**Section 920.180 Closed Loop Wells**

a) Construction. For each closed loop well, the borehole, containing the heat exchanger piping, shall be grouted from the bottom of the borehole to the bottom of the header-piping trench and, in the case of directional bores, the surface of the ground. When karst conditions are encountered, disinfected clean pea gravel or limestone chips may be used to bridge karst zones, limited to 5 feet above the karst zone. When more than one karst zone is encountered a bentonite plug a minimum of 5 feet thick must be installed above each karst zone. The Department will maintain a list of approved closed loop well grouts on its website at http://www.dph.illinois.gov/. Closed loop wells that are constructed in a manner that leaves a casing in the ground shall be grouted in a manner consistent with water wells. Closed loop wells shall not be located closer to water wells and sources of contamination than the minimum separation distances specified in Table C.

b) Borehole Piping. Piping shall be watertight with a minimum of 160 psi pressure-rated high density polyethylene or equivalent manufactured for the purpose of use in a ground heat exchange system. All copperpiping and joints used in direct expansion heat pump systems shall bewatertight and conform to UL 1995.

c) Heat Exchange Fluid. The heat exchange fluid that is pumped through the closed loop well piping shall be compatible with piping in the borehole and shall be water or a mixture of water and one of the following: methanol, or ethanol, or United States Pharmacopeia propylene glycol that meet U.S. FDA Food Contact Substance (FCS) Requirements.

d) Refrigerant. When refrigerant is used with copper piping in a direct exchange system, the refrigerant shall be R-134a or R-290.

e) Sealing Requirements for Closed Loop Wells.

1) Heat Exchange Fluid or Refrigerant. All heat exchange fluid or refrigerant shall be removed from the closed loop well system and disposed of in accordance with State and local laws.

2) Piping. All piping left in place in closed loop wells shall be sealed with neat cement grout or any bentonite product manufactured for water well sealing by pressure grouting. The sealing material shall be pumped into the supply of the loop until the sealing material is flowing out of the return of the loop.

3) Open or cased wells shall be sealed according to Section 920.120.

4) Abandoned closed loop wells shall be brought into compliance with this Section or sealed within 30 days after abandonment.

5) Closed loop wells constructed for thermal conductivity testing shall be incorporated into a system or sealed within one year after borehole completion. The Department will grant an extension of this time if the owner submits a written request to the Department indicating the reasons for the request and an estimate of the time in which the closed loop well will be either sealed or used. The request for the extension shall be submitted not less than 11 months nor more than 12 months after borehole completion.

(Source: Amended at 46 Ill. Reg. 15751, effective August 30, 2022)