechanical integrity. The following requirements shall apply:~~

~~(1) Integrity tests shall be conducted on the storage well and cavern as follows:~~

- ~~(A) Before the cavern is initially placed in service;~~
- ~~(B) every five years, if the well is unplugged;~~

~~(C) before the underground hydrocarbon storage cavern is placed back in service after being in monitoring status, unless the mechanical integrity test has been performed in the last five years; and~~

~~(D) before the well is plugged, unless the mechanical integrity test has been performed in~~

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the last five years.

(2) Integrity tests shall be conducted on the underground hydrocarbon storage well after each workover that involves physical changes to any cemented casing string.

(3) Each underground hydrocarbon storage well shall be tested for mechanical integrity using a nitrogen brine interface method.

(4) Each underground hydrocarbon storage cavern shall be tested for integrity by using a hydrostatic brine test.

(5) Each permittee shall submit a test procedure plan, on a form furnished by the department, to the secretary for review and consideration for approval, at least 30 days before test commencement. The plan shall include the following information:

(A) The justification for test parameters;

(B) the test sensitivities; and

(C) the pass and fail criteria for the test.

(6) Each permittee shall notify the secretary at least five days before conducting any integrity test.

(7) The integrity test shall be conducted at the maximum allowable operating pressure.

(8) All test procedures shall use certified gauges and pressure transducers that have been calibrated annually.

(d) Any permittee may use an alternative integrity test if the secretary determines that the alternative integrity test is substantially equivalent to the integrity tests specified in subsection

(e) The permittee shall submit the following information for the secretary's consideration:

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~~(1) A description of the test method and the theory of operation, including the test sensitivities, a justification for the test parameters, and the pass and fail criteria for the test;~~

~~(2) a description of the well and cavern conditions under which the test can be conducted;~~

~~(3) the procedure for interpreting the test results; and~~

~~(4) an interpretation of the test upon completion of the test.~~

~~(e) No underground hydrocarbon storage well and cavern shall be used for storage if the mechanical integrity is not verified.~~

~~(f) Each permittee shall submit a casing evaluation for each underground hydrocarbon storage well. Acceptable casing evaluation methods shall include magnetic flux and ultrasonic imaging.~~

~~(g) Any permittee may use an alternative casing evaluation method if the secretary determines that the alternative casing evaluation method is substantially equivalent to the casing evaluation methods specified in subsection (f). The permittee shall meet the following requirements:~~

~~(1) Each permittee shall submit a description of the logging method, including the theory of operation and the well conditions suitable for log use.~~

~~(2) Each permittee shall submit the specifications for the logging tool, including tool dimensions, maximum temperature and pressure rating, recommended logging speed, approximate image resolution, and hole size range.~~

~~(3) Each permittee shall describe the capabilities of the log for determining the following:~~

~~(A) The presence of any metal loss due to either of the following:~~

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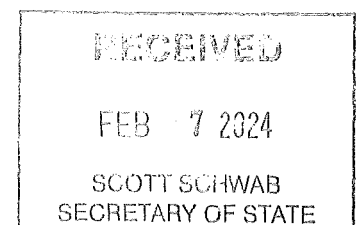
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~~(i) Internal or external corrosion; or~~

~~(ii) internal wear;~~

~~(B) the degree of penetration of the corrosion or the casing defect; and~~

~~(C) the circumferential extent of the corrosion or the casing defect.~~

~~(4) Each permittee shall submit a log and an interpretation of the log to the secretary.~~

~~(h) Each permittee shall submit a casing evaluation according to the following time schedule:~~

~~(1) Every 10 years, for either of the following conditions:~~

~~(A) The underground hydrocarbon storage well has double casing protection; or~~

~~(B) an existing well has a liner and a production casing;~~

~~(2) after any workover involving the cemented casing; and~~

~~(3) every five years, if the underground hydrocarbon well does not have double casing protection or if a determination is made by the secretary that the integrity of the long string casing could be adversely affected by any naturally occurring condition or man-made activity.~~

~~(i) A variance for submitting a casing evaluation may be considered by the director if the well has a tubing and packer assembly in place.~~

~~(j) Each permittee shall submit a cement bond log with the casing evaluation if a cement bond log has not been previously submitted.~~

~~(k) A licensed professional engineer or licensed geologist, or licensed professional engineer's or licensed geologist's designee, shall supervise all test procedures and associated~~

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field activity.

~~(l) Each permittee shall have a licensed professional engineer or licensed geologist review all test results.~~

~~(m) Each permittee shall visually inspect the wellhead monthly for any leakage.~~

~~(n) Each permittee shall conduct an inspection of facility records, using a form furnished by the department, every two years to ensure that the required records are being properly maintained. The permittee shall maintain these records at the facility and shall make the records available to the secretary upon request. (a) Each permittee shall ensure that each storage well is equipped with a continuous pressure-monitoring system for both the product lines and the brine lines of the wellhead. Each permittee shall maintain the continuous pressure-monitoring data as specified in K.A.R. 28-45-19 and shall provide pressure-monitoring data to the department upon request.~~

~~(b) Each permittee shall ensure that each continuous pressure-monitoring system is capable of recording the maximum and minimum operating pressures at least every 60 seconds during each 24-hour period.~~

~~(c) Each permittee shall submit a written plan, including logging and sonar surveys, to the department for the secretary's review and consideration for approval, at least 30 days before any monitoring activity begins.~~

~~(d) Each permittee shall monitor salt roof thickness for each active well and monitoring status storage cavern with a gamma ray log and a density log. Each permittee shall comply with the storage cavern limitations specified in K.A.R. 28-45-6a. A professional geologist shall verify~~

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the top of salt and effective casing seat. Salt roof thickness shall be monitored as follows:

- (1) Every three years, if salt roof thickness is less than 100 feet but more than 50 feet;
- (2) every five years, if salt roof thickness is 100 feet or more;
- (3) before conversion to monitoring status or permanent monitoring status;
- (4) before plugging; and
- (5) at any time the department determines the mechanical integrity is suspect.

(e) Each permittee shall monitor each storage cavern that is considered an active well using a sonar survey. The brine string shall be removed at least for every other sonar survey. The sonar survey shall be completed as follows:

- (1) Before a storage well is considered an active well;
- (2) every five years, if web thickness is less than 100 feet but more than 50 feet;
- (3) every 10 years, if web thickness is 100 feet or more;
- (4) before conversion to permanent monitoring status if a sonar survey has not been completed within the last five years;

- (5) before plugging; and
- (6) at any time the department determines the mechanical integrity is suspect.

(f) Each permittee shall submit the results of any monitoring activity and an interpretation of the results to the department within 90 days of completion.

(g) Each applicant shall submit a subsidence monitoring plan that complies with the requirements of subsection (h) with the facility permit application.

(h) Each permittee shall complete a subsidence monitoring survey biennially. The

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subsidence monitoring survey report shall include a description of the method for conducting an elevation survey and criteria for establishing monuments, benchmarks, wellhead survey points, and natural or artificial reflectors. The following requirements shall apply:

(1) Global positioning system coordinates shall be recorded at each survey point.

(2) Level measurements to the accuracy of 0.01 foot shall be made.

(3) Surface elevation changes more than a rate of 0.10 foot per year shall be reported to the department within 30 days of detection.

(4) No established benchmark or artificial reflector shall be changed, unless the permittee submits justification for the change to the department for the secretary's review and consideration for approval. If an established benchmark or artificial reflector is changed, the elevation change from the previous benchmark shall be noted in the elevation survey report.

(5) Each permittee shall submit the elevation change before and after any wellhead work that results in a change in the survey point at the wellhead.

(6) A professional surveyor shall certify the elevation survey.

(7) Each permittee shall submit biennial elevation survey results to the department within 90 days of completion. The elevation survey report shall include a signature by a professional surveyor certifying the results, a tabulation by well number or measuring point identifier comparing the most recent survey with the previous survey, and an interpretation of the results. The permittee shall keep survey field notes on file and make the notes available to the department upon request. (Authorized by and implementing K.S.A. 2002 2022 Supp. 55-1,117;

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K.A.R. 28-45-16, page 8

effective, T-28-4-1-03, April 1, 2003; effective Aug. 8, 2003; amended P-_____.)

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28-45-17. Groundwater monitoring Mechanical integrity test; casing evaluations. (a) ~~Each~~ permittee of an underground hydrocarbon storage facility shall submit a groundwater monitoring plan with the final permit application to the secretary for review and consideration for approval to ensure the protection of public health, safety, and the environment.

(b) ~~Each~~ permittee shall ensure that the groundwater monitoring wells meet the following requirements:

(1) ~~Each~~ permittee shall set the screen in each shallow monitoring well at a depth that is inclusive of the seasonal fluctuation of the water table.

(2) ~~Each~~ permittee shall ensure that all deep groundwater monitoring wells extend a minimum of 25 feet into the bedrock, or to a depth based on the geology and hydrogeology at the facility and approved by the secretary to ensure the protection of public health, safety, and the environment.

(c) ~~All~~ well locations and the spacing between all well locations shall be based on the geology and the hydrogeology at the facility and shall be required to be approved by the secretary to ensure the protection of public health, safety, and the environment.

(d) ~~Each~~ permittee of a facility shall submit a quality assurance plan, including techniques for sampling and analysis, with the final permit application to the secretary for review and consideration for approval to ensure the protection of public health, safety, and the environment.

(e) ~~Each~~ permittee shall collect groundwater samples and analyze the samples for chlorides and any other parameter determined by the secretary to pose a threat to public health, safety, and the environment. The reporting format shall be determined by the secretary.

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~~(f) Each permittee shall submit the results for chloride analyses from groundwater samples to the department on a quarterly basis.~~

~~(g) Each permittee shall monitor monthly for the presence of combustible gas in the headspace in monitoring wells and shall submit the results to the department quarterly.~~

~~(h) Each permittee shall submit a static groundwater level measurement for each monitoring well with the quarterly chloride analyses results specified in subsection (f).~~

~~(i) Any permittee of a facility where chloride concentrations in the groundwater exceed 250 milligrams per liter may be required by the secretary to submit a work plan, for review and consideration for approval, that describes the methods to delineate potential source areas and to control migration of the chloride contamination.~~

~~(j) Each permittee of a well in which combustible gas is detected shall submit a work plan to the secretary for review and consideration for approval. Each permittee shall describe the proposed methods to eliminate any source areas and return the combustible gas levels to levels that do not pose a potential threat to public health, safety, or the environment. The plan shall be approved if the secretary determines that the plan is protective of public health, safety, and the environment.~~ (a) Each permittee shall submit a plan to conduct a mechanical integrity test to the department for the secretary's review and consideration for approval before beginning a mechanical integrity test. A mechanical integrity test shall not proceed without approval by the secretary. Each plan shall include the following information:

(1) The type and method of the mechanical integrity test proposed;

(2) specification of whether the test is for the casing, cavern, or both;

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(3) justification for test parameters and calculations;

(4) test sensitivities;

(5) test calibrations; and

(6) the pass and fail criteria for the test.

(b) Each mechanical integrity test shall be completed as follows:

(1) Before a storage well and cavern is considered an active well;

(2) every five years for each active well;

(3) before conversion to monitoring status or permanent monitoring status if a mechanical integrity test has not been completed within the last five years;

(4) before plugging; and

(5) after each workover on the storage well casing that involves changes to any cemented casing string.

(c) Each permittee shall conduct a mechanical integrity test on each active well by using an interface test capable of identifying the location of a leak according to the following:

(1) Each mechanical integrity test on the storage well casing shall demonstrate sensitivity to detect a leakage rate in the casing of at least 100 barrels of fluid per year.

(2) Each mechanical integrity test on a storage cavern shall demonstrate sensitivity to detect a leakage rate of at least 1,000 barrels of fluid per year.

(d) Any permittee may use a hydraulic casing test if approved by the department before plugging, conversion to monitoring status, or conversion to permanent monitoring status.

(e) Each permittee shall ensure that each mechanical integrity test uses certified gauges

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and pressure transducers that have been calibrated within one year of the mechanical integrity test date.

(f) Each permittee shall submit results and a written summary report of each mechanical integrity test within 90 days of completion. Each permittee shall have a professional engineer or professional geologist review and certify each mechanical integrity test result and report. Each report shall include the following information:

(1) A chronology of the mechanical integrity test procedures;

(2) copies of all logs, including a narrative interpretation by a logging expert of each log;

(3) storage well and cavern completion information, including schematics;

(4) pressure readings;

(5) volume measurements;

(6) an interpretation of the mechanical integrity test results and calculations, including an explanation of identified anomalies and any issues or problems with any storage well and cavern;

(7) an adjusted maximum allowable operating pressure, if the mechanical integrity test was not conducted at the currently permitted gradient; and

(8) a signature by a professional engineer or professional geologist certifying the mechanical integrity test results.

(g) No permittee shall use a storage well if the mechanical integrity test is not certified by a professional engineer or professional geologist.

(h) Each permittee shall notify the department if a storage well fails a mechanical integrity test within one week of the failed mechanical integrity test. If a storage well fails a

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mechanical integrity test, the storage well shall be considered out of service and each permittee shall meet the following requirements:

(1) Complete an approved method to assess cavern roof, top of salt, and any trapped product;

(2) demonstrate mechanical integrity using an alternative method approved by the department;

(3) remove all feasible product;

(4) fill the cavern with saturated brine; and

(5) submit a plan to convert a storage well to monitoring status or permanent monitoring status or submit a plan to remediate the storage well within two years of the failed mechanical integrity test.

(i) Each permittee shall complete a casing evaluation for each active well. Each permittee shall submit a written plan for a casing evaluation to the department for the secretary's review and consideration for approval, at least 30 days before beginning the casing evaluation.

(j) Each casing evaluation shall be completed as follows:

(1) Every five years for a storage well with single casing;

(2) every 10 years for a storage well with double casing or a production casing and a cemented liner; and

(3) before conversion of a storage well from monitoring status to an active well.

(k) Each permittee shall submit the casing evaluation report to the secretary for review and consideration for approval, within 90 days of completion. Each casing evaluation

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report shall include the following information:

- (1) A copy of any logs that were completed;
- (2) a detailed written interpretation of any logs that were completed;
- (3) a description of the presence of any metal loss due to either corrosion or wear;
- (4) the degree of penetration of the corrosion or the casing defect;
- (5) the circumferential extent of the corrosion or the casing defect;
- (6) any calculations used in the casing evaluation; and
- (7) a signature by a professional engineer certifying the review and analysis of the casing evaluation.

(l) Each permittee shall submit a cement bond log with the casing evaluation if a cement bond log is not currently on file with the department.

(m) A professional engineer or professional geologist, or a professional engineer's or professional geologist's designee, shall supervise each mechanical integrity test and any associated field activities. (Authorized by and implementing K.S.A. ~~2002~~ 2022 Supp. 55-1,117; effective, T-28-4-1-03, April 1, 2003; effective Aug. 8, 2003; amended P-_____.)

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28-45-18. Record requirements and retention Groundwater monitoring. (a) Each permittee shall complete and submit an annual report, on a form furnished by the department, on or before April 1 of each year. The annual report shall include the following:

- (1) A description of any incident of uncontrolled or unanticipated product loss;
- (2) the well number and date of any logs or sonar surveys conducted;
- (3) the estimated storage capacity for all unplugged caverns;
- (4) a list of any caverns being washed;
- (5) a list of the volume of product injected and withdrawn for each well;
- (6) a list, by well number, of the type of product stored; and
- (7) a list, by well number, of the maximum and minimum product storage pressures

encountered during the report year.

(b) Each permittee shall maintain facility records at the facility or at a location approved by the secretary for the following time periods:

- (1) A period of 10 years, for the following records:
 - (A) The maximum and minimum operating pressures for each well; and
 - (B) the annual inspections required by the secretary;
- (2) the life of the well, for the following records:
 - (A) The casing records for each well;
 - (B) the cementing records for each well;
 - (C) the workover records;
 - (D) monitoring information, including calibration and maintenance records; and
 - (E) continuous monitoring data; and

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~~(3) the life of the facility, for the following records:~~

~~(A) All logging events;~~

~~(B) all mechanical integrity tests and other testing;~~

~~(C) all groundwater monitoring data; and~~

~~(D) all correspondence relating to the permit, including electronic mail.~~

~~(e) Surface elevation surveys shall be maintained and retained for the life of facility plus 20 years after the facility's closure.~~

~~(d) All required facility records, reports, and documents shall be transferred to the new permittee with the transfer of the permit. (a) Each applicant shall submit a groundwater monitoring plan with the facility permit application.~~

~~(b) Each permittee shall maintain the groundwater monitoring plan at the facility.~~

~~(c) Each permittee shall ensure that each monitoring well meets the following requirements:~~

~~(1) Monitoring wells shall be installed around the perimeter of each storage well field and brine pond. Well spacing shall be based on the geology and hydrogeology and number of monitoring wells at the facility and approved by the secretary.~~

~~(2) The screen in each shallow monitoring well shall be set at a depth that is inclusive of the seasonal fluctuations of the water table.~~

~~(3) The screen in each deep monitoring well shall be set at least 25 feet into bedrock or to a depth based on local geology and hydrogeology at the facility and approved by the secretary.~~

~~(d) Each applicant shall submit a quality assurance plan, including techniques for~~

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sampling and analysis, with the facility permit application. Each permittee shall maintain the quality assurance plan and shall review and update the plan when necessary.

(e) Each permittee shall submit a groundwater monitoring report on a semiannual basis or as otherwise required by the department. The following requirements shall apply:

(1) Samples shall be analyzed at a state-certified laboratory for chlorides and any other parameter as indicated in the facility permit.

(2) Each report shall include the following information:

(A) Sample results of chloride analysis, including a comparative analysis of current and past results in tabulated and graphical form;

(B) a map showing the sampling locations, groundwater elevation, and groundwater flow; and

(C) a written interpretation and summary of the results.

(f) Each permittee shall monitor monthly for the presence of combustible gas in the headspace of each monitoring well and shall submit the results to the department semiannually.

(g) Any permittee of a facility where chloride concentrations in groundwater are more than 250 milligrams per liter may be required to submit a work plan specifying methods to delineate potential source areas and contaminated areas and to remediate and control migration of the chloride contamination to the department for the secretary's review and consideration for approval.

(h) Any permittee of a facility where combustible gas is detected in a monitoring well may be required to submit a work plan specifying the proposed methods to eliminate any source

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areas and return combustible gas levels to levels that do not pose a potential threat to the department for the secretary's review and consideration for approval. (Authorized by and implementing K.S.A. ~~2002~~ 2022 Supp. 55-1,117; effective, T-28-4-1-03, April 1, 2003; effective Aug. 8, 2003; amended P-_____.)

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28-45-19. ~~Well workovers~~ Records; retention. (a) ~~Each permittee shall submit a workover plan to the secretary for review and consideration for approval to ensure the protection of public health, safety, and the environment. The following provisions shall apply:~~

~~(1) Each permittee shall submit the workover plan at least 10 days before performing any downhole or wellhead work that involves dismantling or removal of the wellhead.~~

~~(2) A permittee shall not be required to submit a workover plan for routine maintenance or replacement of gauges, sensors, or valves.~~

~~(3) Verbal authorization to initiate downhole or wellhead work may be issued by the secretary if the permittee has fulfilled the requirements of this subsection.~~

~~(b) Each permittee shall ensure that a blowout preventer with a pressure rating greater than the pressures anticipated to be encountered is used during each workover.~~

~~(c) Each permittee shall ensure that all logging procedures are conducted through a lubricator unit with a pressure rating greater than the pressures anticipated to be encountered.~~

~~(d) Each permittee shall provide to the person logging the well or performing a well workover all relevant information concerning the status and condition of the well and storage cavern before initiating any work.~~

(a) Each permittee shall submit an annual report for each well listed in the facility permit on or before April 1 of each year. The annual report shall include the following information:

(1) A description of any uncontrolled or unanticipated product loss;

(2) a list by storage well number and date of any monitoring or testing completed, including any mechanical integrity test, log, casing evaluation, and sonar survey;

(3) a list by storage well number of the maximum and minimum operating pressures

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encountered during the report year;

(4) a list by storage well number of the estimated storage capacity for each active well;

(5) a list by storage well number of the type of product currently stored;

(6) a list by storage well number of the volume of product injected and the volume of product withdrawn during the report year;

(7) a list of each storage cavern currently being developed by solution mining, the current cavern volume, and the percentage of the remaining volume to be solution mined; and

(8) an updated map based on the most recent sonar survey for each cavern, if new sonar survey data is available.

(b) Each permittee shall maintain records at the facility or at another department-approved location for the following time periods:

(1) Five years for continuous pressure monitoring data;

(2) 10 years for the maximum operating pressure for each storage well and all annual inspections required by the department;

(3) the life of each storage well for casing and cementing records, workover records, and monitoring information, including calibration and maintenance records; and

(4) the life of each facility for the following records:

(A) each mechanical integrity test;

(B) each log;

(C) each casing evaluation;

(D) each sonar survey;

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(E) each elevation survey;

(F) all groundwater monitoring data;

(G) all geomechanical study reports; and

(H) all variances related to the facility permit.

(c) Each permittee shall conduct a biennial inspection of facility records using a form provided by the department to ensure that the required records are maintained. Each permittee shall submit the inspection form to the department. (Authorized by and implementing K.S.A. 2002 2022 Supp. 55-1,117; effective, T-28-4-1-03, April 1, 2003; effective Aug. 8, 2003; amended P-_____.)

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28-45-20. ~~Plugging requirements~~ Workovers. (a) ~~Each permittee shall submit a plugging plan, including monitoring and testing requirements, to the secretary for review and consideration for approval at least 60 days before the plugging event.~~

(b) ~~Each permittee shall follow the plugging procedure specified in the department's document titled "procedure for the plugging and abandonment of a hydrocarbon storage well, procedure #: UICLPG-3," dated March 2003, which is hereby adopted by reference.~~

(e) ~~Each permittee shall restore and preserve the integrity of the site as follows:~~

(1) ~~Dispose of all liquid waste in an environmentally safe manner;~~

(2) ~~clear the area of debris;~~

(3) ~~drain and fill all excavations;~~

(4) ~~remove all unused concrete bases, machinery, and materials; and~~

(5) ~~level and restore the site.~~ (a) Each permittee shall submit a written workover plan to the department for the secretary's review and consideration for approval, at least 10 days before any workover begins. The workover plan shall include the following information:

(1) A description of any testing or log that will be performed as part of the workover; and

(2) a schedule of when the workover will be conducted.

(b) A permittee shall not be required to submit a workover plan for routine logging or maintenance or for the replacement of gauges, sensors, or valves.

(c) Written authorization to initiate work may be issued by the department if the permittee has met the requirements of this article of the department's regulations.

(d) Each permittee shall ensure that a blowout preventer with a pressure rating of more than the pressures anticipated to be encountered is used during each workover.

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(e) Each permittee shall ensure that a lubricator with a pressure rating of more than the pressures anticipated to be encountered is used when a lubricator unit is required.

(f) Each permittee shall provide to the person completing the log or initiating a workover all relevant information concerning the status and condition of the storage well and cavern before initiating any work.

(g) Each permittee shall submit a written summary report of the workover to the department for review, within 90 days of completion. The report shall include the following information:

(1) A summary page with all pertinent well data on a form provided by the department;

(2) a description of the objectives and goals for the workover;

(3) a written description of the work that was completed during the workover;

(4) preworkover and postworkover schematics;

(5) a written summary and conclusions regarding the workover;

(6) a copy of each associated log and each mechanical integrity test performed during the workover; and

(7) a written interpretation of each log and results for each mechanical integrity test.

(Authorized by and implementing K.S.A. 2002 2022 Supp. 55-1,117; effective, T-28-4-1-03, April 1, 2003; effective Aug. 8, 2003; amended P-_____.)

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28-45-21. ~~Underground hydrocarbon storage fees~~ Plugged and abandoned storage well. (a) ~~Effective on and after January 1, 2004, each permittee shall submit an annual permit fee of \$18,890 per facility and \$305 per unplugged storage well on or before April 1 of each year.~~

(b) ~~Each permittee shall submit a permit fee of \$305 for any unplugged storage well inadvertently omitted from the collection of permit fees for the year 2003.~~

(c) ~~Each applicant for a permit for a proposed new underground hydrocarbon storage well shall submit a fee of \$700 with the permit application.~~

(d) ~~Fees shall be made payable to the "Kansas department of health and environment—subsurface hydrocarbon storage fund."~~

(e) ~~The fees collected under the provisions of this regulation shall not be refunded.~~

(f) ~~If ownership of an underground hydrocarbon storage well or underground hydrocarbon storage facility changes during the term of a valid permit, no additional fee shall be required unless a change occurs that results in a new storage well or an expanded facility operation.~~ (a) Each permittee that wants to plug a storage well shall submit a plugging and abandonment plan to the department for the secretary's review and consideration for approval, at least six months before plugging. Plugging operations shall not begin until the secretary has issued approval.

(b) Each permittee shall comply with the provisions of the department's document titled "plugging and abandonment of a storage well," dated July 27, 2021, which is hereby adopted by reference. (Authorized by and implementing K.S.A. 2002 2022 Supp. 55-1,117; effective, T-28-4-1-03, April 1, 2003; effective Aug. 8, 2003; amended P-_____.)

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28-45-22. Permit required for a brine pond Storage facility fees. (a) Since the underground storage of hydrocarbons and the access to and transfer of hydrocarbons is dependent on the safe and secure operation and maintenance of associated brine ponds, no person shall construct, operate, or maintain any brine pond associated with an underground hydrocarbon storage facility without obtaining a brine pond permit from the secretary.

(b) Each permittee of a brine pond in existence before April 1, 2003 shall meet the requirements for liner construction if either of the following conditions exists:

(1) A potential threat to public health, safety, or the environment exists.

(2) An existing brine pond is dewatered due to the repair, replacement, or expansion of the brine pond.

(c) A variance may be granted by the secretary if both of the following conditions are met:

(1) The variance is protective of public health, safety, and the environment.

(2) The applicant or permittee agrees to perform any additional monitoring or brine pond improvements, or both, if required by the secretary.

(d) Each applicant or permittee seeking a variance shall submit a written request, including a justification for the variance and any supporting data, to the secretary for review and consideration for approval. (a) Each permittee shall submit an annual storage facility permit fee of \$18,890 for each facility, \$305 for each permitted storage well that is not plugged, and \$305 for each storage cavern being developed by solution mining.

(b) Each permittee shall submit a fee of \$700 for each new storage well with the request for a permit modification.

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(c) Each permittee shall make each fee payment payable to the “Kansas department of health and environment – subsurface hydrocarbon storage fund.” The following requirements shall apply:

(1) The fees collected under the provisions of this article of the department’s regulations shall not be refunded.

(2) If ownership of a storage facility changes during the term of a valid permit, no additional fee shall be required unless a change occurs that results in an expanded facility operation or a new storage well and cavern. (Authorized by and implementing K.S.A. ~~2002~~ 2022 Supp. 55-1,117; effective, T-28-4-1-03, April 1, 2003; effective Aug. 8, 2003; amended P-_____.)

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28-45-23. ~~Brine pond application and permit~~ Brine pond; permitting requirements. (a) ~~Each permittee of an existing brine pond and each applicant for a permit for a new brine pond shall submit an application for a permit to the secretary. Upon review of the application, either of the following shall be issued by the secretary:~~ Each permittee of an existing brine pond that is not authorized by a facility permit shall submit a facility permit application within one year of the effective date of this article of the department's regulations.

(1) ~~A final permit if the application is approved; or~~

(2) ~~a notice that the permit has been denied if the applicant has not complied with the requirements of this article of regulations. The notice shall include justification for the permit denial.~~

(b) ~~Each permit for a brine pond shall be authorized for a term not to exceed 10 years.~~ Each permittee that wants to construct a new brine pond shall submit a request for a permit modification to the secretary, at least six months before construction begins. Construction shall not begin until the secretary has issued a permit modification.

(c) ~~Each permittee of an existing brine pond shall submit an application, on a form furnished by the department, to the secretary within six months after April 1, 2003. Upon review by the secretary of each request, the permittee shall receive one of the following:~~

(1) A permit modification, if the request is approved; or

(2) a notice that the request has been denied, if the permittee has not met the requirements of this article of the department's regulations.

(d) ~~Each permittee shall submit a completed application to renew a permit not less than 90 days before the expiration date of the permit in effect.~~

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~~(e) Each applicant for a permit for a new brine pond shall submit a completed application to the secretary not less than 90 days before the construction of the new brine pond commences. Brine pond construction shall not begin until the secretary has issued the permit.~~

~~(f) (d) Each permit application for a new brine pond shall include a hydrogeological investigation conducted under the direction of a licensed geologist or a licensed professional engineer. Each permittee shall include a hydrogeological investigation report with the request for a permit modification to construct a new brine pond. The hydrogeological investigation shall be completed under the direction of a professional engineer or a professional geologist, and the permittee shall notify the department at least 30 days before beginning the hydrogeological investigation. Each hydrogeological investigation for a new brine pond shall meet the following requirements:~~

~~(g) Each hydrogeological investigation for a new brine pond shall include the following information:~~

~~(1) A site characterization for brine pond construction shall meet the following requirements:~~

~~(A) The bottom of the brine pond shall be determined by the lowest surface elevation of compacted or excavated soils used in creating the brine pond structure.~~

~~(B) All required excavations or boreholes shall be ~~drilled~~ made to a depth of at least 10 feet below the bottom of the brine pond.~~

~~(C) A separation distance of at least 10 feet shall be maintained between the brine pond bottom and the ~~water table~~ usable water formation.~~

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(D) The surface area shall be measured at the ~~interior top dike elevation~~ interior elevation of the top of the dike.

(2) The location and ~~elevation~~ depth of each borehole or excavation, based on surface area, shall be determined by the following criteria:

(A) ~~A minimum of~~ At least two boreholes or excavations for each five acres of proposed brine pond surface area; or

(B) ~~a minimum of~~ at least two boreholes or excavations if the brine pond surface area is less than five acres.

(3) The following information shall be submitted for each borehole or excavation:

(A) A log of soil types encountered in each borehole or excavation; and

(B) a groundwater level measurement at each borehole or excavation.

~~(h) Each permittee shall notify the department at least five days before conducting any field activities for the hydrogeological investigation.~~

(e) Each permittee shall submit a contingency plan with the request for a permit modification to construct a new brine pond. Each contingency plan shall include a procedure for brine containment issues associated with brine pond maintenance and dewatering due to brine pond liner failure, repair, replacement, or expansion. Each permittee shall maintain the contingency plan at the facility.

(f) Each permittee shall submit a flood response plan with the request for a permit modification to construct a new brine pond if the brine pond is located in a flood plain or flood-prone area. Each permittee shall maintain the flood response plan at the facility. (Authorized by

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and implementing K.S.A. ~~2002~~ 2022 Supp. 55-1,117; effective, T-28-4-1-03, April 1, 2003;

effective Aug. 8, 2003; amended P-_____.)

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Proposed

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Proposed

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~~28-45-28. Design, construction, and maintenance of brine ponds~~ Brine pond; construction requirements. (a) ~~Each applicant shall submit a design and construction plan for each new brine pond associated with an underground hydrocarbon storage facility to the secretary. The design and construction plan shall be approved if the secretary determines the plan is protective of public health, safety, and the environment. Each brine pond shall be designed by a licensed professional engineer. Each permittee that wants to construct and operate a new brine pond or reconstruct an existing brine pond shall submit a design and construction plan for each brine pond to the secretary with the request for a permit modification, at least six months before construction begins. Each brine pond shall be designed by a professional engineer. Construction shall not begin until the secretary has issued a permit modification.~~

(b) ~~Each applicant~~ permittee shall ensure that the impermeable synthetic membrane liner system for each brine pond is comprised of primary and secondary impermeable synthetic membrane liners with an intermediate leak detection system. The following requirements shall apply:

- (1) The primary and secondary liners shall be at least 30 mils in thickness.
- (2) The professional engineer designing the brine pond shall obtain a certification from the liner manufacturer providing the following information:
 - (A) Confirmation that the specified liner is compatible for use with ~~the~~ saturated brine;
 - (B) confirmation that the specified liner is ultraviolet-resistant; and
 - (C) ~~data for the manufacturer's estimated leakage, permeability, or transmissivity rate for specific liners, including the rate of movement of fluids through the synthetic membrane liner due to the properties and thickness of the liner material, expressed in units of volume per area per~~

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time; the manufacturer's estimated leakage, permeability, or transmissivity rate of the specified liner expressed in units of volume per area per unit of time (gallons per square feet per day) for an installed liner. The leakage, permeability, or transmissivity rate shall reflect the expected rate of movement of fluids through an impermeable synthetic membrane liner when considering the properties of the liner material, liner thickness, normally expected manufacturing defects in the liner material, and normal expected defects associated with the seaming and installation process.

~~(D) any normally expected manufacturing defects in the liner material; and~~

~~(E) any normally expected defects associated with the seaming and installation process.~~

~~(c) Each permittee of an existing brine pond and each applicant for a permit for a new brine pond shall submit a contingency plan to the secretary that outlines the procedures for brine containment issues associated with brine pond maintenance and dewatering due to liner failure, repair, replacement, or expansion of the brine pond. The contingency plan shall be approved if the secretary determines that the plan is protective of public health, safety, and the environment.~~

~~(d) Each permittee of an existing brine pond and each applicant for a permit for a new brine pond shall submit a flood response plan if the brine pond is located in a floodplain or a flood-prone area.~~

~~(e) Each permittee shall immediately cease operations or shall comply with instructions from the secretary if the secretary determines that an imminent threat to public health, safety, or the environment exists due to any unsafe operating condition. The permittee may resume operations if the secretary determines that the brine pond operations no longer pose a risk to public health, safety, or the environment.~~

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(f) (c) Each permittee shall ensure that the primary and secondary impermeable synthetic membrane liner for each brine pond are separated to provide a conduit for the movement of any fluid between the liners to the leak detection monitoring location for detection and removal.

(d) Each permittee shall ensure that each brine pond is constructed with an impermeable synthetic membrane liner system with a maximum liner leakage rate that is less than the more stringent of either of the following:

(1) A maximum monitored or calculated seepage rate of 1/64 inch per day; or

(2) the liner manufacturer's criteria for the material and installation of the impermeable synthetic membrane liner system expressed in units of volume per area per unit of time (gallons per square feet per day).

(g) (e) Each permittee shall ensure that all materials between the primary and secondary liners are capable of transmitting a ~~minimum of~~ at least 1/64 inch per acre per day of flow with a head of no more than two feet placed on the secondary liner. Acceptable materials shall include the following:

(1) Clean sand;

(2) pea gravel;

(3) geotextile fabric; geosynthetic product; and

(4) ~~geonet type material;~~ and (5) (4) any alternatives recommended by the liner

manufacturer, if the secretary determines that the alternatives are substantially equivalent to the materials listed in this subsection.

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~~(h)~~ (f) Each permittee shall ensure that the leak detection system design for each brine pond limits the maximum travel time required for fluid penetrating the liner to reach the leak detection monitoring location to 24 hours or less.

~~(i)~~ (g) Each permittee of a brine pond constructed or reconstructed after the effective date of this article of the department's regulations shall ensure that each brine pond bottom has a slope adequate for the proper operation of the leak detection system with ~~not less than 0.5~~ at least a 1.0 percent for the slope for the collection pipes and ~~1.0~~ 2.5 percent for all other slopes.

(h) Each permittee of a brine pond constructed or reconstructed before the effective date of this article of the department's regulations shall ensure that each brine pond bottom has a slope adequate for the operation of the leak detection system with at least a 0.5 percent slope for the collection pipes and 1.0 percent for all other slopes, as specified in this regulation.

~~(i)~~ (i) Each permittee shall ensure that the dewatering system design for each brine pond is capable of the following:

(1) Monitoring the volume of fluid removed from the intermediate space between the primary and secondary liners; and

(2) pumping the volume of fluid generated equal to 10 times the maximum allowable liner leakage rate.

~~(k)~~ (j) Each permittee shall ensure that the compaction of all brine pond embankments and of the upper six inches of the interior lagoon bottom below the secondary liner meets all of the following criteria requirements:

(1) The ~~maximum~~ standard proctor density shall be a ~~minimum of~~ at least 95 percent at

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optimum moisture to optimum moisture plus three percent.

(2) The ~~maximum~~ thickness of each layer of the compacted material shall ~~not exceed six inches~~ be six inches or less.

(3) The moisture content range of the compacted soils shall be optimum moisture to optimum moisture plus three percent.

(4) The ~~maximum~~ size of dirt clods in the compacted soil shall be ~~less than one inch~~ one inch or less in diameter.

(k) Each permittee shall ensure that the following requirements for the installation of the liners at each brine pond are met:

(1) The primary and secondary liners shall be anchored at the top of the brine pond dike in accordance with the liner manufacturer's instructions.

(2) Installation shall be performed in accordance with the liner manufacturer's instructions.

(3)(A) Installation shall be performed by a contractor experienced in the installation of impermeable synthetic membrane liners.

(4) (B) On-site supervision of the liner installation shall be provided by an individual that who has experience in liner installation practices.

(m) ~~Each permittee shall ensure that the volume of fluid monitored from the intermediate leak detection system at the brine pond is based on a rate of 10 percent of leak return system capacity and does not exceed 1,000 gallons per day per acre of pond area.~~

(n) (l) Each permittee shall submit, to the secretary, a seam testing method to verify the

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adequacy of the seaming process for the liners at each brine pond. The following requirements shall apply:

- (1) The testing method shall include the following:
 - (A) The methods for destructive and nondestructive seam testing;
 - (B) the protocol describing the number of tests per lineal foot of field seam;
 - (C) the size of the destructive test specimen required; and
 - (D) other pertinent quality control provisions recommended by the liner manufacturer.

(2) All field seams shall be subjected to nondestructive testing.

(e) (m) Each permittee shall install a gas vapor control system to ignite or capture hydrocarbon vapors at each brine pond ~~within five years after April 1, 2003, unless a variance is granted by the secretary.~~ The gas vapor control system shall consist of one of the following:

- (1) A hydrocarbon liquid knockout vessel and degasifier; or
- (2) an alternative method if the secretary determines that the alternative method is substantially equivalent to the hydrocarbon liquid knockout vessel and degasifier.

(n) Each permittee shall submit a final report for each new or reconstructed brine pond within 90 days of construction completion. The report shall include the following:

(1) Certification signed by a professional engineer, and if requested, any supporting documentation, confirming that the brine pond and impermeable synthetic membrane liner system were constructed in accordance with the plans and specifications approved by the secretary;

(2) the results of the postconstruction testing of the impermeable synthetic membrane

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liner system;

(3) certification signed by a professional engineer confirming that the impermeable synthetic membrane liner system complies with the maximum impermeable synthetic membrane liner leakage rate; and

(3) a final as-built of the new or reconstructed brine pond.

(o) Each permittee shall immediately cease operations or shall comply with instructions from the secretary if the secretary determines that an imminent threat to public health, safety, or the environment due to any unsafe operating condition exists. The permittee may resume operations if the secretary determines that the brine pond operations no longer pose a risk to public health, safety, or the environment. (Authorized by and implementing K.S.A. ~~2002~~ 2022

Supp. 55-1,117; effective, T-28-4-1-03, April 1, 2003; effective Aug. 8, 2003; amended P-_____.)

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Proposed

28-45-29. (Authorized by and implementing K.S.A. 2002 Supp. 55-1,117; effective, T-28-4-1-03, April 1, 2003; effective Aug. 8, 2003; revoked P-_____.)

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28-45-30. ~~Brine pond closure requirements~~ Brine pond decommissioning and abandonment. (a)

~~Each brine pond permittee shall submit a closure plan, including monitoring and testing requirements, to the secretary for review and consideration for approval at least 60 days before the closure of a brine pond. The closure plan shall be approved if the secretary determines that the closure plan is protective of public health, safety, and the environment. Each permittee that wants to decommission and abandon a brine pond shall submit a closure plan to the department at least six months before decommissioning. Decommissioning shall not begin until the secretary has issued approval.~~

~~(b) The permittee shall not commence closure activities without the secretary's approval.~~

Each permittee shall include at a minimum the following information in the closure plan:

~~(c) Each permittee shall include the following information in the brine pond closure plan:~~

~~(1) The procedure for deactivating the various brine lines employed at associated with the facility;~~

~~(2) the procedures for conducting vertical sampling of the soils beneath the brine pond liner, including the bottom of the brine pond and the dikes;~~

~~(3) the procedure to test the groundwater beneath and around the brine pond;~~

~~(2) (4) the procedures for the remediation, removal, or disposal of brine, accumulated sludge in the brine pond, contaminated soils, and contaminated groundwater;~~

~~(3) (5) a description regarding the proposed maintenance, deactivation, conversion, or demolition of the brine pond structure, including disposal of each brine pond liner; and~~

~~(4) (6) the procedures addressing the plugging of any water wells or groundwater monitoring wells water well or monitoring well associated with the brine pond.~~

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(c) Each permittee shall submit a final closure report within 90 days of decommissioning completion. (Authorized by and implementing K.S.A. ~~2002~~ 2022 Supp. 55-1,117; effective, T-28-4-1-03, April 1, 2003; effective Aug. 8, 2003; amended P-_____.)

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28-45-31. Variances. (a) Any permittee may request a variance from any specific requirement of this article of the department's regulations according to the following:

(1) Each permittee that wants a variance shall submit a written request, including justification for the request and any supporting data, to the department.

(2) Each permittee that wants a variance to operate a storage well and cavern beyond any physical cavern limitation, as specified in K.A.R. 28-45-6a, shall submit a geomechanical study evaluating the mechanical integrity of the storage well and cavern and each surrounding storage well and cavern. The evaluation shall be based on a value greater than the requested variance limit and at least a 10-year operation and maintenance projection.

(3) Each permittee shall complete any additional testing, monitoring, geomechanical studies, or storage well improvements if requested by the department.

(b) Upon the secretary's determination whether the variance request is protective of public health, safety, and the environment, the permittee shall receive one of the following:

(1) A variance from one or more requirements of this article of the department's regulations; or

(2) a notice that the request for a variance has been denied. (Authorized by and implementing K.S.A. 2022 Supp. 55-1,117; effective P-_____.)

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28-45b-1. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-2. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-3. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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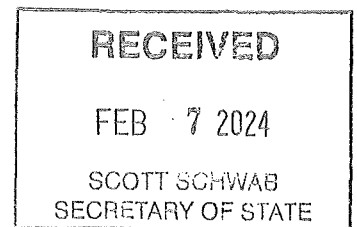
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28-45b-4. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)



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28-45b-5. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-6. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-7. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-8. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-9. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-10. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-11. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-12. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-13. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-14. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-15. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-16. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-17. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-18. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-19. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-20. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-21. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-22. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-23. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-24. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-25. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-26. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-27. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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28-45b-28. (Authorized by K.S.A. 55-1,117 and K.S.A. 2008 Supp. 55-1,117a;
implementing K.S.A. 55-1,117; effective July 6, 2009; revoked P-_____.)

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Kansas Administrative Regulations Economic Impact Statement (EIS)

Kansas Department of Health and Environment
Agency

Susan Vogel
Agency Contact

785-296-1291
Contact Phone Number

Amended: 28-45-2a, 28-45-3a, 28-45-4a, 28-45-5a, 28-45-6a, 28-45-7a, 28-45-8a, 28-45-9a, 28-45-10a, 28-45-11a, 28-45-12, 28-45-13, 28-45-14, 28-45-15, 28-45-16, 28-45-17, 28-45-18, 28-45-19, 28-45-20, 28-45-21, 28-45-22, 28-45-23, 28-45-28, 28-45-30

Revoked: 28-45-24, 28-45-25, 28-45-26, 28-45-27, 28-45-29

New: 28-45-31
K.A.R. Number(s)

Permanent Temporary

Is/Are the proposed rule(s) and regulation(s) mandated by the federal government as a requirement for participating in or implementing a federally subsidized or assisted program?

Yes If yes, continue to fill out the remaining form to be included with the regulation packet submitted in the review process to the Department of Administration and the Attorney General. Budget approval is not required; however, the Division of the Budget will require submission of a copy of the EIS at the end of the review process.

No **If no, do the total annual implementation and compliance costs for the proposed rule(s) and regulation(s), calculated from the effective date of the rule(s) and regulation(s), exceed \$1.0 million over any two-year period through June 30, 2024, or exceed \$3.0 million over any two-year period on or after July 1, 2024 (as calculated in Section III, F)?**

Yes If yes, continue to fill out the remaining form to be included with the regulation packet submitted in the review process to the Department of Administration, the Attorney General, AND the Division of the Budget. The regulation(s) and the EIS will require Budget approval.

No **If no, continue to fill out the remaining form to be included with the regulation packet submitted in the review process to the Department of Administration and the Attorney General. Budget approval is not required; however, the Division of the Budget will require submission of a copy of the EIS at the end of the review process.**

DOB APPROVAL STAMP (if Required)

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Section I

Brief description of the proposed rule(s) and regulation(s).

- Article 45 regulates Underground Hydrocarbon Storage Wells and Associated Brine Ponds and Article 45b regulates Underground Crude Oil Storage Wells and Associated Brine Ponds (currently, there are no underground crude oil storage wells in Kansas). Article 45 became effective in 2003, however, over the last 19 years, vast technological advancements have improved the understanding and safety of the underground hydrocarbon storage (UHS) industry. The amendments proposed will align the regulations with current technology, eliminate redundancy and outdated language that is no longer used, and will allow the UHS industry flexibility for future technological advancement. The amendments will also combine similar regulations for hydrocarbon and crude oil storage under Article 45 and revoke the regulations under Article 45b to reduce redundancy.

Appendix C provides a description of the proposed changes to Article 45 for each regulation.

Section II

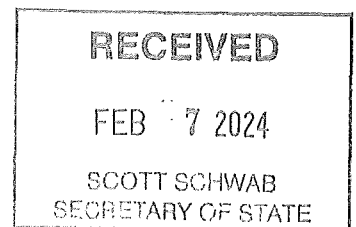
Statement by the agency if the rule(s) and regulation(s) exceed the requirements of applicable federal law, and a statement if the approach chosen to address the policy issue(s) is different from that utilized by agencies of contiguous states or the federal government. (If the approach is different or exceeds federal law, then include a statement of why the proposed Kansas rule and regulation is different.)

The State of Kansas obtained Primacy from the U.S. Environmental Protection Agency (U.S. EPA) to regulate the Class II Underground Injection Control (UIC) program in 1984. Both the current and regulations and proposed amendments meet the U.S. EPA requirements allowing Kansas to continue to regulate this program. The proposed amendments allow more flexibility for the regulated entities while remaining within the confines of federal regulations.

Colorado, Nebraska, and Missouri do not have salt caverns for liquid or liquefied hydrocarbon storage and therefore do not have any associated regulations.

The Oklahoma Corporation Commission (OCC) has Primacy from the U.S. EPA for the entire Class II UIC program, but the OCC regulations do not differentiate operations for cavern storage from other Class II disposal wells. Kansas regulations differ due to a long-standing agreement between the Kansas Corporation Commission (KCC), KDHE, and the U.S. EPA to delegate regulatory oversight for UIC Class II storage to KDHE. Additionally, the wide variety of products stored in Kansas salt caverns are exempt from federal regulations.

DOB APPROVAL STAMP (If Required)



Section III

Agency analysis specifically addressing the following:

A. The extent to which the rule(s) and regulation(s) will enhance or restrict business activities and growth;

The proposed amendments to Article 45 will enhance business activities and growth for the UHS industry by allowing flexibility with the choice of tools and methods that may be used to meet regulatory compliance. Many of the tools and methods developed within the last 19 years are more cost effective for the industry and potentially safer by reducing risk to existing infrastructure (e.g. other wells, caverns, pipelines, powerlines, and highways).

The proposed amendments that allow the use of a geomechanical study will enhance business activities and growth by allowing the industry to utilize core analysis, numerical modeling, and engineering calculations to provide evidence of a minimal risk to public health, safety, and the environment when operating a cavern beyond current regulatory dimensions. This allows permit holders to extend the operational life of many salt caverns, therefore, reducing costs and resources associated with drilling and solution mining a new storage well and cavern.

The current regulations for hydrocarbon storage and crude oil storage are essentially the same; the proposed amendments to combine the regulations for hydrocarbons storage and crude oil storage into one article will reduce confusion for the industry and KDHE by reducing the amount of paperwork and costs associated with hiring UHS consultants to create and submit required paperwork.

B. The economic effect, including a detailed quantification of implementation and compliance costs, on the specific businesses, sectors, public utility ratepayers, individuals, and local governments that would be affected by the proposed rule(s) and regulation(s) and on the state economy as a whole;

There would be no direct economic effect to sectors, public utility ratepayers, or individuals. Existing UHS operators will have assurance of their ability to continue operations as caverns have the potential for increased longevity under the proposed amendments. These industries bring many economic benefits to central Kansas.

By implementing the proposed amendments, the UHS industry will have more flexibility with the choice of tools and methods that may be used to meet regulatory compliance, including new technology that is more cost effective and potentially safer by reducing risk to existing infrastructure. For example, Table 1, shows the average cost to complete a traditional workover to meet regulatory compliance based upon current regulations compared to the average cost to complete a workover using new through-tubing tools to meet regulatory compliance. Detailed quantification can be found in Appendix A.

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Table 1	Average cost of traditional workover	Average cost of a through-tubing workover
UHS Company	\$169,000	\$59,000

Geomechanical studies involve testing and analysis of local rock cores in a laboratory and using engineering calculations and numerical modeling to provide evidence of a minimal risk to public health, safety, and the environment when operating a cavern beyond current regulatory dimensions. By allowing the permittee the option of submitting a geomechanical study, operational life for existing salt caverns may be extended, therefore, reducing costs and resources associated with drilling and solution mining new caverns (Table 2).

Table 2	
Cost of drilling and solution mining a new salt cavern includes: <ul style="list-style-type: none"> • well and wellhead safety components • new brine and product lines • electrical lines 	~ \$4M/well & cavern
Cost of completing data collection for a geomechanical study includes: <ul style="list-style-type: none"> • coring • shipping 	~ \$1M/core
Cost of completing geomechanical study includes: <ul style="list-style-type: none"> • core testing • laboratory analysis • numerical modeling • final report and presentation 	~ \$25K/well & cavern

Permits do not expire under current regulations; the proposed amendments would require existing permits to be renewed every 10 years to maintain consistency between programs regulated by the Division of Environment. With the proposed amendments, there will be no fee for renewing a facility permit, however, there is an estimated \$10,000–\$30,000 cost per facility associated with the permittee using a consultant to prepare a permit renewal application.

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C. Businesses that would be directly affected by the proposed rule(s) and regulation(s);

UHS industry operators, contractors, and consultants.

D. Benefits of the proposed rule(s) and regulation(s) compared to the costs;

References to specific tools and methods have been removed from the proposed regulations to allow KDHE to adapt to future technological advancements and provide the UHS industry flexibility in the methods used to maintain regulatory compliance. By allowing the UHS industry the flexibility of using new technology, a salt cavern’s life may be operationally extended which reduces the cost and resources used for drilling and solution mining a new cavern. New technology may also reduce the risk to existing infrastructure (e.g. other wells, caverns, pipelines, powerlines, and highways).

E. Measures taken by the agency to minimize the cost and impact of the proposed rule(s) and regulation(s) on business and economic development within the State of Kansas, local government, and individuals;

KDHE sent proposed amendments by email to the UHS industry to be reviewed and has met with the UHS industry several times since 2009 to discuss any concerns with the proposed amendments (Appendix B). The goal of the proposed amendments is to reduce unnecessary costs on the industry by allowing for the option to use alternative tools and methods to maintain regulatory compliance, extend the operational life of existing caverns, and potentially reduce the risk to existing infrastructure.

The proposed amendments to combine Article 45 with Article 45b will reduce redundancy and confusion between the industry and KDHE, reduce the amount of required paperwork, and allow the State of Kansas to regulate hydrocarbon storage wells and caverns similarly to Texas and Louisiana, therefore potentially increasing business and economic development within the State of Kansas by implementing a more efficient and organized regulatory program.

F. An estimate of the total annual implementation and compliance costs that are reasonably expected to be incurred by or passed along to businesses, local governments, or members of the public. Note: Do not account for any actual or estimated cost savings that may be realized.

Costs to Affected Businesses – \$30,000

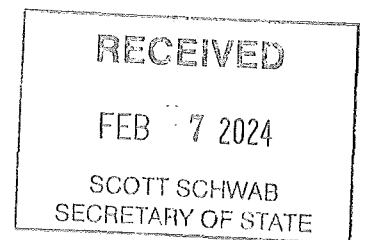
Costs to Local Governmental Units – \$0

Costs to Members of the Public – \$0

Total Annual Costs – \$30,000

(sum of above amounts)

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Give a detailed statement of the data and methodology used in estimating the above cost estimate.

Under current regulations the total estimated cost for 10 UHS facilities to meet compliance is approximately \$12.975M/year. The proposed amendments would cut the total estimated cost for 10 UHS facilities to meet compliance to approximately \$6.239M/year.

The only added cost from the proposed amendments would be the cost of renewing a facility permit every 10 years and ranges from approximately \$10,000–\$30,000 (an estimated \$3,000/year for each facility). Since there are currently 10 facilities permitted, the total annual implementation and compliance costs from the proposed amendments would be a negligible \$30,000. For each permittee, the estimated average annual savings would far out way the cost to renew a facility permit.

KDHE contacted and solicited cost estimates from UHS industry consultants and UHS industry operators in 2018 and again in 2021 (Appendix B). The average number of required workovers and cost information for each company was used to calculate the annual savings (Appendix A).

- Yes
 - No
 - Not Applicable
- If the total implementation and compliance costs exceed \$1.0 million over any two-year period through June 30, 2024, or exceed \$3.0 million over any two-year period on or after July 1, 2024, and prior to the submission or resubmission of the proposed rule(s) and regulation(s), did the agency hold a public hearing to find that the estimated costs have been accurately determined and are necessary for achieving legislative intent? If applicable, document when the public hearing was held, those in attendance, and any pertinent information from the hearing.**

The total implementation and compliance costs of the proposed amendments do not exceed \$1.0 million over any two-year period through June 30, 2024 or exceed \$3.0 million over any two-year period on or after July 1, 2024.

Provide an estimate to any changes in aggregate state revenues and expenditures for the implementation of the proposed rule(s) and regulation(s), for both the current fiscal year and next fiscal year.

There will be no changes in aggregate state revenues and expenditures for the implementation of the proposed amendments.

Provide an estimate of any immediate or long-range economic impact of the proposed rule(s) and regulation(s) on any individual(s), small employers, and the general public. If no dollar estimate can be given for any individual(s), small employers, and the general public, give specific reasons why no estimate is possible.

Long-range economic impact of the proposed amendments will only positively affect individual(s), small employers, and the general public. The proposed amendments allow for the possibility of extending the operational life of existing salt caverns, which directly impacts the UHS industry (including many local contractors and consultants), which allows

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the UHS industry to continue to thrive, bringing job opportunities to central Kansas, economic benefit for the state, and critical energy storage hubs for the country. In addition, with an increased demand for alternative energy, salt cavern research has exploded in the last three years due to the potential for other types of storage in salt caverns including hydrogen, helium, and compressed air storage. The proposed amendments that specify the use of a geomechanical studies contribute data for this type of research in the future.

A specific dollar estimate cannot be given for individual(s), small employers, and the general public due to the volatility of the oil and gas industry, the amount of work varies each year, geomechanical studies are completed on an as-needed basis, and alternative energy storage options are still being conceptualized.

G. If the proposed rule(s) and regulation(s) increases or decreases revenues of cities, counties or school districts, or imposes functions or responsibilities on cities, counties or school districts that will increase expenditures or fiscal liability, describe how the state agency consulted with the League of Kansas Municipalities, Kansas Association of Counties, and/or the Kansas Association of School Boards.

The proposed amendments do not directly impact the revenues of cities, counties, or school districts or impose functions or responsibilities on cities, counties or school districts. However, when the notice of hearing for the regulations is published in the *Kansas Register*, standard agency procedure is followed and the three organizations are contacted electronically for comment with attached copies of the regulations, economic impact statement, environmental benefit statement, and published notice of hearing.

H. Describe how the agency consulted and solicited information from businesses, associations, local governments, state agencies, or institutions and members of the public that may be affected by the proposed rule(s) and regulation(s).

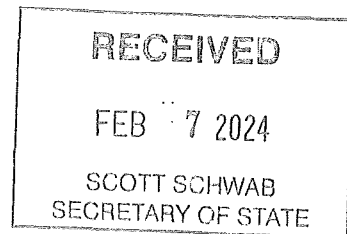
KDHE meets with UHS industry regularly to discuss accomplishments, program suggestions, questions, problems, and to allow both industry and KDHE to provide an update on what they've been working on or plan to work on. KDHE has met with industry several times to discuss proposed amendments to the UHS regulations since early 2009 (Appendix B).

Section IV

Does the Economic Impact Statement involve any environmental rule(s) and regulation(s)?

- Yes If yes, complete the remainder of Section IV.
- No If no, skip the remainder of Section IV.

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A. Describe the capital and annual costs of compliance with the proposed rule(s) and regulation(s), and the persons who would bear the costs.

Under current regulations the total estimated cost for 10 UHS facilities to meet compliance is approximately \$12.975M/year. The proposed amendments would cut the total estimated cost for 10 UHS facilities to meet compliance to approximately \$6.239M/year.

The only added cost from the proposed amendments would be the cost of renewing a facility permit every 10 years and ranges from approximately \$10,000–\$30,000 (an estimated \$3,000/year for each facility). Since there are currently 10 facilities permitted, the total annual implementation and compliance costs from the proposed amendments would be a negligible \$30,000.

The UHS industry would bear the costs of the proposed amendments, however, for each permittee, the estimated average annual savings would far out way the cost to renew a facility permit.

B. Describe the initial and annual costs of implementing and enforcing the proposed rule(s) and regulation(s), including the estimated amount of paperwork, and the state agencies, other governmental agencies, or other persons who would bear the costs.

UHS permits do not expire under current regulations; the proposed amendments would require permits to be renewed every 10 years to maintain consistency between programs regulated by the Division of Environment.

The initial cost from the proposed amendments would be the cost of a facility permit application once the regulations become effective and then renewal of a facility permit every 10 years. The cost to prepare a facility permit ranges from approximately \$10,000–\$30,000 (an estimated \$3,000/year for each facility). Since there are currently 10 facilities permitted, the total annual implementation and compliance costs from the proposed amendments would be a negligible \$30,000.

For each permittee there would be an estimated 50 pages of paperwork to update. Permit materials that were submitted to KDHE previously are outdated; requiring a permit renewal would allow KDHE to receive updated facility maps, emergency response plans, and operations and maintenance plans that haven't been updated since 2003. KDHE would need to review facility permit application materials and create and issue facility permits. After a facility permit is issued, renewal applications would only require updated permit materials if applicable (e.g. if new construction occurs).

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C. Describe the costs that would likely accrue if the proposed rule(s) and regulation(s) are not adopted, as well as the persons who would bear the costs and would be affected by the failure to adopt the rule(s) and regulation(s).

If the proposed rules and regulations were not adopted, the UHS industry would bear the costs and would be affected by the failure to adopt the rules and regulations. The estimated industry wide cost to maintain regulatory compliance associated with workovers and permit preparation under the current regulations for a UHS facility is \$12.975M/year.

If the proposed regulations are adopted, the estimated industry wide cost to maintain regulatory compliance associated with workovers and permit preparation would be \$6.239M/year (a potential cost savings of \$6.736M)

D. Provide a detailed statement of the data and methodology used in estimating the costs used.

KDHE meets with UHS industry regularly to discuss accomplishments, program suggestions, questions, problems, and to allow both industry and KDHE to provide an update on what they've been working on or plan to work on. KDHE has met with industry several times to discuss proposed amendments to the UHS regulations since early 2009 (Appendix B).

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Appendix A – Cost Estimate Analysis

* Workover costs vary based on depth, operator, and cavern design

WORKOVER COST* under CURRENT REGULATIONS

Facility #	# of Traditional Workovers Per Year	Cost Per Traditional Workover	Total Facility Cost Per Year
1	4	\$250,000	\$1,000,000
2	16	\$65,000	\$1,040,000
3	22	\$220,000	\$4,840,000
4	10	\$130,000	\$1,300,000
5	3	\$125,000	\$375,000
6	0		
7	0		
8	16	\$125,000	\$2,000,000
9	8	\$220,000	\$1,760,000
10	3	\$220,000	\$660,000

WORKOVER COST* under PROPOSED AMENDMENTS Using Through Tubing (TT) Technology when applicable

# of TT Eligible	Cost per TT	Total Facility TT Cost Per Year
3	\$18,000	\$54,000
14	\$65,000	\$910,000
19	\$65,000	\$1,235,000
9	\$65,000	\$585,000
2	\$65,000	\$130,000
14	\$65,000	\$910,000
8	\$65,000	\$520,000
2	\$65,000	\$130,000

WORKOVER COST* under PROPOSED AMENDMENTS when TT is not applicable

# of Traditional Workovers still required	Cost Per Traditional Workover	Total Facility Traditional Workover Cost Per Year
1	\$250,000	\$250,000
2	\$65,000	\$130,000
3	\$220,000	\$660,000
1	\$130,000	\$130,000
1	\$125,000	\$125,000
0		\$0
0		\$0
2	\$125,000	\$250,000
0	\$220,000	\$0
1	\$220,000	\$220,000

INDUSTRY TOTAL	82		\$12,975,000
AVERAGE cost of Workover		\$169,375	

71		\$4,474,000
	\$59,125	

11		\$1,765,000
	\$169,375	

\$12,975,000 Total Industry Cost under current regulations
 \$6,239,000 Total Industry Cost allowing TT when applicable (utilizing proposed amendments)
\$6,736,000 Annual Savings for the industry
\$842,000 Annual Savings per Facility

 \$169,375 Average Traditional Workover Cost
 \$59,125 Average Through Tubing (TT) Workover Cost
\$110,250 Annual Savings per Workover using TT

 \$1,621,875 Average Traditional Workover Cost per Facility
 \$779,875.00 Average Workover Cost per Facility Allowing TT

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Appendix B – KDHE & UHS Industry Meetings		
Date	Location	Reason
November 19, 2009	McPherson, KS	UHS industry/KDHE meeting to discuss proposed amendments to regulations
November 7, 2013	McPherson, KS	UHS industry/KDHE meeting to discuss proposed amendments to regulations
March 12, 2015	n/a	Sent proposed amendments to UHS industry by email to review and provide comments
May 14, 2015	McPherson, KS	UHS industry/KDHE meeting to discuss proposed amendments to regulations
May 17, 2016	McPherson, KS	UHS industry/KDHE meeting to discuss proposed amendments to regulations
June 14, 2016	Topeka, KS	UHS industry/KDHE meeting to discuss proposed amendments to regulations
August 16, 2016	McPherson, KS	UHS industry/KDHE meeting to discuss proposed amendments to regulations
October 20, 2016	McPherson, KS	UHS industry/KDHE meeting to discuss proposed amendments to regulations
October 4, 2017	Lyons, KS	UHS industry/KDHE meeting for round table open discussion
December 18, 2017	n/a	Sent proposed amendments to UHS industry by email to review and provide comments
March 23, 2018	n/a	Sent proposed amendments to UHS industry by email to review and provide comments
October 9, 2018	Wichita, KS	UHS industry/KDHE meeting to discuss proposed amendments to regulations
February 5, 2019	Topeka, KS	UHS industry/KDHE meeting to discuss proposed amendments to regulations
September 25, 2019	n/a	Sent proposed amendments UHS industry by email to review and provide comments
October 8, 2019	Wichita, KS	UHS industry/KDHE meeting to discuss proposed amendments to regulations
November 13, 2019	McPherson, KS	UHS industry/KDHE meeting to discuss proposed amendments to regulations
January 20, 2021	n/a	Sent proposed amendments to UHS industry by email to review and provide comments
April 26, 2021, May 12, 2021	n/a	Asked industry for cost estimate to meet regulatory compliance from UHS consultants
June 23, 2021	Wichita, KS	UHS industry/KDHE meeting to discuss final proposed amendments to regulations

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Appendix C – Description of Changes to Article 45	
Regulation	Change
<p>K.A.R. 28-45-2a. Definitions. <i>(amended)</i></p>	<ul style="list-style-type: none"> • Clarified existing definitions, added definitions as suggested by industry, and removed definitions that are no longer used • Revised the definition of “product” to include both liquid hydrocarbons (crude oil, unleaded gasoline, etc.) and liquefied hydrocarbons (butane, propane, etc.) so that KDHE can revoke K.A.R. 28-45b-1 through K.A.R. 28-45b-28 (Underground Crude Oil Storage Wells and Associated Brine Ponds) therefore eliminating a redundant and superfluous set of regulations <ul style="list-style-type: none"> ○ COVID-19 prompted industry interest in the storage of crude oil. Crude oil storage is regulated by Article 45b which is nearly identical to Article 45 ○ Changing the definition of “product” will allow Kansas to regulate liquid and liquefied hydrocarbon storage in salt caverns similarly to Louisiana and Texas while still maintaining the required level of testing and monitoring that ensures protection of public health, safety, and the environment
<p>K.A.R. 28-45-3a. Permit required. <i>(amended)</i></p>	<ul style="list-style-type: none"> • Combined the requirement to obtain a permit to construct and operate a storage facility, storage well and cavern, or a brine pond into one regulation • Removed temporary and final permitting language in subsections (a)(1) through (3) that no longer applies • Transferred variance request language to K.A.R. 28-45-31 • Revised passive voice to active voice
<p>K.A.R. 28-45-4a. Well conversions and reentry. <i>(amended)</i></p>	<ul style="list-style-type: none"> • Created flexibility for industry to request multiple types of cavern conversions • Clarified requirements for existing storage well conversion types • Combined two procedure documents into one, increasing convenience for industry and KDHE to revise and reference
<p>K.A.R. 28-45-5a. Storage facility permit; renewal. <i>(amended)</i></p>	<ul style="list-style-type: none"> • Removed temporary and final permitting language that no longer applies • Revised wording for a facility permit to authorize each storage well and each brine pond within a facility <ul style="list-style-type: none"> ○ A combined storage well and brine pond permit allows KDHE improved oversight with 10 renewable facility permits • Revised wording for a 10-year facility permit term and renewal process <ul style="list-style-type: none"> ○ A 10-year permit expiration allows consistency between programs regulated by the Division of Environment and provides an opportunity for permittees to update any previously submitted application materials including facility maps, operations and maintenance plans, emergency response plans, and safety and security measures due to any new construction completed within the 10-year period

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	<ul style="list-style-type: none"> • Removed requirement for permittee to have a core available upon request • Revised self-regulatory language
<p>K.A.R. 28-45-6a. New storage well and cavern. <i>(amended)</i></p>	<ul style="list-style-type: none"> • Removed temporary and final permitting language that no longer applies • Added language for the modification of a facility permit for the conversion of a permitted well or for the addition of a new storage well • Revised self-regulatory language • Transferred the requirements for a new storage well in subsections (e) and (f), to K.A.R. 28-45-10a • Removed language requiring the permittee to submit a 10-year compliance audit; this will be unnecessary with a 10-year permit renewal process • Removed specific language and procedure document on how to drill a storage well and how to collect and describe well cuttings • Transferred requirements for the collection of a core in subsection (i) to K.A.R. 28-45-5a • Removed redundant requirements for monitoring wells • Included guidance for solution mining of a storage cavern; language is consistent with requirements for Class III UIC solution mining wells and is accepted industry standard • Revised “prohibited” language to “shall not be allowed, unless authorized by the secretary in writing” which allows the industry flexibility to submit a geomechanical study from a third party <ul style="list-style-type: none"> ○ A geomechanical study (based upon core testing, laboratory analysis, and numerical modeling) can provide evidence that there is a minimal risk for continued operation of a storage well and cavern beyond current regulatory dimensions therefore extending operational life of existing storage caverns
<p>K.A.R. 28-45-7a. Public notice. <i>(amended)</i></p>	<ul style="list-style-type: none"> • Revised public notice requirements to incorporate facility permit and facility permit modifications • Revised self-regulatory language
<p>K.A.R. 28-45-8a. Transfer and modification of a facility permit. <i>(amended)</i></p>	<ul style="list-style-type: none"> • Removed temporary and final permitting language that no longer applies • Revised public notice requirements to incorporate facility permit wording
<p>K.A.R. 28-45-9a. Signatory authority. <i>(amended)</i></p>	<ul style="list-style-type: none"> • Revised signatory authority to include the facility, a storage well and cavern, and a brine pond which reduces redundant regulations • Added wording for the signatory to certify under penalty of law that the documents were evaluated and contain correct information to the best of their ability

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<p>K.A.R. 28-45-10a. Siting requirements. <i>(amended)</i></p>	<ul style="list-style-type: none"> • Revised to include siting requirements for both a new storage facility and a new storage well and cavern • Revised passive voice to active voice • Clarified text and removed redundancies • Text from K.A.R. 28-45-6a was added for consistency.
<p>K.A.R. 28-45-11a. Financial assurance. <i>(amended)</i></p>	<ul style="list-style-type: none"> • Added wording for financial assurance to include closure of the facility, the plugging of each storage well and cavern, and the decommissioning of each brine pond. • Updated the financial assurance procedure document and revised date in regulation.
<p>K.A.R. 28-45-12. Operations and maintenance plan. <i>(amended)</i></p>	<ul style="list-style-type: none"> • Updated defined terms • Revised the required information for drilling a new water well to submitting a water well record, which is already required by the water well program • Added wording for permittees to update the operations and maintenance plan when new construction is completed • Transferred solution mining requirements in subsections (d) and (e) to K.A.R. 28-45-6a • Transferred maximum allowable operating pressure, minimum operating pressure, notification requirements, and product change information in subsections (f) through (i) to K.A.R. 28-45-15
<p>K.A.R. 28-45-13. Emergency response plan and safety and security measures. <i>(amended)</i></p>	<ul style="list-style-type: none"> • Removed temporary and final permitting language that no longer applies • Added wording for permittees to update the emergency response plan when new construction is completed • Added requirement for hydrogen sulfide detectors (for crude storage wells)
<p>K.A.R. 28-45-14. Construction requirements for a storage well and cavern. <i>(amended)</i></p>	<ul style="list-style-type: none"> • Clarified defined terms • Revised passive voice to active voice
<p>K.A.R. 28-45-15. Storage well and cavern operation and notification requirements. <i>(amended)</i></p>	<ul style="list-style-type: none"> • Transferred requirements for monitoring wellhead pressures and providing pressure data in subsections (a)(1) through (4) to K.A.R. 28-45-16 • Struck subsections (b)(1) and (2); language no longer applies • Transferred requirements for logging and sonar surveys in subsections (c) through (f) to K.A.R. 28-45-16 • Struck subsection (g); alternative methods may be requested as a variance (K.A.R. 28-45-31) • Transferred requirements for subsidence monitoring in section (h) to K.A.R. 28-45-16

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<p>K.A.R. 28-45-16. Storage well and cavern monitoring. <i>(amended)</i></p>	<ul style="list-style-type: none"> • Transferred requirements for mechanical integrity testing in subsections (a) through (c) to K.A.R. 28-45-17 • Struck subsection (d) and (g); alternative methods may be requested as a variance K.A.R. 28-45-31 • Transferred requirements for a casing evaluation in subsection (g) through (j) to K.A.R. 28-45-17 • Transferred requirement for visual inspection of the wellhead in subsection (m) to K.A.R. 28-45-15 • Transferred requirement for inspection of faculty records in subsection (n) to K.A.R. 28-45-19
<p>K.A.R. 28-45-17. Mechanical integrity testing and casing evaluations. <i>(amended)</i></p>	<ul style="list-style-type: none"> • Transferred requirements for groundwater monitoring in subsections (a) through (j) to K.A.R. 28-45-18 • Clarified what type of mechanical integrity test is required and frequency
<p>K.A.R. 28-45-18. Groundwater monitoring <i>(amended)</i></p>	<ul style="list-style-type: none"> • Transferred requirements for record retention in subsection (a) through (c) to K.A.R. 28-45-19 • Transferred requirements for transferring facility records to new permittee in subsection (d) to K.A.R. 28-45-8a • Reduced groundwater monitoring frequency from quarterly to semiannual
<p>K.A.R. 28-45-19. Record requirements and retention. <i>(amended)</i></p>	<ul style="list-style-type: none"> • Transferred requirements for well workovers in subsections (a) through (d) to K.A.R. 28-45-20 • Added requirement for including additional information for solution mining wells in the annual report
<p>K.A.R. 28-45-20. Well workovers. <i>(amended)</i></p>	<ul style="list-style-type: none"> • Added the requirement for submitting a workover report within 90 days of work completion • Added the information required to be submitted in the workover report • Transferred requirements for well plugging in subsections (a) through (c) to K.A.R. 28-45-21
<p>K.A.R. 28-45-21. Storage well plugging and abandonment. <i>(amended)</i></p>	<ul style="list-style-type: none"> • Updated the plugging and abandonment procedure document and revised date in regulation • Transferred requirements for underground hydrocarbon storage fees in subsection (a) through (f) to K.A.R. 28-45-22
<p>K.A.R. 28-45-22. Storage facility fees. <i>(amended)</i></p>	<ul style="list-style-type: none"> • Transferred and revised requirement for obtaining a brine pond permit in subsection (a) to K.A.R. 28-45-5a and K.A.R. 28-45-23; a brine pond will be authorized by a facility permit • Removed language for obtaining a variance for brine ponds constructed before 2003; all brine ponds currently permitted meet construction requirements • Revised to incorporate facility permit and facility permit modification wording in storage facility fees •

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<p>K.A.R. 28-45-23. New brine pond. <i>(amended)</i></p>	<ul style="list-style-type: none"> • Revised brine pond permit application requirements to submitting a request to modify a facility permit to construct a new brine pond • Revised passive voice to active voice
<p>K.A.R. 28-45-24. Public notice for a brine pond. <i>(revoked)</i></p>	<ul style="list-style-type: none"> • The requirements of this regulation were combined with K.A.R. 28-45-7a; this regulation is revoked to reduce redundancy
<p>K.A.R. 28-45-25. Renewal, modification, and transfer of a brine pond permit. <i>(revoked)</i></p>	<ul style="list-style-type: none"> • The requirements of this regulation were combined with K.A.R. 28-45-5a; this regulation is revoked to reduce redundancy
<p>K.A.R. 28-45-26. Signatories for brine pond permit applications and reports. <i>(revoked)</i></p>	<ul style="list-style-type: none"> • The requirements of this regulation were combined with K.A.R. 28-45-9a; this regulation is revoked to reduce redundancy
<p>K.A.R. 28-45-27. Financial assurance for brine pond closure. <i>(revoked)</i></p>	<ul style="list-style-type: none"> • The requirements of this regulation were combined with K.A.R. 28-45-11a; this regulation is revoked to reduce redundancy
<p>K.A.R. 28-45-28. Construction requirements for a new or modified brine pond. <i>(amended)</i></p>	<ul style="list-style-type: none"> • Revised to incorporate facility permit and facility permit modification wording • Revised what information is required from the manufacturer • Revised maximum synthetic membrane liner leakage rage • Revised to include requirement to submit a final report upon brine pond construction completion • Transferred requirements for submitting a contingency plan and submitting a flood response plan were moved to K.A.R. 28-45-23
<p>K.A.R. 28-45-29. Groundwater monitoring for brine ponds. <i>(revoked)</i></p>	<ul style="list-style-type: none"> • The requirements in this regulation were combined with K.A.R. 28-45-18; this regulation is revoked to reduce redundancy
<p>K.A.R. 28-45-30. Brine pond decommissioning and abandonment. <i>(amended)</i></p>	<ul style="list-style-type: none"> • Revised the requirements for what to include in the brine pond decommissioning and abandonment plan • Added requirement for submitting a final brine pond decommissioning and abandonment report
<p>K.A.R. 28-45-31. Variances. <i>(new)</i></p>	<ul style="list-style-type: none"> • Transferred variance requirements from K.A.R. 28-45-3a, 5a, 16, and 22 to this regulation

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Kansas Administrative Regulations Economic Impact Statement (EIS)

Kansas Department of Health and Environment
Agency

Susan Vogel
Agency Contact

785-296-1291
Contact Phone Number

Revoked: 28-45b-1, 28-45b-2, 28-45b-3, 28-45b-4, 28-45b-5, 28-45b-6, 28-45b-7, 28-45b-8, 28-45b-9, 28-45b-10, 28-45b-11, 28-45b-12, 28-45b-13, 28-45b-14, 28-45b-15, 28-45b-16, 28-45b-17, 28-45b-18, 28-45b-19, 28-45b-20, 28-45b-21, 28-45b-22, 28-45b-23, 28-45b-24, 28-45b-25, 28-45b-26, 28-45b-27, 28-45b-28

Permanent Temporary

K.A.R. Number(s)

Is/Are the proposed rule(s) and regulation(s) mandated by the federal government as a requirement for participating in or implementing a federally subsidized or assisted program?

Yes If yes, continue to fill out the remaining form to be included with the regulation packet submitted in the review process to the Department of Administration and the Attorney General. Budget approval is not required; however, the Division of the Budget will require submission of a copy of the EIS at the end of the review process.

No **If no, do the total annual implementation and compliance costs for the proposed rule(s) and regulation(s), calculated from the effective date of the rule(s) and regulation(s), exceed \$1.0 million over any two-year period through June 30, 2024, or exceed \$3.0 million over any two-year period on or after July 1, 2024 (as calculated in Section III, F)?**

Yes If yes, continue to fill out the remaining form to be included with the regulation packet submitted in the review process to the Department of Administration, the Attorney General, AND the Division of the Budget. The regulation(s) and the EIS will require Budget approval.

No **If no, continue to fill out the remaining form to be included with the regulation packet submitted in the review process to the Department of Administration and the Attorney General. Budget approval is not required; however, the Division of the Budget will require submission of a copy of the EIS at the end of the review process.**

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Section I

Brief description of the proposed rule(s) and regulation(s).

Article 45b regulates Underground Crude Oil Storage Wells and Associated Brine Ponds. This article has been incorporated into the amendments to Article 45 which regulates Underground Hydrocarbon Storage Wells and Associated Brine Ponds. This change streamlines the regulations for similar operational needs within the industry and would render Article 45b redundant.

Section II

Statement by the agency if the rule(s) and regulation(s) exceed the requirements of applicable federal law, and a statement if the approach chosen to address the policy issue(s) is different from that utilized by agencies of contiguous states or the federal government. (If the approach is different or exceeds federal law, then include a statement of why the proposed Kansas rule and regulation is different.)

The U.S. Environmental Protection Agency (EPA) has established regulations for liquid hydrocarbon storage wells under the Class II Underground Injection Control (UIC) program. These regulations have been incorporated into state regulations (Article 45 and Article 45b); by combining both articles into one regulation set, Article 45b is no longer necessary. Colorado, Missouri and Nebraska do not have Underground Hydrocarbon Storage in salt formations and have no related regulations. The Oklahoma Corporation Commission (OCC) has Primacy from EPA for the entire Class II UIC program, but OCC regulations do not differentiate operations for cavern storage from other Class II UIC wells (e.g. enhanced oil recovery, salt-water disposal).

Section III

Agency analysis specifically addressing the following:

A. The extent to which the rule(s) and regulation(s) will enhance or restrict business activities and growth;

Article 45b is no longer relevant because the regulations have been incorporated into Article 45, it should only enhance business activities by streamlining similar operational processes and reducing confusion and paperwork for the industry and KDHE.

B. The economic effect, including a detailed quantification of implementation and compliance costs, on the specific businesses, sectors, public utility ratepayers, individuals, and local governments that would be affected by the proposed rule(s) and regulation(s) and on the state economy as a whole;

There would be no direct economic effect to specific businesses, sectors, public utility ratepayers, individuals, or local government because there are no implementation and compliance costs due to revoking Article 45b.

C. Businesses that would be directly affected by the proposed rule(s) and regulation(s);

None, as there are no permit applications or permit holders under Article 45b.

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D. Benefits of the proposed rule(s) and regulation(s) compared to the costs;

Streamline duplicative regulations and reduce confusion and paperwork with no associated costs.

E. Measures taken by the agency to minimize the cost and impact of the proposed rule(s) and regulation(s) on business and economic development within the State of Kansas, local government, and individuals;

None; there are no permit applications or permit holders under Article 45b.

F. An estimate of the total annual implementation and compliance costs that are reasonably expected to be incurred by or passed along to businesses, local governments, or members of the public. Note: Do not account for any actual or estimated cost savings that may be realized.

Costs to Affected Businesses – \$0

Costs to Local Governmental Units – \$0

Costs to Members of the Public – \$0

Total Annual Costs – \$0

(sum of above amounts)

Give a detailed statement of the data and methodology used in estimating the above cost estimate.

N/A; there are no permit applications or permit holders under Article 45b.

- Yes
 - No
 - Not Applicable
- If the total implementation and compliance costs exceed \$1.0 million over any two-year period through June 30, 2024, or exceed \$3.0 million over any two-year period on or after July 1, 2024, and prior to the submission or resubmission of the proposed rule(s) and regulation(s), did the agency hold a public hearing to find that the estimated costs have been accurately determined and are necessary for achieving legislative intent? If applicable, document when the public hearing was held, those in attendance, and any pertinent information from the hearing.**

There are no compliance costs associated with revoking Article 45b.

Provide an estimate to any changes in aggregate state revenues and expenditures for the implementation of the proposed rule(s) and regulation(s), for both the current fiscal year and next fiscal year.

There will be no changes in aggregate state revenues and expenditures for both the current fiscal year and next fiscal year with revoking Article 45b.

Provide an estimate of any immediate or long-range economic impact of the proposed rule(s) and regulation(s) on any individual(s), small employers, and the general public. If no dollar

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estimate can be given for any individual(s), small employers, and the general public, give specific reasons why no estimate is possible.

None; there are no permit applications or permit holders under Article 45b.

G. If the proposed rule(s) and regulation(s) increases or decreases revenues of cities, counties or school districts, or imposes functions or responsibilities on cities, counties or school districts that will increase expenditures or fiscal liability, describe how the state agency consulted with the League of Kansas Municipalities, Kansas Association of Counties, and/or the Kansas Association of School Boards.

None. There are no permit applications or permit holders under Article 45b. However, when the notice of hearing for the regulations is published in the *Kansas Register*, standard agency procedure is followed the three organizations are contacted electronically for comment with attached copies of the regulations, economic impact statement, environmental benefit statement, and published notice of hearing.

H. Describe how the agency consulted and solicited information from businesses, associations, local governments, state agencies, or institutions and members of the public that may be affected by the proposed rule(s) and regulation(s).

None; there have been no permit applications or permit holders under Article 45b since the regulations were promulgated in July 2009.

Section IV

Does the Economic Impact Statement involve any environmental rule(s) and regulation(s)?

- Yes If yes, complete the remainder of Section IV.
- No If no, skip the remainder of Section IV.

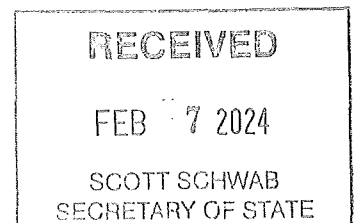
A. Describe the capital and annual costs of compliance with the proposed rule(s) and regulation(s), and the persons who would bear the costs.

None; there are no permit applications or permit holders under Article 45b.

B. Describe the initial and annual costs of implementing and enforcing the proposed rule(s) and regulation(s), including the estimated amount of paperwork, and the state agencies, other governmental agencies, or other persons who would bear the costs.

None; there are no permit applications or permit holders under Article 45b.

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C. Describe the costs that would likely accrue if the proposed rule(s) and regulation(s) are not adopted, as well as the persons who would bear the costs and would be affected by the failure to adopt the rule(s) and regulation(s).

None; there are no permit applications or permit holders under Article 45b.

D. Provide a detailed statement of the data and methodology used in estimating the costs used.

None; there are no permit applications or permit holders under Article 45b.

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Division of Environment

Bureau of Water

ENVIRONMENTAL BENEFIT STATEMENT

AND

ADDITIONAL ECONOMIC IMPACTS FOR ENVIRONMENTAL REGULATIONS

Pursuant to K.S.A. 55-1,117 to 55-1,119

**PROPOSED AMENDMENT OF K.A.R. 28-45:
UNDERGROUND HYDROCARBON STORAGE WELLS
AND ASSOCIATED BRINE PONDS**

March 2022

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I. Environmental Benefit Statement

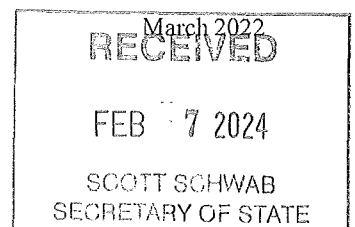
1) Need for proposed amendments and environmental benefit likely to accrue.

a) Need

Article 45 became effective in 2003 and regulates Underground Hydrocarbon Storage (UHS) Wells and Associated Brine Ponds. Over the last 18 years vast technological advancements have improved the understanding of safe operating practices in the UHS industry. The proposed amendments will allow permittees the flexibility of choice in the tools and methods used to meet regulatory compliance, including tools that are more cost effective and potentially safer due to the reduced risk to existing infrastructure. The proposed amendments also allow for the flexibility of any additional technological advancements. Additional amendments include laboratory analysis of local core and numerical modeling to potentially provide evidence that there is a minimal risk to public health, safety, and the environment when operating a cavern beyond existing regulatory dimensions, which allows the permittee to extend the operational life of salt caverns, and reduces costs and resources associated with drilling and solution mining a new storage well and cavern.

b) Environmental benefit

Technological advancements have improved the understanding of safe operating practices in the UHS industry. Many of the tools and methods developed over the last 18 years are more cost effective and potentially safer due to the reduced risk to existing infrastructure including other underground injection control (UIC) wells, storage wells and caverns, groundwater water wells, highways, powerlines, and railroads. In addition, by allowing the use of a geomechanical study which includes a core analysis and numerical modeling to potentially provide evidence that there is a minimal risk to public health, safety, and the environment when operating a cavern beyond existing regulatory dimensions. These studies potentially extend the operational life of existing storage caverns and reduces the cost and resources associated with drilling replacement storage assets.



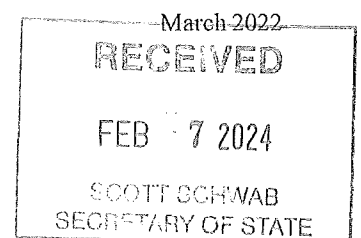
2) When applicable, a summary of the research indicating the level of risk to the public health or the environment being removed or controlled by the proposed rules and regulations or amendment.

Through-tubing tools are new technology requested to be used by the industry to meet regulatory compliance. A sensor is run through the tubing string of the well, which reduces the costs and risk to existing infrastructure associated with traditional compliance maintenance activities.

A geomechanical study is a laboratory analysis of a subsurface core taken at an approved location near an existing or proposed storage well and cavern. Laboratory analysis of the core provides data that is used for numerical modeling of the well and cavern. Caverns are evaluated on the potential for shear failure, development of tensile fractures, hydraulic integrity, and casing failure at normal operating pressures over an extended period of time. Numerical models of the cavern can potentially provide evidence that a storage well and cavern may be safely operated beyond dimensions stated in regulation.

KDHE has solicited technical advice from UHS industry consultants, professional engineers, and professional geologists who have many years of experience working with salt caverns across Kansas, Louisiana, and Texas. KDHE has met with engineers within the Louisiana Department of Natural Resources to discuss how our agencies regulate salt caverns and hydrocarbon storage and their use of through-tubing and geomechanical studies. These draft regulations have been reviewed by U.S. Environmental Protection Agency, Region 7 with no comments.

KDHE has also reviewed the Nova Scotia Department of Energy, Code of Practice Respecting the Underground Storage of Hydrocarbons, the Texas Administrative Code, Rule §3.95: Underground Storage of Liquid or Liquefied Hydrocarbons in Salt Formations, and the Louisiana Administrative Code, Statewide Order No. 29-M: Hydrocarbon Storage Wells in Salt Dome Cavities to compare with Kansas UHS regulations. Additionally, KDHE is a member of the Solution Mining Research Institute (SMRI), attends an SMRI conference once per year, and has access to the SMRI library which includes a plethora of research on industry tools, methods, testing, and safety.



3) If specific contaminants are to be controlled by the proposed regulations or amendment, a description indicating the level at which the contaminants are considered harmful according to current available research.

Specific contaminants are not addressed by the proposed amendments.

II. Additional Economic Impacts for Environmental Regulations

In addition to the Economic Impact Statement prepared for the Kansas Division of the Budget, for all environmental rules and regulations the following descriptions of costs are included:

1) Capital and annual costs of compliance with the proposed amendments and the persons who will bear those costs.

Addressed in the cost estimate attachment of the Economic Impact Statement (EIS) prepared for the Kansas Division of the Budget and under Section III of the EIS, Subsection B, C, and F.

2) Initial and annual costs of implementing and enforcing the proposed amendments, including the estimated amount of paperwork, and the state agencies, other governmental agencies or other persons or entities who will bear the costs.

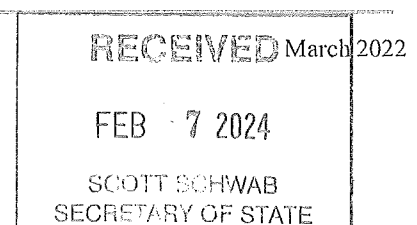
Addressed in the cost estimate attachment of the EIS prepared for the Kansas Division of the Budget and under Section III, Subsection F.

3) Costs which would likely accrue if the proposed regulations are not adopted, the persons who will bear the costs and those who will be affected by the failure to adopt the regulations.

Addressed in the Economic Impact Statement prepared for the Kansas Division of the Budget under Section III, Subsection I.

4) A detailed statement of the data and methodology used in estimating the costs used in the statement.

Addressed in the Economic Impact Statement prepared for the Kansas Division of the Budget under Section III, Subsection F.





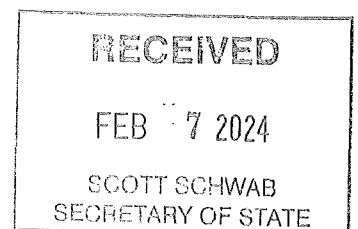
Division of Environment
Bureau of Water

ENVIRONMENTAL BENEFIT STATEMENT
AND
ADDITIONAL ECONOMIC IMPACTS FOR ENVIRONMENTAL REGULATIONS

Pursuant to K.S.A. 55-1,117 to 55-1,119

**PROPOSED REVOCATION OF K.A.R. 28-45b:
UNDERGROUND CRUDE OIL STORAGE WELLS
AND ASSOCIATED BRINE PONDS**

March 2022



I. Environmental Benefit Statement

1) Need for proposed amendments and environmental benefit likely to accrue.

a) Need

These regulations were very similar to those found in K.A.R. 28-45 Underground Hydrocarbon Storage Wells and Associated Brine Ponds. As regulations found in K.A.R. 28-45 have been recently amended to incorporate all references to Underground Crude Oil Storage Wells and Associated Brine Ponds. Once the amendments to K.A.R. 28-45 are promulgated, K.A.R. 28-45b will be redundant and irrelevant.

b) Environmental benefit

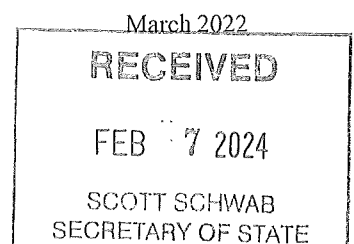
The revocation of these regulations will have no environmental effect, as they have been combined with the amended regulations for Underground Hydrocarbon Storage Wells and Associated Brine Ponds.

2) When applicable, a summary of the research indicating the level of risk to the public health or the environment being removed or controlled by the proposed rules and regulations or amendment.

Not applicable

3) If specific contaminants are to be controlled by the proposed regulations or amendment, a description indicating the level at which the contaminants are considered harmful according to current available research.

Not Applicable



II. Additional Economic Impacts for Environmental Regulations

In addition to the Economic Impact Statement prepared for the Kansas Division of the Budget, for all environmental rules and regulations the following descriptions of costs are included:

1) Capital and annual costs of compliance with the proposed amendments and the persons who will bear those costs.

Addressed in the Economic Impact Statement prepared for the Kansas Division of the Budget under Section III, Subsection B, C, and F.

2) Initial and annual costs of implementing and enforcing the proposed amendments, including the estimated amount of paperwork, and the state agencies, other governmental agencies or other persons or entities who will bear the costs.

\$0

3) Costs which would likely accrue if the proposed regulations are not adopted, the persons who will bear the costs and those who will be affected by the failure to adopt the regulations.

N/A

4) A detailed statement of the data and methodology used in estimating the costs used in the statement.

Addressed in the Economic Impact Statement prepared for the Kansas Division of the Budget under Section III, Subsection F.

