



**GUIDANCE FOR COMPLETING  
CLASS V UNDERGROUND INJECTION CONTROL  
APPLICATION FOR AUTHORIZATION TO OPERATE AIR  
SPARGING WELL IN CONJUNCTION WITH A  
GROUNDWATER REMEDIATION PROJECT**

**UICV-G1**  
(5/11)

<p><b>Submit to:</b></p> <p><b>Kansas Department of Health &amp; Environment Bureau of Water – Geology Section 1000 SW Jackson St. Suite 420 Topeka, KS 66612-1367</b></p> <p><a href="mailto:ckhan@kdheks.gov">ckhan@kdheks.gov</a></p>	<p><b>Date:</b> _____</p> <p><b>Legal Description of Well(s) (Center of Project):</b> ____ 1/4 ____ 1/4 ____ 1/4, Sec. ____ , T ____ S, R ____ (E)(W)</p> <p><b>G.P.S. Coordinates (Center of Project)</b> <b>Latitude:</b> _____ <b>Longitude:</b> _____</p> <p><b>Facility Name:</b> _____</p> <p><b>Facility Address:</b> _____</p> <p><b>Well(s) #:</b> _____</p> <p><b>County:</b> _____</p>
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In conformity with K.S.A. 65-171d:

\_\_\_\_\_  
(Name of Injection Well Owner)

\_\_\_\_\_  
(Address) (Telephone Number)

hereby makes application to the Kansas Department of Health and Environment (KDHE) to inject air into or above an underground source of fresh or usable water by means of an injection well(s) for the purpose of remediation contamination.

**Make sure all information is provided. Check the legal location and compare it with the location city or street locations described throughout the application and/or shown on maps. If there is a discrepancy, inquire about what the problem is and make necessary corrections.**

1. The applicant shall provide documentation with this application that the KDHE Bureau of Environmental Remediation has approved a remediation plan that includes the use of the proposed injection well(s). (Attach BER approval documents)

**Make sure there is a letter or memo stating BER has approved the use of the air sparging wells. If no information was provided, contact the project manager at BER and inquire as to whether the project is approved. If the BER project manager advises the project is approved, make a phone memo**

**for the file stating this fact. BER can also provide a memo or copy of a letter to be placed in the file.**

- Briefly describe the contamination to be remediated.

**The applicant must provide a description of the contamination to be remediated.**

- Describe the function of the well(s) within the scope of the remediation project.

**The applicant must provide information describing the function of the wells in the remediation project.**

- Describe the air mixture to be injected.

**The applicant must advise of the air mixture which will be introduced. Usually ambient air will be pumped; however, there is the possibility that some other type of gas or additives could be added to the air to enhance remediation. If an additive or other type of gas is to be used, information of the properties of the gas must be provided and the effects of the additives must be evaluated.**

- Provide the approximate depth to groundwater.

**This information must be provided. Compare the information provided with data provided on any drawings or maps and check for nay discrepancies. Often, information from monitor well or exploratory boreholes are available for the site.**

- Provide a lithologic description of the injection zone below.

Injection Zone(s):

Geologic Name(s)	Depth to Top	Depth to Bottom

- Provide Well Completion information below:

Borehole Size	Casing or Tubing Size	Material	Weight lbs/ft	Wall Thickness or Gauge #

Casing Seat Depth	Type of Grout	Amount of Grout	Grouted Interval from:	Grouted Interval to:

Screen or perforation material:	
Type of screen or perforation openings:	

Screen or perforation intervals:

from:	to:	from:	to:
from:	to:	from:	to:

Gravel pack intervals:

from:	to:	from:	to:
from:	to:	from:	to:

K.A.R. 28-30-6(b) requires constructed or reconstructed wells be sealed by grouting the annular space between the casing and the well bore from ground level to a minimum of 20 feet, or to a minimum of five feet into the first clay or shale layer if one is present, whichever is greater. If a pitless well adapter or unit is being installed, the grouting shall start below the point at which the pitless well adapter or unit attaches to the well casing and shall continue a minimum of 20 feet below this point, or to a minimum of five feet into the first clay or shale layer, whichever is greater. If groundwater is encountered at a depth less than the minimum grouting requirement, the grouting requirement may be modified to meet local hydrogeologic conditions if approved by KDHE. To facilitate grouting, the grouted interval of the well bore shall be drilled to a minimum diameter at least three inches greater than the maximum outside diameter of the well casing.

Provide information describing the seal to be used on top of the well casing. This seal shall be water tight.

If a pitless well adapter is to be used, provide information describing the design of the pitless adapter. The pitless well adapter shall be so designed and fabricated to prevent soil and subsurface waters from entering the well.

If the wellhead is to be completed below the finished ground level, the wellhead shall be enclosed in a KDHE approved water tight vault. The top of the vault shall be sloped to allow drainage away from the vault. If the wellhead of the soil vapor extraction (SVE) well(s) is to be completed below the finished ground level, the wellhead shall also be enclosed in a KDHE approved water tight vault. Provide a schematic drawing depicting the proposed SVE well(s) completion at the surface and subsurface. The vault design for the air sparging well(s) and SVE well(s) should conform to the design depicted in Attachment I. Attachment I depicts a monitoring well, but the vault design also applies to injection wells and SVE wells. Completion of the wellhead below the finished ground level requires from KDHE a waiver to regulation K.A.R. 2830-6(e).

**As stated above, the well shall conform to the requirements of Article 30. Make sure the construction as described agrees with any drawings provided. If the wells are to be completed flush with the ground surface, check to make sure a waiver has been granted. If no waiver has been granted, advise the applicant of this need in the authorization letter.**

8. Provide a detailed schematic drawing depicting the proposed well(s) completion at the surface and subsurface.

**Compare the drawing with other information provided in the application.**

9. Air Injection Rate:

Air is to be injected at a minimum rate of _____ scfm to a maximum rate of _____ scfm.
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**This is mainly for informational purposes. Injection rates do not normally exceed 20 scfm. If the rate proposed is out of reason, the application should be questioned to determine if the rate is correct and practical.**

10. Injection Pressure:

Maximum wellhead injection pressure will be _____ psig.
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Minimum wellhead injection pressure will be _____ psig.
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**Pressure is needed to depress the water level to within the screened interval. To determine the amount needed, calculate the amount the groundwater must be depressed and multiply by 0.433. For example, if the water level is 12 feet below surface and the screen is at a depth of 25 feet, the water level must be depressed at least 13 feet to be within the screened interval. The pressure necessary would be (13') (0.433) = 6 psi. If the**

**pressures proposed are out of reason, the applicant must be questioned. Too high of an injection pressure could damage the formation or well components.**

- 11. Provide a plugging and abandonment plan for the well(s). The plugging plan must include the type of grout, estimated volume of grout, and a description of the grout emplacement procedure. KDHE requires the well(s) to be filled with a KDHE approved grout from the bottom of the well to three feet below ground level.

**Review this information and determine the requirements are met.**

- 12. Include a diagram depicting how the well(s) will be plugged.

**Make sure the diagram and the plugging and abandonment plan in item #10 concur.**

- 13. Provide a map of the site showing the location of the proposed air sparging well(s), monitoring wells and SVE wells.

**Compare the information on the map with other information in the file.**

- 14. The well(s) shall be constructed by a water well contractor licensed by KDHE. Provide the contractor's name, business address and KDHE license number.

**Make sure the contractor listed is licensed by KDHE.**

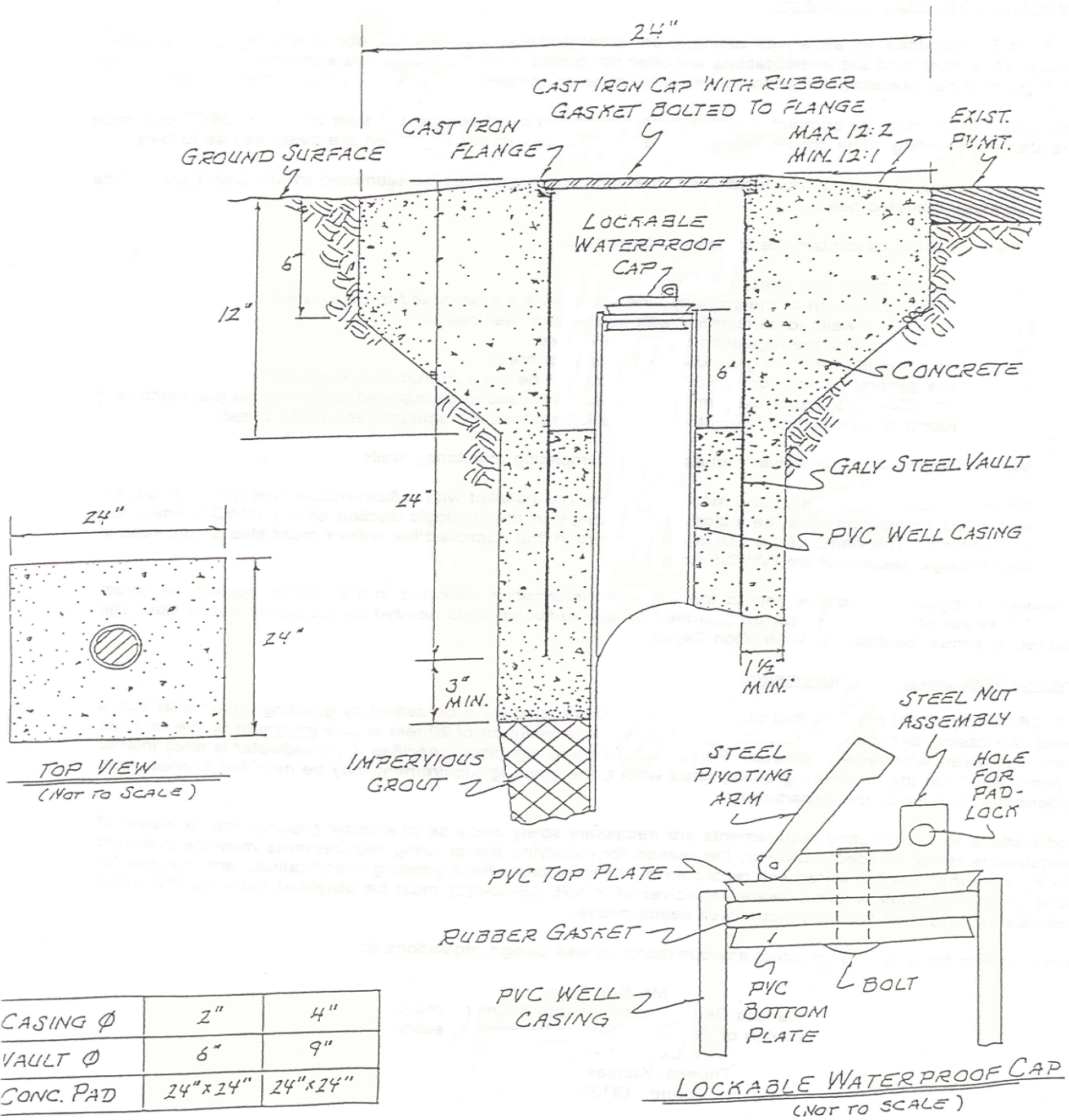
- 15. Within 30 days after construction or reconstruction of the air sparging and SVE well(s) the water well contractor shall submit a report of such work to KDHE on the KDHE water well record form WWC-5.

KDHE Project Manager: \_\_\_\_\_

To whom should future correspondence regarding this application be addressed:

NAME:	
ADDRESS:	
CITY, STATE, ZIP:	
EMAIL ADDRESS:	

ATTACHMENT I



SEP. 10, 1993

## MONITORING WELL DESIGN ADDITIONAL INSTRUCTIONS

### Flush-Mount Well Head Completion:

K.A.R. 28-30-6(e) does not allow well casing to be terminated less than one foot above finished ground surface. Because state trust fund site investigations are often conducted in areas where completing monitoring well heads above grade is not practical, consideration must be given to completing flush-mount monitoring well heads.

If monitoring wells must be completed with a flush-mount well head design, a waiver of K.A.R. 28-30-6(e) must be requested in writing. The procedures for requesting a waiver of this regulation are described as follows:

Prior to the monitoring well installation, the written request must be submitted to Mr. Richard Harper at the address indicated below.

1. The request must contain the following information:
  - a. Facility name and street address;
  - b. Legal description of the property where the wells are proposed to be located;  
\_\_\_\_\_ 1/4 \_\_\_\_\_ 1/4 \_\_\_\_\_ 1/4 Sec. \_\_\_\_\_ Town. \_\_\_\_\_ Range \_\_\_\_\_
  - c. Number of wells to be installed with flush-mount well heads;
  - d. Reason(s) why the regulation should be waived;
  - e. Approximate depth to groundwater in the local area;
  - f. The general geology or lithologies expected to be encountered in drilling; and
  - g. Specifications and/or diagrams of the vault proposed to be installed including the manufacturer's name and any other descriptive information such as a manufacturer's trade sheet.
2. Wait for approval of the waiver request before completing monitoring wells.
3. When waivers are approved and monitoring wells are installed with a flush-mount well head design, the well head completion must be indicated accordingly in the lithologic section of the WWC-5 water well record form. The name of the KDHE contact person that approved the waiver must also be provided in the lithologic section of the WWC-5 form.
4. Kansas licensed water well contractor and number.

Any waiver of regulations applies only to the wells and information indicated in the written request. A verbal request for waiver of regulations may be approved on any additional wells needed for the same area or site. The verbal request must be directed to Mr. Richard Harper.

### Monitoring Well Grouting Requirements:

K.A.R. 28-30-6, part (b) requires that constructed or reconstructed wells be sealed by grouting the annular space between the casing and the well bore from ground level to a minimum of 20 feet or to a minimum of five feet into the first clay layer, whichever is greater. Part (c) of the same regulation specifies if groundwater is encountered at a depth less than the minimum grouting requirements, the grouting requirement may be modified to meet local conditions if approved by the department.

If modifications to the grouting requirements are necessary solely because of shallow groundwater, a waiver of the regulations is not needed; however, the reason for modifying the grouting requirements must be indicated accordingly on the WWC-5 water well record form. In situations where grouting modifications are required for reasons other than shallow groundwater, a waiver of K.A.R. 28-30-6(b) must be obtained following the same procedures as described for flush-mount well heads above.

Submit requests for waivers and direct any questions on well design regulations to:

Mr. Richard Harper  
Kansas Department of Health & Environment  
Bureau of Water - Geology Section  
1000 S.W. Jackson Street, Suite #420  
Topeka, Kansas 66612-1367  
Phone: (785) 296-3565