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Frequently Asked Questions About Underground Injection Control Class V Wells in Nebraska



A Class V injection well in Nebraska

What are Underground Injection Control (UIC) Class V injection wells?

UIC Class V injection wells are those not included in Class I, II, III, or IV (Title 122, Ch. 2, §005), and are used to inject non-hazardous fluids underground. Class V injection wells are often shallow (however deep injection wells that are not included in any other Class are identified as Class V injection wells), and include a variety of categories and subcategories. The Environmental Protection Agency (EPA) states that most Class V wells are used to dispose of wastes into or above underground sources of drinking water, which can pose a threat to groundwater quality if not properly managed. Examples of Class V injection wells include: large capacity septic systems, aquifer remediation wells, and heat pump or air conditioning return flow. A comprehensive list of authorized and permitted Class V injection wells in Nebraska can be found below under “*What are the different types of Class V injection wells authorized and permitted in Nebraska?*”

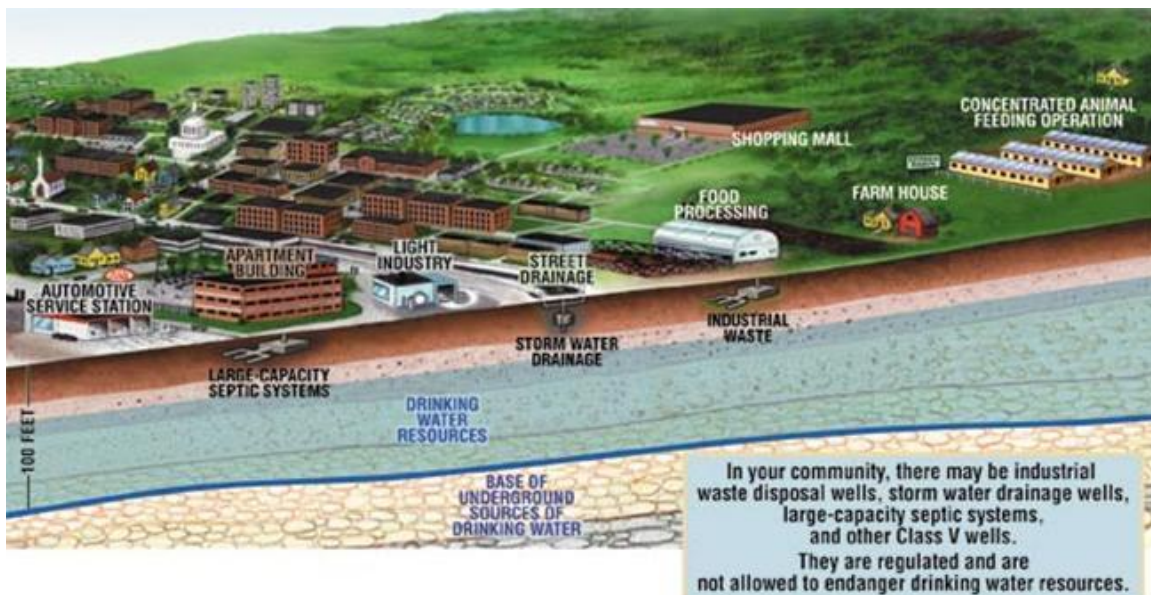


Figure 1. EPA diagram depicting various types of common Class V injection wells. Accessed on 7/6/2017 (<https://www.epa.gov/uic/class-v-wells-injection-non-hazardous-fluids-or-above-underground-sources-drinking-water>).

What regulations apply to Class V injection wells?

The Nebraska Department of Environment and Energy (NDEE) requires all Class V injection wells within the state to obtain authorization or permits through the Underground Injection Control (UIC) program. Authority from this program comes from the federal Safe Drinking Water Act. Nebraska gained primacy over the state’s UIC program in 1984, and is therefore authorized by the EPA to issue authorizations and permits for injection wells.

The NDEE regulations specific to UIC Class V injection wells can be found in Title 122 – *Rules and Regulations for Underground Injection and Mineral Production Wells*. Other relevant NDEE regulations include (but are not limited to) Title 118 – *Groundwater Quality Standards and Use Classification*, Title 124 – *Rules and Regulations for the Design, Operation and Maintenance of On-site Wastewater Treatment Systems*, Title 126 – *Rules and Regulations Pertaining to Management of Waste*. These can be found on the NDEE website (<http://deq.ne.gov/NDEEProg.nsf/OnWeb/Rules>).

The EPA delegates the UIC program to the NDEE and provides authority for the program through the Safe Drinking Water Act. UIC program components located on tribal land are handled directly by the EPA. In 1999, the EPA finalized an update to the existing UIC rules; *Underground Injection Control Regulations for Class V Injection Wells*, collectively known as the Class V Rule. The EPA's UIC website states that the Class V Rule Revision:



- Banned large capacity cesspools nationwide by April 2005
- Phased out existing cesspools by April 2005
- Banned new motor vehicle waste disposal wells nationwide by April 2000
- Required operators of existing motor vehicle waste disposal wells in regulated areas to either close their wells or obtain permits
- Integrated UIC regulations with source water assessment and protection programs

Other applicable federal regulations include those from the Code of Federal Regulations (CFR), specifically 40 CFR parts 144 (*Underground Injection Control Program*), 145 (*State UIC Program Requirements*), and 146 (*Underground Injection Control Program: Criteria and Standards*).



The Natural Resource Districts (NRDs) across the state have developed sets of rules and regulations regarding permitting requirements and the installation of wells based on specific Groundwater Management Plans.



All wells installed in the State of Nebraska must be registered with the Nebraska Department of Natural Resources (NDNR). Additionally, the NDNR is charged with issuing permits for industrial use of groundwater.

The Nebraska Department of Health and Human Services (NDHHS) requires that all wells in the State of Nebraska be installed by a licensed well driller. Additionally, all groundwater samples must be collected by a certified water well monitoring technician or pump installer licensed in the State of Nebraska through the NDHHS. The NDHHS also requires that a public water supply service facilities with more than 25 employees. These facilities must obtain a permit to operate a public water supply well. The well must also be operated by a person licensed to do so in the State of Nebraska.

Additional agencies including (but not limited to) the Nebraska Oil and Gas Commission may be involved in regulation, authorization and permitting of Class V injection wells on a case-to-case basis.

What are the different types of Class V injection wells authorized and permitted in Nebraska?

The NDEE authorizes and permits a variety of different categories and subcategories of Class V wells. The table below describes these, as well as their individual Class V code numbers.

Class V Category	Class V Subcategory	Class V Code Number
Drainage	Storm Water Drainage	5D2
	Improved Sinkholes	5D3
	Industrial Drainage	5D4
	Special Drainage	5G30
Geothermal Reinjection	Electric Power Reinjection	5A5
	Direct Heat Reinjection	5A6
	Heat Pump/AC Return Flow (open loop)	5A7
	Ground Water Aquaculture Return Flow	5A8
Domestic Wastewater Disposal	Septic System (undifferentiated disposal)	5W11
	Septic System (well disposal)	5W31
	Septic System (drainfield disposal)	5W32
	Wastewater Treatment Plant Effluent Disposal	5W12
Mineral and Fossil Fuel Recovery Related	Mining, sand & other backfill	5X13
	Solution Mining	5X14
	In-situ Fossil Fuel Recovery	5X15
	Spent-Brine Return Flow, after halogen extr.	5X16
Oil Field Production Waste Disposal	Air Scrubbed Waste Disposal	5X17
	Water Softener Regeneration Brine Disposal	5X18
Industrial/Commercial/Utility Disposal	Cooling Water Return Flow	5A19
	Industrial Process Water & Waste Disposal	5W20
Recharge	Aquifer Recharge	5R21
	Saline Water Intrusion Barrier	5B22
	Subsidence Control	5S23
Miscellaneous	Experimental Technology	5X25
	Aquifer Remediation Related	5X26
	Other (specify purpose & injection fluid)	5X27
Prohibited Injection Wells	Agricultural Drainage Wells	5F1
	Untreated Sewage Waste Disposal Wells	5W9
	Cesspools	5W10
	Radioactive Waste Disposal Wells	5N24
	Motor Vehicle Waste Disposal Wells	5X28
	Abandoned Drinking Water Wells used for Disposal of Waste	5X29

How many Class V injection wells are there in Nebraska?

Since the inception of the UIC program in the 1980s, the NDEE UIC program has issued over 2,300 Class V injection well authorizations and permits. The breakdown of these by year is depicted below, with omitted years being those in which no Class V injection well authorizations or permits were issued.

Year	Number of Class V Authorizations or Permits Issued	Year	Number of Class V Authorizations or Permits Issued
1982	1	2002	53
1984	2	2003	61
1986	2	2004	105
1987	28	2005	24
1988	32	2006	54
1989	17	2007	57
1990	126	2008	92
1991	117	2009	82
1992	83	2010	109
1993	33	2011	177
1994	19	2012	156
1995	18	2013	178
1996	20	2014	211
1997	17	2015	107
1998	33	2016	101
1999	13	2017	116
2000	48	2018	95
2001	77	2019	59

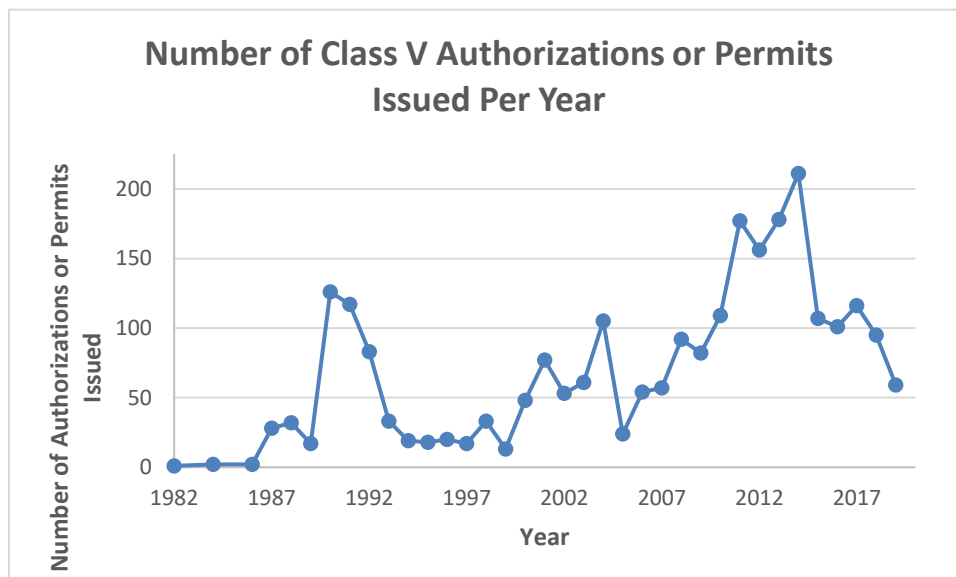


Figure 2. Graphic depiction of Class V authorizations or permits issued per year from 1980-2019.

Why do I need a Class V authorization or permit?

Many of the Class V injection well categories may pose a risk to underground sources of drinking water (USDWs), also referred to as the aquifer. The amount of risk associated with a Class V injection well is dependent on a number of factors including the type of fluid(s) injected, the location in relation to water supplies, construction of the injection well itself, maintenance, and local geology. When properly located, operated, and maintained, an authorized or permitted Class V injection well should not present major risk. "Well" is defined in Title 122, Chapter 1 as "a bored, drilled, driven, dug, or otherwise constructed excavation whose depth is greater than its largest surface dimension," and as such includes many systems that would not immediately come to mind. The most common systems that the NDEE UIC program receives questions about are listed below.

- **Large Capacity Septic Systems** require a Class V injection well authorization or permit when flow is greater than 1,000 gallons/day, the system has a capacity to serve 20 people or more, or the system will receive wastes other than sanitary wastes. These requirements are set forth in order to best protect the aquifer from contamination. This is especially important due to the fact that many rural and suburban septic systems are within close proximity to private drinking water wells or public water systems that utilize groundwater sources. Examples of facilities whose large capacity septic systems may require a Class V injection well authorization or permit are churches and small businesses.

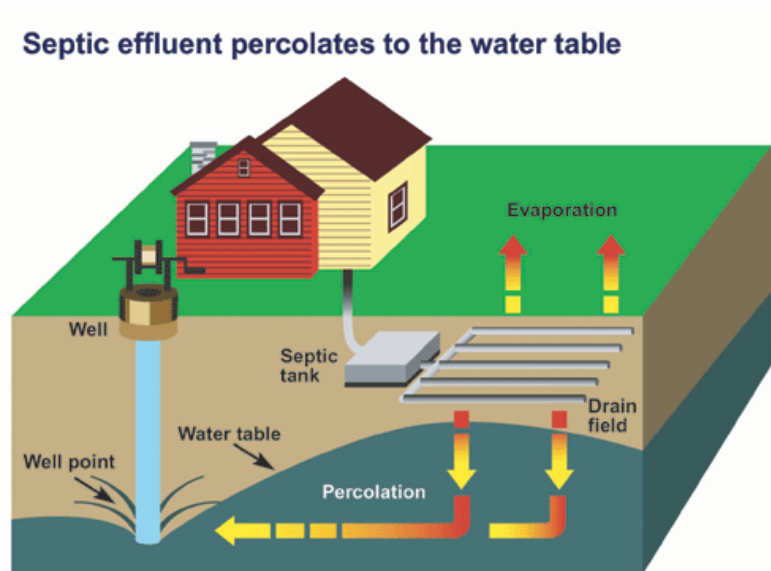


Figure 3. Diagram depicting a typical septic system and the potential contamination effects it can have on USDWs. Accessed on 7/7/2017 (<https://www.ec.gc.ca/eau-water/default.asp?lang=En&n=6A7FB7B2-1>).

- **Aquifer Remediation Related Wells** require a Class V injection well. These types of Class V wells are defined by the EPA as wells used to clean up, treat, or prevent contamination of the aquifer. Treated ground water (pump and treat), bioremediation agents, or other recovery enhancement materials may be injected into the subsurface via these wells. It is important for aquifer remediation related wells to obtain a Class V authorization or permit so the NDEE can track and monitor effects that these wells may have on the aquifer. Many of these are associated with RCRA or Superfund cleanup projects.

What is the difference between a Class V injection well permit and authorization?

Most Class V injection wells in Nebraska are “authorized by rule,” meaning they are authorized to operate without a permit as long as the owner(s) or operator(s) submit information regarding their proposed Class V injection well to the NDEE, operate the Class V injection well in a way that does not endanger the aquifer, and properly close and abandon their Class V injection well once it is no longer in use. To obtain authorization, the owner or operator must submit an authorization application to the NDEE which will be reviewed and then either approved or denied.

If the UIC program is concerned that a Class V injection well may endanger the aquifer, the owner(s) or operator(s) may be required to obtain a permit. Class V injection well permits include specific conditions the owner(s) or operator(s) must meet to ensure the well does not endanger the aquifer, which may include monitoring requirements, limitations, and abandonment procedures.

Class V injection well authorizations have no associated fees through the NDEE. Class V injection well permits require a \$500 non-refundable permit fee with the permit application.

What is the NDEE’s process for reviewing a Class V injection well application?

The NDEE must receive a Class V injection well authorization or permit application from anyone wishing to operate a Class V injection well in the State of Nebraska. The Department will then perform a technical review of the application and make a determination to either approve or deny the authorization or permit.

Applicants for Class V injection wells must submit complete applications including:

- The specific type of Class V well to be utilized as defined in Title 122, Chapter 2;
- Facility and owner information;
- Legal description of the well;
- A detailed description and amount of fluid to be injected;
- A description of the nature of the business or activity that generates the waste;
- The status of the well (i.e. planned, under construction, in use, abandoned);
- A scaled map of the entire property on which the injection is proposed including the injection well(s), any other injection well(s), all major structural features, and all water wells;
- A scaled map or aerial photograph of all water wells within one half mile radius of the injection well;
- The design or construction details of the injection well as outlined in Title 122, Chapter 17;
- A confirmation that all siting distances have been met as outlined in Title 122, Chapter 17;
- The static water level or seasonal high water level at the site and the resource from which this information was obtained;
- A description of the geologic material into which the injection is planned;
- The name, telephone number, and signature of the person completing the application;
- And the name, telephone number, and signature of the owner of the Class V injection well.

Additional information may be required by the NDEE in order to evaluate the application, and other requirements may be established by the Director on a case-to-case basis.

How do I close out a Class V injection well, and what information does the NDEE need?

Class V injection wells may be closed out upon completion of their purpose or if the NDEE UIC program requires it. To officially close out a Class V injection well it must be properly plugged, abandoned, and restored, when applicable. Prior to these activities, a written abandonment plan must be submitted to the Director for approval. No Class V injection well should be plugged and/or abandoned and restored until the procedures outlined in the submitted abandonment plan have been approved. Proper plugging, abandonment, and restoration procedures are outlined in Title 122, Chapter 35.

After completion of the plugging, abandonment, or restoration procedures, an affidavit setting forth in detail the significant data in connection with the well (including well details) and the procedure used in plugging, abandonment, or restoration, signed by a qualified witness to the procedures and duly notarized shall be filed with the Department within 90 days. The Department reserves the right to require the operator to replug and/or abandon any well where it can be determined the procedures were not effective due to failure of materials or other difficulty. The Department also reserves the right to require the permittee to restore areas (including aquifers) that were not restored properly or to standards outlined in the approved abandonment plan.

How does the public participate?

During the public comment period for Class V injection well permits, anyone may submit comments on the proposed decision as described in the Public Notice. Interested persons may request a public hearing, if one has not already been scheduled. A request for a public hearing must be in writing and must state the nature of the issues proposed to be raised in the public hearing. All relevant comments will be considered in the final decision. Additionally, a response to comments will be prepared by the NDEE. Written comments can be sent to the Director, Nebraska Department of Environment and Energy, P.O. Box 98922, Lincoln, Nebraska, 68509.

More information regarding State regulation of Class V injection wells can be found in Title 122 – *Rules and Regulations for Underground Injection and Mineral Production Wells*, located on the NDEE website (<http://dee.ne.gov>). The Nebraska Department of Environment and Energy can also be contacted by telephone at (402) 471-2186, or through e-mail at NDEE.moreinfo@nebraska.gov.