

TITLE 77: PUBLIC HEALTH  
CHAPTER I: DEPARTMENT OF PUBLIC HEALTH  
SUBCHAPTER r: WATER AND SEWAGE

PART 920  
WATER WELL CONSTRUCTION CODE

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**AUTHORITY:** Implementing and authorized by the Illinois Water Well Construction Code [415 ILCS 30].

**SOURCE:** Adopted September 12, 1973; amended at 2 Ill. Reg. 42, p.35, effective October 16, 1978; rules repealed, new rules adopted and codified at 7 Ill. Reg. 9633, effective August 1, 1983; amended at 12 Ill. Reg. 2990, effective January 13, 1988; amended at 13 Ill. Reg. 11796, effective July 1, 1989; amended at 14 Ill. Reg. 228, effective January 1, 1990; amended at 14 Ill. Reg. 14871, effective September 1, 1990; amended at 15 Ill. Reg. 18188, effective January 1, 1992; amended at 18 Ill. Reg. 17684, effective November 30, 1994; amended at 22 Ill. Reg. 3973, effective April 1, 1998; amended at 24 Ill. Reg. 11934, effective August 1, 2000; amended at 37 Ill. Reg. 19676, effective November 25, 2013.

### **Section 920.10 Definitions**

"Abandoned Well" means a water or monitoring well that is no longer used to supply water, or that is in such a state of disrepair that the well or boring has the potential for transmitting contaminants into an aquifer or otherwise threatens the public health or safety.

"Act" means the Illinois Water Well Construction Code [415 ILCS 30].

"Annular Space" means the opening between a well-hole excavation and the well casing or between a casing pipe and a liner pipe.

*"Aquifer" means saturated (with groundwater) soils and geologic materials which are sufficiently permeable to readily yield economically useful quantities of water to wells, springs, or streams under ordinary hydraulic gradients. (Section 3(b) of the Illinois Groundwater Protection Act [415 ILCS 55/3(b)])*

"Bentonite Grout" means a manufactured grout product that is a mixture of sodium bentonite and water mixed at the manufacturer's recommended ratio; a mixture of granulated sodium bentonite and water that consists of a minimum of 20 percent solid bentonite clay and water that is equivalent to 9.4 pounds/gallon; or sodium bentonite in the granulated or chip form. All bentonite products shall comply with National Sanitation Foundation (NSF) International requirements.

"Borehole" also known as "drill hole" means an excavation that is drilled, cored, driven, dug or otherwise constructed that penetrates an aquifer or that may degrade the quality of the aquifer.

"Cement" means a mixture consisting of cement, sand and water in the proportion of one bag of cement (94 pounds) and an equal volume of dry sand to not more than 6 gallons of clean water.

"Chemical Injection System" means any device or combination of devices having hose, pipe or other methods of conveyance that connect directly to any water well through which a mixture of water, pesticides and fertilizers is mixed or is drawn and applied to land, crops or plants at agricultural, nursery, turf, golf course or greenhouse sites.

*"Closed Loop Well" means a sealed, watertight loop of pipe buried outside of a building foundation intended to re-circulate a liquid solution through a heat exchanger but is limited to the construction of the borehole and the grouting of the borehole and does not include the piping and appurtenances used in any other capacity. "Closed loop well" does not include any horizontal closed loop well systems where grouting is not necessary by law or standard industry practice.* (Section 3(h) of the Act) "Closed Loop Heat Pump Well" means the same as "Closed Loop Well".

*"Closed Loop Well Contractor" means any person who installs closed loop wells for another person. "Closed loop well contractor" does not include the employee of a closed loop contractor.* (Section 3(j) of the Act)

"Closed Loop Well System" means a clustered group of closed loop wells that serve the same facility.

*"Community Water System" means a public water system which serves at least 15 service connections used by residents or regularly serves at least 25 residents for at least 60 days per year.* (Section 9(a)(1) of the Illinois Groundwater Protection Act)

"Consolidated Formation" means a geological formation that is firm rock referred to as bedrock.

*"Construction" means all acts necessary to obtaining ground water by any method, including without limitation the location of and the excavation for the well, but not including prospecting, surveying or other acts preparatory to those activities, nor the installation of pumps and pumping equipment.* (Section 3(a) of the Act)

*"Contaminant" means any physical, chemical, biological, or radiological*

*substance or matter in water.* (Section 9(a)(2) of the Illinois Groundwater Protection Act .

"Crevice, Consolidated Formation" is a consolidated formation characterized by fractures.

"Department" means the Illinois Department of Public Health.

"Detention Pond" is an engineered structure designed to store storm water from a rain event. The elevation of the outlet structure designed to meet the release rate requirement is equivalent to the lowest elevation of the pond.

"Driven Water Well" means a well constructed by joining a drive point with lengths of pipe and then driving or jetting the assembly into the ground with percussion equipment or by hand.

"Established Ground Surface" means the elevation of the ground surface at the site of the well.

"Finished Ground Surface" means the final or permanent elevation of the ground surface at the site of the well.

"Flowing Artesian Well" means a well in which the water from the confined aquifer rises above the finished ground surface.

*"Ground Water" or "Groundwater" means water of underground aquifers, streams, channels, artesian basins, reservoirs, lakes and other water under the surface of the ground, whether percolating or otherwise.* (Section 2(2) of the Illinois Water Well and Pump Installation Contractor's License Act)

"Horizontal Closed Loop Well Systems" means any open cut excavation where a watertight loop of pipe is buried outside of a building foundation that is intended to re-circulate a liquid solution through a heat exchanger.

"Mechanically Driven" means a procedure by which a casing is fitted with a drive shoe and driven with a force sufficient to firmly seat the casing in rock or to the desired depth in unconsolidated formations.

"Modification" means the alteration of the structure of an existing water well, including, but not limited to, deepening, elimination of a buried suction line, installation of a liner, replacing, repairing or extending casing, or replacement of a well screen. Pertaining to closed loop wells, "modification" also means any alteration to the construction of the borehole of an existing closed loop well, including, but not limited to, regrouting and installation of additional boreholes.

"Monitoring Well" means a water well intended for the purpose of determining

groundwater quality or quantity.

"Neat Cement Grout" means a mixture consisting of one bag of cement (94 pounds) to not more than 6 gallons of clean water. Bentonite or similar material may be added up to 6 percent by dry weight to increase fluidity or to control shrinkage.

*"Non-Community Water System" means a public water system which is not a community water system, and has at least 15 service connections used by nonresidents, or regularly serves 25 or more nonresident individuals daily for at least 60 days per year. (Section 9(a)(4) of the Illinois Groundwater Protection Act)*

"Pitless Adapter Unit" means a factory assembled device consisting of a pitless well adapter, a mechanism that attaches to the well casing, and a well casing riser in a single unit, for the purpose of preventing contaminants from entering the well.

"Pitless Well Adapter" means an assembly of parts that will permit water to pass through the wall of the well casing or extension of the wall; provides access to the well and to the parts of the water system within the well; and provides for the transportation of the water and the protection of the well and water in the well, from surface or near surface contamination. Parts or appurtenances to a pitless well adapter include, but are not limited to, the vent, the device or devices on or in the wall of the casing, and the cap or cover on top of the casing or casing extension.

*"Potable" means generally fit for human consumption in accordance with accepted water supply principles and practices. (Section 3(h) of the Illinois Groundwater Protection Act)*

*"Potential Primary Source" means any unit at a facility or site not currently subject to a removal or remedial action which:*

*is utilized for the treatment, storage, or disposal of any hazardous or special waste (as defined in Section 3 of the Environmental Protection Act) not generated at the site; or*

*is utilized for the disposal of municipal waste not generated at the site, other than landscape waste (as defined in Section 3 of the Environmental Protection Act) and construction and demolition debris; or*

*is utilized for the landfilling, land treating, surface impounding or piling of any hazardous or special waste (as defined in Section 3 of the Environmental Protection Act) that is generated on the site or at other sites owned, controlled or operated by the same person; or*

*stores or accumulates at any time more than 75,000 pounds above ground, or more than 7,500 pounds below ground, of any hazardous substances. (Section 3.345 of the Environmental Protection Act )*

*"Potential Route" means abandoned and improperly plugged wells of all kinds (i.e., those wells not plugged in accordance with this Part), drainage wells, all injection wells, including closed-loop heat pump wells, and any excavation for the discovery, development or production of stone, sand or gravel. This term does not include closed-loop heat pump wells using United States Pharmacopeia (USP) food grade propylene glycol. (Section 3.350 of the Environmental Protection Act)*

*"Potential Secondary Source" means any unit at a facility or a site not currently subject to a removal or remedial action, other than a potential primary source, which:*

*is utilized for the landfilling, land treating, or surface impounding of waste that is generated on the site or at other sites owned, controlled or operated by the same person, other than livestock and landscape waste, and construction and demolition debris; or*

*stores or accumulates at any time more than 25,000 but not more than 75,000 pounds above ground, or more than 2,500 but not more than 7,500 pounds below ground, of any hazardous substances; or*

*stores or accumulates at any time more than 25,000 gallons above ground, or more than 500 gallons below ground, of petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance; or*

*stores or accumulates pesticides, fertilizers, or road oils for purposes of commercial application or for distribution to retail sales outlets; or stores or accumulates at any time more than 50,000 pounds of any de-icing agent; or*

*is utilized for handling livestock waste or for treating domestic wastewaters other than private sewage disposal systems as defined in the Private Sewage Disposal Licensing Act. (Section 3.355 of the Environmental Protection Act )*

"Pressure Grouting" means the placement of grout by a method using positive pressure.

*"Private Water System" means any supply which provides water for drinking, culinary, and sanitary purposes and serves an owner-occupied single family*

*dwelling.* (Section 9(a)(5) of the Illinois Groundwater Protection Act )

*"Public Water System" means a system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if the system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days per year. A public water system is either a community water system (CWS) or a non-community water system (non-CWS. The term "public water system" includes any collection, treatment, storage or distribution facilities under control of the operator of such system and used primarily in connection with such system and any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system.* (Section 9(a)(6) of the Illinois Groundwater Protection Act )

"Pumping Water Level" means the depth to of the water surface in a well from the ground surface, top of casing or other established datum when water is discharged by pumping.

"Retention Pond" is an engineered structure designed to store storm water from a rain event. The elevation of the outlet structure designed to meet the release rate requirement is higher than the elevation of the pond base.

*"Semi-Private Water System" means a water supply which is not a public water system, yet which serves a segment of the public other than an owner-occupied single family dwelling.* (Section 9(a)(7) of the Illinois Groundwater Protection Act)

*"Site" means any location, place, tract of land, and facilities, including but not limited to buildings, and improvements used for purposes subject to regulation under the Environmental Protection Act.* (Section 3.460 of the Environmental Protection Act)

"Thermal Grout" is a Department approved grout specifically developed to enhance the heat transfer in a closed loop well. Department approved closed loop well grouts shall have permeability no greater than  $1 \times 10^{-7}$  centimeters per second and all bentonite products shall comply with National Sanitation Foundation (NSF) International requirements. The Department will maintain a list of approved closed loop well grouts on its website at [www.idph.org](http://www.idph.org).

"Tremie Method" means pumping grout through a pipe that is inserted into the annular space to fill the space from the bottom upward to the ground surface or to the point of pitless adapter attachment.

"Unconsolidated Formation" means a geological formation above bedrock, such as sand or gravel, that is caving in nature.

"Undesirable Water" means water that contains contamination that exceeds Class

I Groundwater Standards adopted in the Groundwater Quality Standards Code (35 Ill. Adm. Code 620, Subpart B).

*"Unit" means any device, mechanism, equipment, or area (exclusive of land utilized only for agricultural production).* (Section 3.515 of the Environmental Protection Act)

"Water-Bearing Formation" means any geologic formation that contains water.

*"Water Well" means any excavation that is drilled, cored, bored, washed, driven, dug, jetted or otherwise constructed when the intended use of such excavation is for the location, diversion, artificial recharge, or acquisition of ground water, but such term does not include an excavation made for the purpose of obtaining or prospecting for oil, natural gas, minerals or products of mining or quarrying or for inserting media to repressure an oil or natural gas bearing formation or for storing petroleum, natural gas or other products or for observation or any other purpose in connection with the development or operation of a gas storage project.* (Section 3(e) of the Act"

*"Well" means a bored, drilled or driven shaft, or dug hole, the depth of which is greater than the largest surface dimension.* (Section 3.555 of the Environmental Protection Act)

"Well Cap" means that portion of the pitless well adapter used to enclose the atmospheric termination of the casing, which shall overlap the top of the casing extension with a downward flange.

"Well Seal" means an arrangement or device used to establish a watertight closure at the junction of a well pump or piping with the well casing cover at the upper terminal of the well, the purpose of which is to prevent contaminated water or other material from entering the well.

(Source: Amended at 37 Ill. Reg. 19676, effective November 25, 2013)

### **Section 920.15 Incorporated and Referenced Materials**

The following rules, standards and statutes are incorporated or referenced in this Part.

- a) The following standards are incorporated by reference:
  - 1) National Sanitation Foundation International/American National Standards Institute (NSF/ANSI), Standard NSF/ANSI 14-2010a, Plastic Piping System Components and Related Materials, and Standard NSF/ANSI 61-2012, Drinking Water System Components – Health Effects, published by:



NSF International  
789 N. Dixboro Road  
P.O. Box 130140

Ann Arbor, Michigan 48113-0140

Referenced in Section 920.90

- 2) American Society for Testing and Materials (ASTM) International required standards ASTM A53/A53M-10, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless (2010); ASTM A589/A589M-06, Standard Specification for Seamless and Welded Carbon Steel Water-Well Pipe (2006); ASTM F480-12, Standard Specification for Thermoplastic Well Casing Pipe and Couplings Made in Standard Dimension Ratios (SDR), SCH 40 and SCH 80 (2006); ASTM D3035-10, Standard Specification for Polyethylene (PE Plastic Pipe (DR-PR)) Based on Controlled Outside Diameter (2010); ASTM C564-11, Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings (2011); and ASTM F477-10, Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe (2010); published by:

American Society for Testing and Materials International  
100 Barr Harbor Drive  
P.O. Box C700  
West Conshohocken, Pennsylvania 19428-2959

Referenced in Sections 920.90 and 920.180

- 3) Underwriter's Laboratories, Inc., UL 1995 (2005), UL Standard for Safety Heating and Cooling Equipment, published by:

Underwriter's Laboratories, Inc.  
333 Pfingster Road  
Northbrook, Illinois 60062-2096

Referenced in Section 920.90

- 4) American Petroleum Institute API SPEC 5L-2011, Specification for Line Pipe, published by:

American Petroleum Institute  
1220 L Street, NW  
Washington, D.C. 20005-4070

Referenced in Section 920.90

- b) The following statutes and rules are referenced:
- 1) Environmental Protection Act, Title IV, Public Water Supplies [415 ILCS 5/Title IV]
  - 2) Illinois Water Well and Pump Installation Contractor's License Act [225 ILCS 345]
  - 3) Private Sewage Disposal Licensing Act [225 ILCS 225]
  - 4) Illinois Groundwater Protection Act [415 ILCS 55]
  - 5) Groundwater Quality Standards Code (35 Ill. Adm. Code 620, Subpart B)
  - 6) Practice and Procedure in Administrative Hearings (77 Ill. Adm. Code 100)
  - 7) Drinking Water Systems Code (77 Ill. Adm. Code 900)
  - 8) Illinois Water Well Pump Installation Code (77 Ill. Adm. Code 925)
  - 9) Private Sewage Disposal Code (77 Ill. Adm. Code 905)
- c) All incorporations by reference of the standards of nationally recognized organizations refer to the standards on the date specified and do not include any amendments or editions subsequent to the date specified.
- d) All materials incorporated by reference are available for inspection and copying at the Department's Central Office, Division of Environmental Health, 525 West Jefferson – Third Floor, Springfield, Illinois 62761.

(Source: Amended at 37 Ill. Reg. 19676, effective November 25, 2013)

### **Section 920.20 Scope**

This Part provides minimum standards for the location, construction and modification of water wells, monitoring wells and closed loop wells that are not otherwise subject to regulation under the Environmental Protection Act, Title IV, Public Water Supplies . No water well, monitoring well or closed loop well as defined in this Part shall be constructed or modified contrary to the provisions of this Part.

(Source: Amended at 37 Ill. Reg. 19676, effective November 25, 2013)

### **Section 920.30 General Requirements**

- a) Authorized Constructor. Water wells subject to this Part shall be constructed only

by persons having a valid license under the Illinois Water Well and Pump Installation Contractor's License Act unless exempt under that Act.

- b) Reports. Within 30 days after a water well has been constructed or deepened, the contractor shall submit a report of construction to the Department, an approved unit of local government or local health department (see Sections 920.150 and 920.160) on forms prescribed and furnished by the Department.
- c) Variance
  - 1) If conditions exist at a proposed installation site that preclude compliance with this Part, a variance shall be requested and shall be approved before well construction begins. The contractor may request a variance by submitting to the Department or an approved unit of local government or local health department, a written request outlining a specific proposal to be used in lieu of compliance with this Part. The request shall include a plot plan of the property, showing lot size, the location of sewers, septic tanks, buildings, seepage fields, and other sources of contamination on the property and adjacent property, with distances shown to the proposed well. A description of geological and soil conditions shall also be included. The Department or approved local health department will approve the variance if the proposal is in accordance with accepted public health and sanitary engineering principles and practices, and if the resulting water well installation can be expected to provide a continuously safe and sanitary water supply. The Department or approved local health department will notify the applicant in writing of its decision either to grant or deny the variance.
  - 2) Examples of location problems that would preclude compliance with this Part would be the proposed location of a well too close to septic tanks, buildings, sewer lines, or barnyards.
  - 3) Examples of public health and engineering principles that would be considered in issuing a variance would be ground surface conditions, depth of the water table, the location of sources of contamination, the ability of the existing soil to remove bacteria and geologic conditions.
  - 4) After a well has been drilled for which a variance has been issued, the contractor shall submit two water samples to the Department laboratory for analysis. The first sample shall be submitted within 30 days after the pump is installed and operated; the second sample shall be submitted within 60 days after start-up of the pump, but not less than 30 days after collection of the first sample.

(Source: Amended at 37 Ill. Reg. 19676, effective November 25, 2013)

## Section 920.40 Design Factors

The design of each well shall include the following:

- a) Natural Protection. Location of the well shall include use of every natural protection available to promote sanitary conditions.
- b) Geologic Formations. The well construction shall be adapted to the geologic formations and groundwater conditions at the site, but shall comply with this Part.
- c) Undesirable Geologic Formations. Water-bearing formations shall be excluded by installing casing or a liner and properly sealing when the formations contain undesirable water. When a contaminated formation is to be excluded, the liner shall be grouted in place, in accordance with Section 920.90(h), from 10 feet below the bottom of the contaminated formation to at least 10 feet above the top of the contaminated formation. When multiple water-bearing formations of different static water levels are penetrated in the construction of a water well and the lower water-bearing formation has sufficient yield for the water well, the upper water-bearing formations shall be excluded by installing casing or a liner and properly sealing to prevent the dewatering of the upper water-bearing formations.
- d) Capacity. The well shall be capable of producing as much of the desired water quantity as the aquifer or aquifers can safely furnish.
- e) Durability. Construction methods and materials shall provide a durable well capable of maintaining safe water and protecting the aquifer.
- f) Pitless Well Adapters. No well casing shall be cut off or cut into below ground surface except to install a pitless well adapter below the frost level. Pitless well adapters or pitless units installed on plastic well casing shall be pressurized at the point of attachment with the well casing, unless the pitless unit is solvent welded onto the plastic casing and the riser casing of the pitless unit is plastic. Pitless well adapters installed on steel well casing shall be pressurized at the point of attachment with the well casing, unless the pitless unit is threaded or welded onto the well casing. The annular opening between the well casing and the well borehole or any excavation made to install the pitless adapter shall be filled with earth to minimize settling and shall be mounded to provide drainage away from the well. The contractor installing the pitless well adaptor shall be responsible for the installation of the earth backfill. A list of approved pitless well adapters will be periodically updated and a copy of this list may be obtained from the Department.
- g) Well Caps. There shall be no openings through the well cap except for a factory-installed vent, air line connection, and power supply wiring unless a proposal is

submitted to and approved by the Department. The proposal shall show that any entrance into the well cap is watertight. In addition, well caps shall:

- 1) Prevent surface water from entering the water supply;
  - 2) Be secured in position;
  - 3) Be removable only with tools; and.
  - 4) Be resistant to weathering and corrosion.
- h) Chemical Injection System. Where a chemical injection system is directly connected to a water well used for irrigation, a backflow device shall be installed in accordance with Section 925.40 of the Illinois Water Well Pump Installation Code.
- i) Vents. Vent piping shall be of adequate size to allow equalization of air pressure in the well. For wells that are greater than 4 inches in diameter, the vent shall be not less than ½ inch in diameter. Vent openings shall be located so as to prevent contamination of the well and shall be reasonably tamper proof. The vent opening shall be turned down, secured in position, and screened with not less than 24-mesh durable screen or filtered so as to prevent the entry of insects. The vent opening shall terminate at least 8 inches above finished grade, or 24 inches above maximum high water level in areas where flooding occurs. Wells shall be properly vented in areas where toxic or inflammable gases are known to be a characteristic of the water. If either of these types of gases are present, all vents located in buildings shall be extended to discharge outside of the building at a height where the vent will not be a hazard. Venting is required on all wells except driven water wells and flowing wells.

(Source: Amended at 37 Ill. Reg. 19676, effective November 25, 2013)

### **Section 920.50 Location**

- a) General. In establishing the location of a well, the constructor shall consider sources of contamination that exist on or adjacent to the location of the well. As far as possible, the well shall be located on ground that is higher than sources of contamination and shall have ready access for repairs, maintenance, treatment and inspection. All water wells, except monitoring wells, shall be located in accordance with the minimum distances specified in Table C and shall be constructed in accordance with this Part.
- b) Relation to Sources of Contamination. Determination of minimum lateral distances to locate a well from potential sources of contamination involves evaluation of the character and location of the sources of contamination, types of geologic formations present, depth to the aquifer, direction of groundwater flow,

effect on the groundwater movement by well pumping, and possibilities of flooding of the site by surface waters. Based on practice and experience, accepted minimum lateral distances for some common sources of pollution with respect to a well are established in Table C. Other soil conditions or other sources of contamination shall be evaluated in each particular situation and a distance arrived at based on the pertinent facts. The Department may be called on for assistance in determining a proper distance.

- 1) Prohibitions. No new water well may be located within 200 feet of any potential primary or potential secondary source or any potential route, unless some other distance is allowed or required in Table C. If the owner is the same for both the well to serve the private water system and a potential secondary source or a potential route, the well shall be no closer than 75 feet from the potential route or potential secondary source, unless some other distance is allowed or required in Table C.
- 2) If the owner of a water well is the same owner of a potential primary source, potential secondary source, or potential route, the Department will allow a variance to the minimum separation distances required between a water well and a potential primary source, potential secondary source, or potential route if the owner of the potable water well demonstrates that applicable protective measures will be used to minimize the potential for contamination of the well, and if the resulting well installation can be expected to provide a continuously safe and sanitary water supply in compliance with the Act, this Part and the Department's Drinking Water Systems Code. Protective measures may include ensuring that sources of contamination are down grade from the water source or isolation of the potential source of contamination so as to prevent a route of contamination of the groundwater, or isolating the potential source of contamination to prevent accidental introduction of contaminants into groundwater. To obtain a variance, the owner shall comply with Section 920.30(c). (See Section 6(a) of the Act.)
- c) Floodwater. Locations subject to flooding shall be avoided. If no reasonable alternate site exists, wells may be constructed in flood zones if special protective construction is included. The casing of the well shall terminate not less than 2 feet above the maximum known flood water elevation.
- d) Relation to Building. With respect to buildings, pits and basements, the location of a well shall be as follows:
  - 1) Adjacent to Building. When a well must be located adjacent to a building, it shall be located so that the center line of the well extended vertically will clear any projection from the building by not less than 2 feet.
  - 2) Pits and Basements. New wells shall not be constructed in pits or

basements.

(Source: Amended at 37 Ill. Reg. 19676, effective November 25, 2013)

### **Section 920.60 Drilled Wells in Unconsolidated Formations**

- a) **General.** Unconsolidated formations such as sand and gravel may extend to or near the ground surface. Generally, however, they lie below the ground surface at varying depths and are covered by an overburden of earth. The kind, nature and depth of the overburden are factors in determining how a well shall be constructed.
- b) **Unconsolidated Formations.** When wells are constructed in unconsolidated formations, a casing shall be installed the entire depth of the formation. Wells constructed in unconsolidated formations shall have a minimum of 20 feet of permanent casing.
  - 1) When an oversized drill hole is constructed for the installation of the casing, the diameter of the drill hole shall be a minimum of 3 inches greater than the outer diameter of the casing or coupling, whichever is greater. If plastic well casing is installed, it shall be installed as required in Section 920.90(g). After the well casing is installed, the annular space shall be grouted as provided in Section 920.90(h). The annular space is from within a maximum of 10 feet of the top of the screen to finished ground surface. The tremie pipe shall be installed to the bottom of the annular space. No device shall be installed to prevent the tremie pipe from being installed into the annular space or to prevent the grout from filling the annular space. Excessive development and washing shall not be used to induce collapse of the borehole wall or to reduce the amount of open annular space. (See Illustration A.)
  - 2) When the casing is installed by mechanically driving the casing, an oversized hole shall be constructed to a depth of at least 10 but not more than 20 feet to allow removal of the drive nipple and installation of a joint of casing. While the casing is being driven, the bottom of the oversized hole shall be filled with granulated bentonite or natural clay mixture. After the casing is installed, either the open annular space that exists around the well casing shall be grouted as required in Section 920.90(h) or, when the diameter of the oversized hole is a minimum of 3 inches greater than the outer diameter of the casing or coupling, the open annular space that exists around the well casing can be filled with bentonite or natural clay. (See Illustration B.)
- c) **Gravel Pack Construction.** When an oversized drill hole is constructed to permit the placement of a gravel pack around the well screen, the diameter of the drill hole shall be a minimum of 3 inches greater than the outer diameter of the casing

or coupling, whichever is greater. The annular opening between the casing and drill hole shall be grouted in accordance with Section 920.90(h). If a permanent outer casing is installed, it shall extend to a depth of at least 20 feet and the annular opening between the drill hole and the outer casing shall be grouted in accordance with Section 920.90(h). The annular opening between inner and outer casings shall be sealed at the top of the casing. The seal shall be made in such a manner as to prevent water or contaminants from entering the annular space between the inner and outer casing. If plastic well casing is installed, it shall be installed as required in Section 920.90(g). (See Illustration C.)

- 1) All gravel placed in the well shall be clean and shall be washed and disinfected prior to placement, or provisions shall be made for disinfection in place.
- 2) Gravel refill pipes may be installed if they terminate above ground surface and are provided with watertight caps.
- 3) Wells designed for placement of an artificial gravel pack shall be provided with an adequate screen having openings sized on the basis of the grain size of the gravel. The well shall be developed to ensure free entry of water without sediment.

(Source: Amended at 37 Ill. Reg. 19676, effective November 25, 2013)

### **Section 920.70 Drilled Well Construction in Consolidated Formations**

- a) Drift or Earth Cover Less Than 30 Feet in Thickness
  - 1) The well casing shall extend to a depth of at least 40 feet below finished ground surface. The diameter of the drill hole shall be a minimum of 3 inches greater than the outer diameter of the casing or coupling, whichever is greater. The annular space shall be pressure grouted as provided for in Section 920.90(h). If plastic casing is installed, it shall be installed in accordance with Section 920.90(g). (See Illustration D.)
  - 2) If a well is drilled to obtain water below the upper bedrock formation, it shall comply with subsection (a)(1) and the well casing shall be seated firmly in rock. When a liner is installed through the casing, the annular space between the casing and the liner shall be pressure grouted in accordance with Section 920.90(h). If the upper bedrock formation is a water-bearing formation, the liner shall be installed in accordance with Section 920.40(c).
- b) Drift or Earth Cover Over 30 Feet in Thickness
  - 1) When an oversized drill hole is constructed for the installation of the



casing and the annular space is to be grouted through a tremie pipe installed in the annular space, the diameter of the drill hole shall be a minimum of 3 inches greater than the outer diameter of the casing or coupling, whichever is greater. After the casing is installed, the annular space shall be grouted as provided for in Section 920.90(h). The annular space shall be grouted from the bottom of the casing to ground level. The tremie pipe shall be installed to the bottom of the annular space. No device shall be installed to prevent the tremie pipe from being installed into the annular space or to prevent the grout from filling the annular space. (See Illustration E.)

- 2) When grout is pumped into the annular space through the inside of the casing, the diameter of the drill hole shall be a minimum of 2 inches greater than the outer diameter of the casing or coupling, whichever is greater. The entire length of casing shall be grouted as provided in Section 920.90(h). If plastic well casing is installed, it shall be installed as required in Section 920.90(g).
  - 3) When the casing is installed by mechanically driving the casing, an oversized hole shall be constructed to a depth of at least 10 but not more than 20 feet to allow removal of the drive nipple and installation of a joint of casing. While the casing is being driven, the bottom of the oversized hole shall be filled with granulated bentonite or natural clay mixture. After the casing is installed, either the annular space that exists around the well casing shall be grouted as required in Section 920.90(h) or, when the diameter of the oversized hole is a minimum of 3 inches greater than the outer diameter of the casing or coupling, whichever is greater, the annular space that exists around the well casing can be filled with bentonite or natural clay. (See Illustration F.)
- c) Flowing Artesian Well. A well that is constructed in a location where flowing artesian conditions are encountered or expected to occur shall be grouted to protect the artesian aquifer, prevent erosion of overlying geologic materials, and confine the flow to within the casing. Initial drilling operations shall extend into but not through the formation confining the water. The casing shall be installed and the annular opening between drill hole and casing shall be pressure grouted in accordance with Section 920.90(h). If plastic casing is installed, it shall be installed in accordance with Section 920.90(g). The hole shall then be extended into the artesian formation. Flow control from the well shall be provided by valved pipe connections, watertight pump connections, or receiving reservoirs set at an altitude corresponding to the artesian head. The flowing well discharge control shall be provided to conserve groundwater and to prevent the loss of artesian head by preventing or reducing continuous discharges. A flow discharge pipe, where installed, shall not be directly connected to a sewer or other source of contamination.

(Source: Amended at 37 Ill. Reg. 19676, effective November 25, 2013)

### **Section 920.80 Special Type Wells**

- a) General. Wells in this classification are dug, bored, driven, and radial collector. The choice of any one of these as opposed to a drilled well is largely dictated by the characteristics of the water bearing formations or aquifers in the local areas.
- b) Bored or Dug Well - Well Not Finished With Buried Slab. Bored or dug wells that are not finished as buried slab wells shall comply with the following: (See Illustration G.)
  - 1) Annular Opening. The open space between the excavation and the installed casing shall be grouted with concrete. The concrete shall be a minimum of six inches thick and be poured without construction joints from the ground surface to a minimum of ten feet below ground level. The contractor shall be responsible for the installation of the concrete grout. The diameter of the well bore below the grouting shall be a minimum of four inches greater than the outside diameter of the well casing and shall be filled with washed pea gravel to the well bottom.
  - 2) Upper Terminal. The casing shall extend at least 8 inches above finished ground surface. A cover slab at least four inches thick, adequately reinforced and having a diameter sufficient to extend to the outer edge of the casing shall be provided. The slab shall be constructed without joints. The top of the slab shall be sloped to drain to all sides and a watertight joint made where the slab rests on the well casing. A manhole, if installed, shall consist of a curb cast in the slab and extending four inches above the slab. The manhole shall have a watertight cover having sides which overhang the curb at least two inches.
    - A) A vent shall consist of pipe extending above the slab with the open end turned down and not less than six inches above the slab. The open end shall be covered with 24 mesh or finer screen of durable material.
    - B) Adequate sized pipe sleeve or sleeves shall be cast in place in the slab to accommodate the type of pump or pump piping proposed for the well.
- c) Bored or Dug Well - Buried Slab Construction. The well casing shall be terminated at a depth of 10 feet or more below the ground surface. Well casing shall meet the requirements in Section 920.90. This casing shall be firmly imbedded in a uniformly tapered hole that is formed when the reinforced concrete buried slab is manufactured, the hole size tapering in diameter from 1/2 inch greater than the outside diameter of the riser pipe to 1/2 inch smaller than the

outside diameter of the riser pipe or shall be connected to a pipe cast in a reinforced buried concrete slab. The connection shall be made in accordance with Section 920.90(c). The casing shall be a minimum of four inches in diameter and extend from the concrete slab to at least eight inches above finished ground surface. A bentonite seal that is a minimum of 12 inches in thickness shall be installed over the buried slab the entire diameter of the well. The annular opening between the casing pipe and the well bore shall be filled with clean earth thoroughly tamped to minimize settling, and mounded to drain away from the well. The contractor shall be responsible for the installation of the backfill. If a pitless adaptor is scheduled to be installed within seven calendar days, the earth backfill may terminate one foot below the frost level. The diameter of the well bore below the buried slab shall be a minimum of four inches greater than the outer diameter of the well casing and shall be filled with washed pea gravel to the well bottom. (See Illustration H.)

- d) Driven Well. The well point, drive pipe and joints shall be structurally suitable to prevent rupture during the driving of the well. If aids to driving are used, such as an augered starting hole or water jetting, the annular space around the drive pipe shall be sealed with cement grout or puddled clay. The type of pump proposed for the well will determine how the the top ten feet or more of the well shall be completed. If the working barrel of a hand pump is to be located below ground surface, the upper portion of the well shall be enclosed in steel or iron casing pipe to a point below the barrel. So called "frost pits" curbed with stone, brick, tile, etc., are prohibited.
- 1) A minimum of 20 ft. of casing shall be provided for the drop pipe. (See Illustration I.)
  - 2) Driven wells shall not be constructed in basements.
  - 3) Well seals or pitless adapter units shall be employed in accordance with the Illinois Water Well Pump Installation Code.
  - 4) The casing used in driven wells shall be in compliance with Table A or Table B.
- e) Radial Collector Well. Approval of plans for the well shall be obtained from the Department before construction. Factors that will be considered for approval of a radial collector well will include depth of well, types of soil formations, location of well and sources of potential contamination in the surrounding area.

(Source: Amended at 22 Ill. Reg. 3973, effective April 1, 1998)

### **Section 920.90 Construction Materials and Other Requirements**

- a) Casing and Liner Pipe. In selection of casing and liner pipe, consideration shall

be given to the stress to which the pipe will be subjected during construction and the corrosiveness of the water with which it comes in contact. Used or rejected pipe shall not be used.

- 1) Steel well casing shall meet one of the following standards: ASTM A53/A53M-10, ASTM 589/A589M-06, or API SPEC 5L-2011, and shall conform to Table A.
  - 2) Plastic well casing and liners shall meet the requirements of ASTM F480-12 and the NSF/ANSI 14-2010a, Plastic Piping System Components and Related Materials. Evidence of compliance shall be inclusion in the current NSF listing and display of the NSF seal on each section of casing, and marking the casing in accordance with the requirements of ASTM Standard F-480-12.
  - 3) Plastic well casing and liners shall be Standard Dimension Ratio (SDR) rated and conform to Table B.
- b) Outer Casing. Casing intended for construction purposes only shall be of weight and design necessary to be watertight and permit installation without distortion or rupture to the specified depth and shall be removed upon completion of the well.
  - c) Joints. All casing and liner pipe joints shall be watertight. When the water well casing is to be extended, the joint shall be a threaded coupling or welded if the casing is metal, or the joint shall be solvent welded if the casing material is plastic. When plastic well casing is installed, the pipe spigot and socket shall be cleaned and treated with a cleaner primer. Other types of plastic joints may be evaluated and approved by the Department on the basis of NSF/ANSI 14-2010a, NSF/ANSI 61-2010a, and laboratory pressurization tests for leakage. A pressurized connection shall be used when steel casing is used to extend plastic casing when the connection is within 20 feet of the ground surface.
  - d) Screens. Screen openings shall provide the maximum amount of open area consistent with the strength of the screen and the grading of the water-bearing formation or gravel pack. The openings shall permit maximum transmitting ability without clogging or jamming. Screens shall be made of non-corrosive material.
  - e) Drive Shoe. Pipe that is to be driven shall be equipped with a drive shoe.
  - f) Grouting Guides. Casing that is to be pressure grouted in the drill hole or annular opening shall be provided with a centering shoe and shall have sufficient guides or centralizers to permit the unobstructed flow and deposition of the thickness of grout specified.
  - g) Plastic Casing Installations. There shall be no penetrations through the casing. A

formation packer may be installed just above the screen on unconsolidated formation wells or just above the bottom of the casing. A coupling shall be cemented on the bottom of the casing to stabilize it in the hole. A section of steel well casing, a minimum of 5 feet in length and meeting the requirements of subsection (a)(1) may be used on the bottom of the casing in lieu of the coupling. In rock wells, the casing shall be set into the firm rock a minimum of 3 feet to prevent leaking around the end of the casing. In areas where the water is obtained at the rock surface, the casing shall be set just above the rock.

- h) Grouting. Procedures and materials for grouting shall be as follows:
- 1) Grout Material. Grout shall be bentonite grout or neat cement grout as described in Section 920.10. The Department will maintain a list of water well grouts on its website.
  - 2) Prohibitions. Shale traps, cementing baskets, packers or other devices shall not be used to suspend grout above an open annular space. Excessive development and washing, shoveling of cuttings, or other activities shall not be used to induce collapse of the borehole wall or to reduce the amount of open annular space surrounding the permanent well casing.
  - 3) Application. Grouting through the inside of the casing shall be performed so that the grout fills the annular opening from the bottom to the surface. If a tremie pipe is installed in the annular space, grout shall be pumped through the tremie pipe until grout completely fills the annular space to the surface. Bentonite or similar material may be added to the annular opening in the manner indicated for grouting, prior to the cement grouting, to seal any small crevices or fissures and assure that the annular space is open. If the grout settles below the ground surface or the point of pitless adapter attachment, the water well contractor who constructed the well shall grout from the depth of settling to the surface or the point of pitless adapter attachment. If the grout has settled, the annular space shall be grouted as required in this subsection (h). When the grout has settled less than 20 feet, the annular space can be grouted with bentonite chips.
  - 4) Grouting Time. The annular space shall be grouted when the drill rig is on the drill site.
  - 5) Setting Time. Drilling operations shall not be resumed until the cement grout has set. Neat cement grout shall set for at least 48 hours. Setting time may be reduced from 48 hours by the addition of manufacturers' approved chemicals and following manufacturers' recommendations for setting time. If the casing is fitted with a drive shoe on the bottom of the casing and driven to a firm seat into the consolidated formation, the set time can be reduced to one hour. Bentonite grout shall set for a minimum

of one hour from the start of placement of the grout at the bottom of the annular opening by tremie method or one hour after completion of grouting by other methods.

- i) Plumbness and Alignment. The bore of the hole shall be sufficiently plumb and straight to receive the casing without binding. The casing shall be sufficiently plumb and straight so that it will not interfere with installation and operation of the pump.
- j) Construction Water. Water used in the drilling process shall be obtained from a source that will not result in contamination of the well. All of the water shall be treated so as to maintain a free chlorine residual as an extra precaution.
- k) Cement Tile for Bored Wells. The minimum wall thickness shall be 2 inches. The minimum strength of the concrete shall be 4,000 pounds per square inch (psi). Before pouring the concrete, #10 gage reinforcement wire mesh with a grid size of 6 inches by 6 inches shall be installed in the concrete casing form. The concrete tile shall be formed to have overlapping joints on the top and bottom.
- l) Fiberglass Casing for Bored Wells. Fiberglass casing for bored wells shall meet the requirement for NSF/ANSI Standard 61 and be installed no deeper than 120 feet. The manufacturer shall certify that the fiberglass casing can withstand loads at depths of 120 feet with a 2:1 load factor. Certification shall be in the form of a letter from a professional or structural engineer registered in Illinois. If the casing is buried, the top of the casing shall not be installed deeper than 30 feet below ground surface.
- m) Buried Slab for Bored Wells. The manufacturer shall certify that the buried slab shall withstand loads at depths to which it will be installed with a 2:1 load factor. Certification shall be in the form of a letter from a professional or structural engineer registered in Illinois. The design, including dimensions and type of reinforcement, shall be submitted to the Department along with the certification letter. The slab shall not be installed before Department approval is issued, based on compliance with this Section. If the buried slab is constructed of fiberglass material, it shall meet NSF/ANSI Standard 61.

(Source: Amended at 37 Ill. Reg. 19676, effective November 25, 2013)

### **Section 920.100 Finishing and Testing**

- a) Upper Terminal. The casing or riser pipe shall be terminated at a height above finished ground surface consistent with proposed plans for a pump house and pump installation but not less than 8 inches above finished ground surface or 24 inches above maximum high water level where flooding occurs. The well shall be capped watertight until pump installation is made.
- b) Disinfection. Only after the well has been effectively cleaned of all remaining

drilling mud and drill cuttings can the well be disinfected. The well contractor shall be responsible for properly disinfecting the well upon completion. Disinfection shall also be done after the pump installation is completed. Sufficient chlorine shall be introduced to give a dosage of 100 parts per million to the water in the well.

1) Drilled Wells. The disinfection of drilled wells shall be accomplished in accordance with the following:

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1 cup = 8 oz. measuring cup  
 (2 cups = 1pt.; 4 cups = 1 qt.)  
 1 oz. = 1 heaping tablespoon granules  
 (16 oz. = 1 lb.)

- A) Determine the amount of water in the well by multiplying the gallons per foot by the number of feet of water in the well.
- B) For each 100 gallons of water in the well, use the amount of chlorine liquid or compound given in the above tables. Mix this total amount in about 10 gallons of water. If dry granules or tablets are used, they may be added directly to drilled wells.
- C) Pour this solution into the top of the well before the seal is installed.
- D) Connect one or more hoses from faucets on the discharge side of the pressure tank to the top of the well casing and start the pump, recirculating the water back into the well for at least 15 minutes. Then open each faucet in the system until a chlorine smell appears. Close all faucets. Seal the top of the well.
- E) Let stand for several hours, preferably overnight.
- F) After standing, operate the pump, discharging water from all outlets until all chlorine odor disappears. Faucets on fixtures discharging to septic tank systems should be throttled to a low flow

to avoid overloading the disposal system.

- 2) Dug/Bored Wells. The disinfection of dug/bored wells shall be accomplished in accordance with the following:

Diameter of well (in feet)	3	4	5	6	7	8	10
Amount of 5.25% laundry bleach to use per foot of water (in cups)	1	3	4	6	9	12	18
Amount of 70% Hypochlorite granules to use per foot of water (in ounces)	1	2	3	4	6	8	12

- A) The amount of disinfectant required is determined primarily by the amount of water in the well. The table above shows the amount of the chlorine to use for each foot of water in the well, according to its diameter.
- B) To determine the exact amount of bleach to use, multiply the amount of disinfectant indicated as determined by the well's



- diameter times the number of feet of water.
- C) This total amount of bleach shall be added to approximately 10 gallons of water, and splashed around the lining, or wall of the well. Be certain that the solution has contacted all parts of the well, using the entire amount of disinfectant. Seal the top of the well.
  - D) When this is done, pump enough water so the strong chlorine odor is evident. When the odor is detected, stop the pumping and allow the solution to remain in the well overnight.
  - E) After standing, operate the pump, discharging water from all outlets until all chlorine odor disappears. Faucets on fixtures discharging to septic tank systems shall be throttled to a low flow to avoid overloading the disposal system.
- 3) Water Samples. Upon completion of a new well or modification of an existing well, the contractor shall give the owner information prepared by the Department explaining the importance of water well sampling, procedures for sampling, and how the water can be tested to assure a safe supply of water.

(Source: Amended at 22 Ill. Reg. 3973, effective April 1, 1998)

### **Section 920.110 Modification of Wells**

- a) General. Wells constructed prior to the adoption of this Part may not meet the criteria established. When a well is to undergo modification, reconstruction, or repair, the work shall include those changes necessary to make the well conform to this Part. Where existing wells have buried well seals, the seal shall be replaced with a pitless well adapter or the casing shall be extended above the ground surface in accordance with Section 920.90(c) when the existing well seal is removed.
- b) Well Pits.
  - 1) No new well pits shall be allowed.
  - 2) Existing pits will be accepted if the following conditions exist:
    - A) The well pit shall be structurally sound and watertight. The casing shall extend at least twelve (12) inches above the pit or basement floor and have a well seal to prevent contaminants from entering the well.
    - B) A watertight manhole and cover must be provided for the well pit.
  - 3) No existing well pit shall be modified to comply with subsection (b)(2) above. Existing pits which are not in compliance with subsection (b)(2)

shall be eliminated. The floor or one wall of the pit shall be broken or removed and the pit filled with compacted earth.

(Source: Amended at 18 Ill. Reg. 17684, effective November 30, 1994)

## **Section 920.120 Abandoned Wells**

### a) Abandonment of Wells

- 1) The owner of a water well, boring, or monitoring well shall assure that a well is sealed within 30 days after it is abandoned and when the well is no longer used to supply water or is in such a state of disrepair that the well or boring has the potential for transmitting contaminants into an aquifer or otherwise threatens the public health or safety. 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 time in which the well will be either sealed or reused. For an extension to be granted, the owner shall assure the Department that applicable protective measures will be taken and that the methods and materials will be in compliance with the Act and this Part. Applicable protective measures may include ensuring that sources of contamination are down grade from the water source, ensuring isolation of the potential source of contamination so as to prevent a route of contamination of the groundwater, or isolating the potential source of contamination to prevent accidental introduction of contaminants into groundwater.
- 2) Water wells shall be sealed by a licensed water well driller pursuant to the Water Well and Pump Installation Contractor's License Act. An individual who is not licensed may seal a well if all of the following conditions exist:
  - A) The well is located on land that is owned or leased by the individual;
  - B) The land is used by the individual for farming purposes or as the individual's place of abode; and
  - C) A request is made to the Department or local health department prior to the commencement of sealing indicating how the water well is to be sealed and the materials to be used. The Department or local health department will grant approval when requested prior to the commencement of sealing if the methods and materials are in compliance with this Section.

- b) **Sealing Requirements.** Where geologic data does not exist for a particular abandoned drilled water well, the water well shall be sealed, from the bottom up to where the well casing is removed, with neat cement grout or any bentonite

product manufactured for water well sealing. Water wells, borings or monitoring wells that are abandoned shall be disinfected by introducing a sufficient amount of chlorine to produce 100 parts per million of chlorine in the water in the well and shall be sealed by placing the sealing materials from the bottom of the well to the surface by methods that will avoid segregation or dilution of material, in accordance with the following requirements:

- 1) Non-creviced, Consolidated Formations. Wells extending into non-creviced sandstone, or other water-bearing consolidated formations shall be sealed by filling the well with disinfected clean pea gravel or limestone chips to within 10 feet below the top of the water-bearing formation or to within 10 feet of the bottom of the casing, whichever is less. Neat cement grout or any bentonite product manufactured for water well sealing shall be placed for a minimum of 20 feet above this point. The upper part of the well to where the well casing is removed shall be sealed by neat cement grout or any bentonite product manufactured for water well sealing. Concrete or cement may be used for sealing if the upper part of the well is dry. (See Illustration J.)
- 2) Creviced Formations. Wells extended into creviced formations shall be sealed by filling with disinfected clean pea gravel or limestone chips to within 10 feet below the top of the water-bearing formation or to within 10 feet below the bottom of the casing, whichever is less. Neat cement grout or any bentonite product manufactured for water well sealing shall be placed for a minimum of 20 feet above this point. The upper part of the well to where the well casing is removed shall be sealed by neat cement grout or any bentonite product manufactured for water well sealing. Concrete or cement may be used for sealing if the upper part of the well is dry. If the earth cover is less than 30 feet, the hole shall be grouted from 10 feet below the creviced formation to where the well casing is removed. (See Illustration J.)
- 3) Unconsolidated Formations. If the water-bearing formation consists of coarse gravel and producing wells are located nearby, the well shall be sealed by filling with disinfected clean pea gravel or limestone chips to 10 feet below the top of water-bearing formation. Neat cement grout or any bentonite product manufactured for water well sealing shall be placed for a minimum of 20 feet above this point. The upper part of the well to where the well casing is removed shall be sealed by neat cement grout or any bentonite product manufactured for water well sealing. Concrete or cement may be used for sealing if the upper part of the well is dry. Abandoned dug and bored wells shall be sealed by using one of the following methods:
  - A) Filling with disinfected clean pea gravel or limestone chips to within 20 feet below the top of the casing. The upper part of the

well to where the well casing is removed shall be sealed for a minimum of 20 feet by filling with neat cement grout, any bentonite product manufactured for water well sealing, or impervious material such as clay. Concrete or cement may be used for sealing if the upper part of the well is dry;

- B) Placing a one foot layer of any bentonite product manufactured for water well sealing at the bottom of the well, followed by alternating layers of agricultural limestone (limestone fines) and any bentonite product manufactured for water well sealing. The alternating layers of agricultural lime shall be 5 to 7 feet thick and the alternating layers of any bentonite product manufactured for water well sealing shall be 6 inches thick. The uppermost or top layer shall be agricultural lime; or
  - C) Completely filling with concrete, cement grout or impervious material such as clay. (See Illustration K.)
- 4) More than One Water-Bearing Formation. If wells extend into more than one water-bearing formation, each water-bearing formation shall be sealed independently in the manner described in this Section. Neat cement grout or any bentonite product manufactured for water well sealing shall be placed a minimum of 10 feet above and below at all intermittent water-bearing formations except artesian wells and artesian formations. Disinfected clean pea gravel or limestone chips shall be placed in each water-bearing formation between plugs. When the lower formation has an upflow of water into the upper formation, a pressure seal is required to shut off the upflow while a neat cement plug at least 50 feet in length is pumped in place and allowed to set. The upper part of the well to where the well casing is removed shall be sealed with neat cement grout or any bentonite product manufactured for water well sealing. Concrete or cement may be used for sealing if the upper part of the well is dry. (See Illustration L.)
- 5) Artesian Wells. A cement retainer shall be used with pressure grouting equipment used to place cement grout. Neat cement grout, containing bentonite from 2% to 6% by dry weight, shall be placed for a minimum of 10 feet below and 10 feet above the water bearing formation. The upper part of the well to where the well casing is removed shall be filled with neat cement grout or any bentonite product manufactured for water well sealing. Concrete or cement may be used for sealing if the upper part of the well is dry.
- 6) Buried Slab Bored Wells. Wells shall be sealed by filling with disinfected clean pea gravel or limestone chips to within 1 foot below the buried slab. The upper part of the well to where the casing is removed shall be sealed

with neat cement or any bentonite product manufactured for water well sealing.

- 7) In lieu of filling the well with disinfected clean pea gravel or limestone chips as required in subsections (b)(1) through (6), wells may be sealed by grouting from the bottom up by using neat cement grout or any bentonite product manufactured for water well sealing. This material shall be applied the full depth of the well and shall terminate within 2 feet of the ground surface. Concrete grout may be used in the upper part of the well if the upper part of the well is dry.
- c) Non-Producing Well. If a water well is drilled and a water-bearing formation is not located, the water well driller shall fill the water well with clay, or neat cement containing bentonite or similar materials from 2% to 6% by weight, or pure bentonite in any form, not more than 10 calendar days after the well has been drilled. If a water well is drilled and a water-bearing formation is located, but the yield from the formation is not sufficient, or if the water well is to be sealed for any other reason, the water well shall be sealed in accordance with all provisions of this Part regulating the sealing of water wells.
- d) The well casing or liner shall be removed to at least 2 feet below final grade, except where the well terminates with a concrete slab that is part of a building floor. If the well terminates in a slab that is part of a building floor, the sealing material shall be placed flush with the floor. The pump and drop pipe shall be removed.
- e) Notification
  - 1) The Department, approved local health department, or approved unit of local government shall be notified by telephone or in writing at least 48 hours prior to the commencement of any work to seal a water well or monitoring well. Preparation of the abandoned well, such as pulling the pumping unit, may be completed prior to notification.
  - 2) When a water, boring or monitoring well is sealed, the individual performing the sealing shall submit a sealing form to the Department or approved local health department not more than 30 days after the well is sealed. The following information shall be submitted on a form provided by the Department:
    - A) The date that water, boring or monitoring well was drilled;
    - B) Depth and diameter of the water, boring or monitoring well;
    - C) Location of the water, boring or monitoring well;

- D) Type of sealing method used;
- E) Original water well permit number if available;
- F) Date that the water, boring or monitoring well was sealed;
- G) Type of water well (bored, dug, driven or drilled);
- H) Whether the formation is clear of obstructions;
- I) Casing record (explanation of the required removal); and
- J) Water well driller's license number and name.

(Source: Amended at 37 Ill. Reg. 19676, effective November 25, 2013)

### **Section 920.130 Water Well Permit Requirements**

- a) Permit. A permit to construct, deepen, modify or seal a water well shall be obtained from the Department or approved local health department prior to start of work.
- b) Application. Application for a permit shall be made on the forms provided by the Department or approved local health department. All applications for permit shall include a plan and drawing of the proposed construction. At a minimum the plan shall include:
  - 1) A drawing indicating lot size, direction of slope, location of property lines, and distances from proposed well construction to septic tanks, abandoned wells, property lines, seepage fields, sewers, and all other sources of contamination, and an indication of the type of contamination source;
  - 2) Water well driller's license number and name;
  - 3) Estimated daily pumping capacity if greater than 100,000 gallons per day;
  - 4) The location of the water well, including county, city, street address or lot number, township, range, directions to the site (i.e., subdivision lot number, highway number, secondary roads, signs to follow, etc.), and section;
  - 5) Name and address of the owner of the well;
  - 6) Type of well to be constructed (bored, dug, drilled or driven);
  - 7) An estimate of the depth of the well;

- 8) Type of well (i.e., non-potable use well, such as an irrigation, livestock or industrial water well, private water well, semi-private water well, or non-community public water well); and
- 9) Proposed aquifer.
- c) Expiration. A permit is void if construction has not commenced within one year after the date of issuance.
- d) Water Well Fee. The fee to be paid for a permit to construct, deepen, modify or seal a water well shall not exceed \$100.
- e) The Department will grant permit requests that meet the requirements of the Act and this Part. The Department's standards for denial of a permit request are set forth in subsection (f).
- f) Groundwater Contamination
  - 1) The Department will deny the approval of a permit request when available information indicates that the groundwater aquifer contains contamination that exceeds the Class I groundwater standards adopted in the Groundwater Quality Standards Code. A potential public health problem may be detected on the basis of a sanitary survey, laboratory analyses, location of known sources of pollution, condition of water supply, type of construction or information from previous well owners that might indicate the water would be too hazardous to drink.
  - 2) The Department will grant approval of a request for a permit when approved treatment is shown to reduce contaminant levels below the levels of recognized health advisories or established by the Department and the federal government and referenced in this subsection (f)(2). Treatment includes, but is not limited to, sampling for additional contaminants, more frequent sampling for contaminants, or imposing maximum contaminant levels specified in the Drinking Water Systems Code, or in public health advisories concerning the safety of drinking water issued by the Department or USEPA.
- g) Notification. Any person who constructs, deepens, modifies or seals a water well for which a permit has been issued under this Part shall notify the Department, approved local health department, or approved unit of local government by telephone or in writing at least two days prior to commencement of the work.

(Source: Amended at 37 Ill. Reg. 19676, effective November 25, 2013)

## **Section 920.140 Administrative Hearings**

All administrative hearings shall be conducted in accordance with the Department's Practice and Procedure in Administrative Hearings.

(Source: Amended at 37 Ill. Reg. 19676, effective November 25, 2013)

### **Section 920.150 Designation of Agents of the Department**

- a) The Department may designate and use full-time municipal, district, county or multi-county health departments as its agents for the purpose of performing inspections of water well and closed loop well system construction, investigating complaints, inspecting existing water wells and closed loop well systems and inspecting the work of water well drillers and closed loop well contractors. Health departments that desire approval as an agent shall make a request in writing to the Department.
- b) The Department will designate a health department as its agent if the health department agrees to do the following:
  - 1) Issue permits for the construction, deepening, modification or sealing of all water wells and closed loop well systems;
  - 2) Perform inspections of all water wells and closed loop well systems for which the health department has issued a permit;
  - 3) Inspect all non-community public water supplies;
  - 4) Inspect the sealing of all abandoned water wells; and
  - 5) Enter into a written agreement with the Department for the conduct of an inspection program.

(Source: Amended at 37 Ill. Reg. 19676, effective November 25, 2013)

### **Section 920.160 Issuance of Water Well and Closed Loop Well Permits by Units of Local Government or Local Health Departments**

- a) Approval
  - 1) A unit of local government or local health department may issue water well construction, deepening, modification or sealing permits and closed loop well permits if:
    - A) the unit of local government or local health department adopts an ordinance that:



- i) requires the unit of local government or local health department to issue water well and closed loop well permits; and
    - ii) establishes a system for the inspection of water well construction and regulation; and
  - B) the ordinance is approved by the Department.
- 2) The unit of local government or local health department shall charge a water well construction, deepening, modification or sealing permit fee not to exceed \$100. The unit of local government or local health department shall charge a closed loop well construction, modification or sealing permit fee as required in Section 920.200(d).
- b) To receive approval of an ordinance, the unit of local government or local health department shall submit to the Department a request for approval and submit a copy of the ordinance, including all amendments. The Department will approve the ordinance if the ordinance:
  - 1) Has been adopted by the unit of local government or local health department and is in effect;
  - 2) Adopts this Part and the Illinois Water Well Pump Installation Code; and
  - 3) Requires the unit of local government or local health department to inspect each water well for which a permit is issued and each closed loop well system for which a permit is issued, and the sealing of each abandoned water well or monitoring well within its jurisdiction. The unit of local government or local health department shall enter into a written agreement with the Department to conduct inspections.
- c) Required Information. An approved unit of local government or local health department that has an ordinance approved by the Department in accordance with subsection (a) of this Section shall submit to the Department the information listed in Section 920.130(b) for each water well permit issued. This information shall be submitted within 30 days after the date of issuance of the permit and shall be submitted on forms provided by the Department.

(Source: Amended at 37 Ill. Reg. 19676, effective November 25, 2013)

### **Section 920.170 Monitoring Wells**

This Section shall apply to all monitoring wells, except those wells installed to monitor chemicals leaking from underground storage tanks which are installed within the excavation made for the installation of the underground storage tank.

- a) Casing. All monitoring wells shall have casing which meets the requirements of Section 920.90(a), except where the design specifications require the use of another material. Threaded joints shall be required where plastic casing is used. Casing must be clean, free of rust, grease, oil or contaminants and be composed of materials, including but not limited to steel and plastic, that will not affect the quality of the water sample. All casing shall be watertight. The casing shall be centered in the borehole, be free of any obstructions and allow sampling devices to be lowered into the well.
- b) Well Screen. All monitoring well screens shall be constructed of non-corrosive and non-reactive material. All well screens shall be permanently joined to the well casing and shall be centered in the borehole.
- c) Filter Packs. All monitoring wells installed in unconsolidated material shall be constructed with filter packs. When used, the filter pack shall be the only material in contact with the well screen.
  - 1) The filter pack shall consist of sand or gravel. The sand or gravel used for filter packs shall have an average specific gravity of not less than 2.50. The filter pack material shall be sized to match the screen slot size and the surrounding formation to prevent the formation materials from entering the screen. The sand or gravel shall be free of clay, dust and organic matter. Crushed limestone, dolomite or any material containing clay or any other material that will adversely affect the performance of the monitoring well shall not be used as filter pack.
  - 2) Installation. The filter pack shall extend a maximum of 6 inches below the bottom of the screen to 2 feet above the top of the screen. For water table observation wells constructed in areas where the depth to the water table is less than 5 feet, the required filter pack height above the top of the well screen may be reduced to 6 inches to allow for the required amount of annular space sealant to be placed.
- d) Grouting Requirements. All materials and procedures used in the installation of annular seals for groundwater monitoring wells shall meet the requirements of this Section. The annular sealing material above the filter pack shall prevent the migration of fluids from the surface and between aquifers. Sealing material shall be chemically compatible with anticipated contaminants.
  - 1) Annular Space Seal. All monitoring wells shall be installed with an annular space seal. The annular seal shall extend from the top of the filter pack to the surface.
  - 2) Above Ground Surface Completion. Where the monitoring well does not terminate flush with the ground surface in accordance with Section

920.170(d)(3), the casing shall extend at least 8 inches above the ground surface. The top of the casing shall be provided with a locking cap. If the monitoring well is located in a floodplain, the cap shall be watertight. Protective devices, such as rings of brightly colored posts around the well, shall be installed in areas where the casing is likely to be struck by farm vehicles or by individuals who are unaware of the existence of the well.

- 3) **Ground Surface Completion.** Monitoring well casing may terminate at the ground surface provided a flush-mounted well completion pipe is installed over the casing. The flush-mounted completion pipe shall consist of a metal casing at least four inches larger in diameter than the well casing. Monitoring wells terminating at the surface may be allowed only in areas traveled by vehicles. The flush-mounted well completion pipe shall have a water tight seal and the annular opening around the well completion pipe shall be grouted. The well casing shall be sealed with a watertight locking cap.
- e) **Drilling Methods and Fluids.** The drilling method shall introduce the least possible amount of foreign material into the borehole, produce the least possible disturbance to the formation and permit the proper construction and development of the required diameter well. Water from a source free of bacterial and chemical contamination shall be used in the drilling fluid mixture.
- f) **Disposal and Decontamination.**
  - 1) All drill cuttings and fluids and surge and wash waters from borehole and monitoring well construction and development shall be disposed of in a manner which will not result in contamination of the immediate area or result in a hazard to individuals who may come in contact with these materials.
  - 2) All monitoring well construction equipment shall be decontaminated by washing and triple rinsing or high pressure heat cleaning to prevent cross-contamination of monitoring wells or in accordance with design specifications, whichever is more stringent.
- g) **Special Circumstances and Exceptions.**
  - 1) The Department may require more restrictive or alternative well material, assembly or installation if the contaminant concentrations or geologic setting require alternative construction.
  - 2) Variances to the requirements of this subsection may be approved by the Department prior to installation or abandonment. A variance request shall state the reasons why compliance with the rule is impractical or impossible. The Department shall approve a variance when it can be

shown that the particular contaminant or drilling method requires alternative materials or procedures to safeguard against contamination of the groundwater.

- h) Abandonment or Decommissioning of Monitoring Wells. All abandoned monitoring wells shall be sealed in accordance with Section 920.120.
- i) Reporting. Within 30 days after a monitoring well has been constructed or abandoned, the owner, designer or consulting firm shall submit a report of construction or abandonment to the Department on such forms as are prescribed and furnished by the Department.

(Source: Amended at 18 Ill. Reg. 17684, effective November 30, 1994)

### **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. The Department will maintain a list of approved closed loop well grouts on its website. 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.

(Source: Amended at 37 Ill. Reg. 19676, effective November 25, 2013)

### **Section 920.190 Assurance of Potable Water Supply**

Except as provided in Section 14.2 of the Environmental Protection Act [415 ILCS 5/14.2], the owner of a potable well, which has been contaminated due to the actions of the owner or operator of a potential primary or potential secondary source or of a potential route, shall be provided with an alternative source of potable water or treatment of the water supply by the owner or operator of the contamination source or route, or such other remedy as may be mutually agreed upon by the well owner and the owner or operator of the potential primary or potential secondary source or potential route. For the purposes of this Part, the water shall be considered contaminated when it exceeds Class I groundwater standards adopted in the Groundwater Quality Standards Code (35 Ill. Adm. Code 620). The Department shall notify the owner or operator of the contamination source or route of the determination of contamination of the potable water well and the responsibility to comply with this Section. The Department shall also provide the owner or operator notice and opportunity for an administrative hearing to appeal the determination. Such notice shall be made by certified mail or by personal service and shall set forth the particular reasons for the determination and provide the owner or operator with an opportunity to request a hearing. All hearings conducted pursuant to this Section shall be governed by the Department's Rules of Practice and Procedure in Administrative Hearings (77 Ill. Adm. Code 100).

(Source: Added at 18 Ill. Reg. 17684, effective November 30, 1994)

### **Section 920.200 Closed Loop Well System Permit Requirements**

- a) **Permit.** A permit to construct, modify or seal a closed loop well system shall be obtained from the Department, approved local health department or approved unit of local government prior to performing the work.
- b) **Application.** Application for a permit shall be made on the forms provided by the Department. All applications for permits shall include a plan and drawing of the proposed construction. At a minimum, the plan shall include:
  - 1) Name and address of the owner of the closed loop well system;
  - 2) Closed loop well contractor's registration number and name;
  - 3) The location of the closed loop well system, geographical location of the site using global positioning equipment and a description including county, city, street address, subdivision lot number, township, range, section and directions to the site (i.e., highway number, secondary roads, signs to follow, etc.). Changes in location of the closed loop well system shall be approved by the issuing party prior to construction;
  - 4) Type of facility to be served (e.g., single family residence, apartment building, business, factory, school);
  - 5) The number and depth of the closed loop boreholes;
  - 6) A drawing indicating lot size, location of property lines, and distances from proposed closed loop well system construction to water wells, septic tanks, abandoned wells, property lines, seepage fields, sewers, and all other sources of contamination, if they are within 200 feet of any closed loop well.
- c) **Expiration.** A permit shall be void if construction has not commenced within one year after date of issuance.
- d) **Closed Loop Well System Permit Fee.** The fee to be paid to the Department for a permit to construct or modify each individual closed loop well system shall be \$100 for the first 10 closed loop well boreholes drilled and \$10 for each additional borehole drilled. The fee to be paid to the Department for a permit to abandon each individual closed loop well system using up to 10 closed loop wells shall be \$100 and \$10 for each additional closed loop well after 10. A unit of local government or local health department having an approved ordinance in

accordance with Section 920.160 shall set its own fees for permits to construct, modify or seal an abandoned closed loop well system.

- e) The Department, approved local health department or approved unit of local government will grant permit requests that meet the requirements of the Act and this Part.
- f) Notification. Any closed loop well contractor who constructs, modifies or seals a closed loop well for which a permit has been issued under this Part shall notify the Department, approved unit of local government or approved local health department by telephone or in writing at least two days prior to commencement of the work.
- g) Within 30 days after a closed well system is completed or abandoned and sealed, the closed loop well contractor shall submit a report of the completion or sealing on a form prescribed by the Department, approved local health department or approved unit of local government.
- h) Variance
  - 1) If conditions exist at a proposed installation site that preclude compliance with this Part, a variance shall be requested and shall be approved before well construction begins. The closed loop well contractor may request a variance by submitting to the Department or an approved unit of local government or local health department a written request outlining a specific proposal to be used in lieu of compliance with this Part. The request shall include a plot plan of the property, showing lot size, the location of sewers, septic tanks, buildings, seepage fields, and other sources of contamination on the property and adjacent property, with distances shown to the proposed closed loop well. A description of geologic and soil conditions shall also be included. The Department or approved local health department will approve the variance if the proposal is in accordance with accepted public health and sanitary engineering principles and practices. The Department or approved local health department will notify the applicant in writing of its decision either to grant or deny the variance.
  - 2) Examples of location problems that would preclude compliance with this Part would be the proposed location of a well too close to septic tanks, buildings, sewer lines or barnyards.
  - 3) Examples of public health and engineering principles that would be considered in issuing a variance would be ground surface conditions, depth of the water table, location of sources of contamination, ability of the existing soil to remove bacteria, and geologic conditions.

(Source: Added at 37 Ill. Reg. 19676, effective November 25, 2013)

### **Section 920.210 Examination for Closed Loop Well Contractor Certification and Fees**

- a) Applications
  - 1) Each person who desires to apply for admittance to the examination for closed loop contractor certification shall file an application for examination on forms provided by the Department. Forms may be obtained by writing to the Illinois Department of Public Health, Division of Environmental Health, 525 W. Jefferson Street, Springfield IL 62761.
  - 2) The Department will establish examination dates and locations. A completed application, a current photograph of the applicant, proof of 180 days working as a geothermal well driller and a fee of \$175 shall be filed with the Department at least 45 days prior to the examination date.
  - 3) Members of the Closed Loop Well Contractors Certification Board shall be allowed to take the examination.
- b) Examination Requirements and Results
  - 1) Examination Content. The examination for a closed loop well contractor certification will test the applicant's knowledge of the location of closed loop wells in relation to water wells and sources of contamination, drilling of boreholes and grouting of the borehole.
  - 2) Passing Grade. The examination shall consist of questions with a grade value of 100 points. To successfully pass the examination, a grade of not less than 70 shall be obtained.
  - 3) Notification of Results. The Department will notify each examinee by letter of the results of his or her examination.
  - 4) Failure to Pass. Any person who fails to pass the examination shall be admitted to a subsequent regularly scheduled examination after filing a new examination application and fee with the Department in accordance with subsection (a).
  - 5) Review of Examinations. Individuals may not review their examinations once they have been taken.
- c) Any person holding a valid water well contractor's license issued under the Water Well and Pump Installation Contractor's License Act may apply and receive, without examination or fee, a closed loop well contractor's certification. As part

of the application, the person shall submit a copy of his or her current Water Well Contractor's License.

- d) Any person who installs horizontal closed loop wells using only the open trench method shall be exempt from certification under this Section.
- e) Certification shall expire if the person holding the certifications fails to register within two years after becoming certified or a registered person allows his or her registration to lapse for more than three years.

(Source: Added at 37 Ill. Reg. 19676, effective November 25, 2013)

### **Section 920.220 Closed Loop Contractor Registration, Renewal and Fees**

- a) **Registration Required.** All closed loop well contractors shall hold a certificate of registration as a closed loop well contractor issued by the Department. All closed loop well contractors shall annually file an application to renew their registrations with the Department.
- b) **Application.** An individual may apply for registration as a closed loop well contractor on forms provided by the Department and shall submit the registration application fee of \$100 to the Department.
- c) **Certification by an Approved Organization.** An applicant for registration under this Section shall provide verification of certification by an organization approved by the Department. The Department shall keep a list of approved organizations posted on the Department's website.
- d) **Closed Loop Well Contractor Certification by the Department.** An applicant for registration shall submit proof of certification under Section 920.210 unless specifically exempt from certification in Section 920.210(c).
- e) **Renewal Fee.** The fee to be paid for the annual renewal of a closed loop well contractor registration shall be \$100. All license renewals shall be made by November 30 of each year.
- f) **Late Fee.** The late fee to be paid for a registration annual renewal submitted after November 30 shall be \$25.
- g) **Expiration.** A registration issued under this Section shall expire on December 31 of the year issued, except that an original license issued after October 1 and before December 31 shall expire on December 31 of the following year.
- h) **Continuing Education Required.** All renewals and reinstatements of a closed loop well contractor registration shall be made on forms prescribed by the Department, and shall include documentation that the contractor has attended at least six hours



of approved continuing education in the preceding two years that is approved in accordance with Section 920.240.

- i) Reinstatement. The fee to be paid for the reinstatement of a closed loop well contractor registration that has expired for a period of less than three years shall be \$50 plus all lapsed renewal fees
- j) Restoration. A registration that has expired for more than three years may be restored by taking and passing the written closed loop well contractor certification exam and paying the required fees.

(Source: Added at 37 Ill. Reg. 19676, effective November 25, 2013)

### **Section 920.230 Registered Closed Loop Well Contractor Responsibility**

- a) Closed Loop Well Construction. An individual who is not registered under the Act may perform labor and services in connection with the installation of a closed loop well, provided that the labor and services are performed at the direction and under the personal supervision of a registered closed loop well contractor. In order for the registered closed loop well contractor to perform personal supervision, the registered closed loop well contractor shall visit the work site at least once, and as often as necessary, to assure that the unregistered individual is performing work in compliance with this Part.
- b) The registered closed loop well contractor shall visit the work site when requested by the Department. If the work is performed by an unregistered individual, under the supervision of a registered closed loop well contractor, the registered closed loop well contractor shall sign the closed loop well construction report, indicate that a closed loop well contractor has personally supervised the work, and indicate the name of the unregistered person supervised.

(Source: Added at 37 Ill. Reg. 19676, effective November 25, 2013)

### **Section 920.240 Closed Loop Well Continuing Education Sessions**

- a) Approval of Continuing Education Sessions. Each entity that has established or proposes to present a continuing education session under the Act shall request Department approval by submitting its continuing education program to the Department. Requests shall be submitted to the Department no later than 60 days before the date the program begins. Continuing education sessions shall not be presented until at least 30 days after Department approval. A list of approved continuing education sessions will be available from the Department. The Department will approve sessions that address at least one of the following topics:
  - 1) Closed loop well construction in general;

- 2) Grouting Products and Procedures;
  - 3) Code Requirements, Ground Water Protection;
  - 4) Geological Topics, Strata;
  - 5) Safety hazards associated with the closed loop well construction industry;
  - 6) Other relevant information necessary for the continued improvement of knowledge of a closed loop water well contractor; or
  - 7) New Technologies.
- b) **Minimum Classroom Hours for Continuing Education Sessions.** A continuing education session shall have a minimum of two classroom contact hours of closed loop well topics.
- c) **Requests for Approval.** When requesting approval, the entities shall submit the following information to the Department:
- 1) Title of session;
  - 2) Sponsoring organization;
  - 3) Location of session;
  - 4) Names and qualifications of instructors or presenters; and
  - 5) Brief description of each topic and the amount of time for each topic.
- d) **Contact Hours.** Total classroom contact hours excluding breaks (a classroom contact hour is 60 minutes).
- e) **Attendance.** The entity shall provide, upon request, the methodology used to verify attendance. Attendance records shall be retained for three years after the continuing education session.
- f) **Certificate.** A certificate of completion shall be issued for each participant enrolled in a continuing education course. The certificate shall contain the participant's name, course completed, dates, hours completed and location of course.

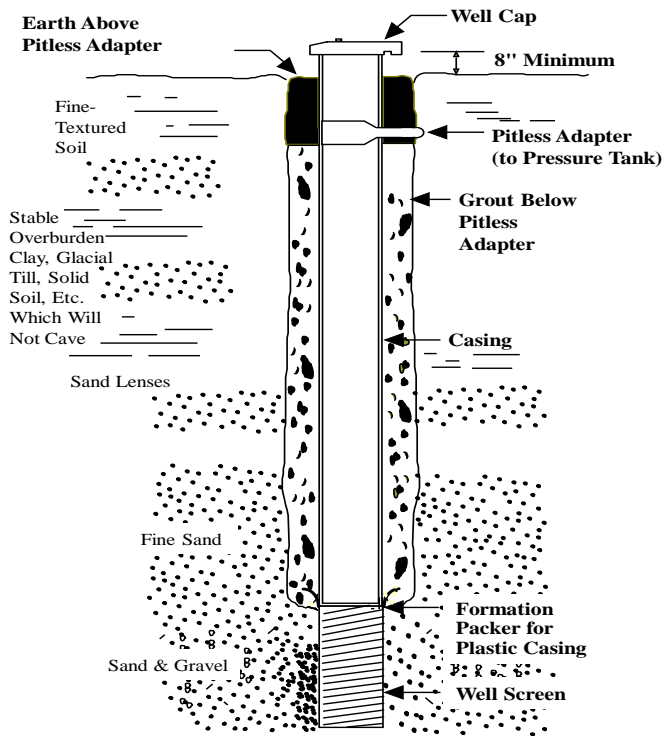
(Source: Added at 37 Ill. Reg. 19676, effective November 25, 2013)

### **Section 920.250 Approval of Closed Loop Well Third Party Organizations**

- a) Approval of Third Party Organizations as Described in 920.220(c). The Department, with the advice of the Closed Loop Well Contractor's Advisory Board, shall make the decision to approve organizations dedicated to promoting top quality and safe closed loop installations.
- b) Requests for Approval. When requesting approval, the entities shall submit the following information to the Department:
  - 1) The organization's mission statement; and
  - 2) Proof that the organization can meet the requirements of Section 920.240.

(Source: Added at 37 Ill. Reg. 19676, effective November 25, 2013)

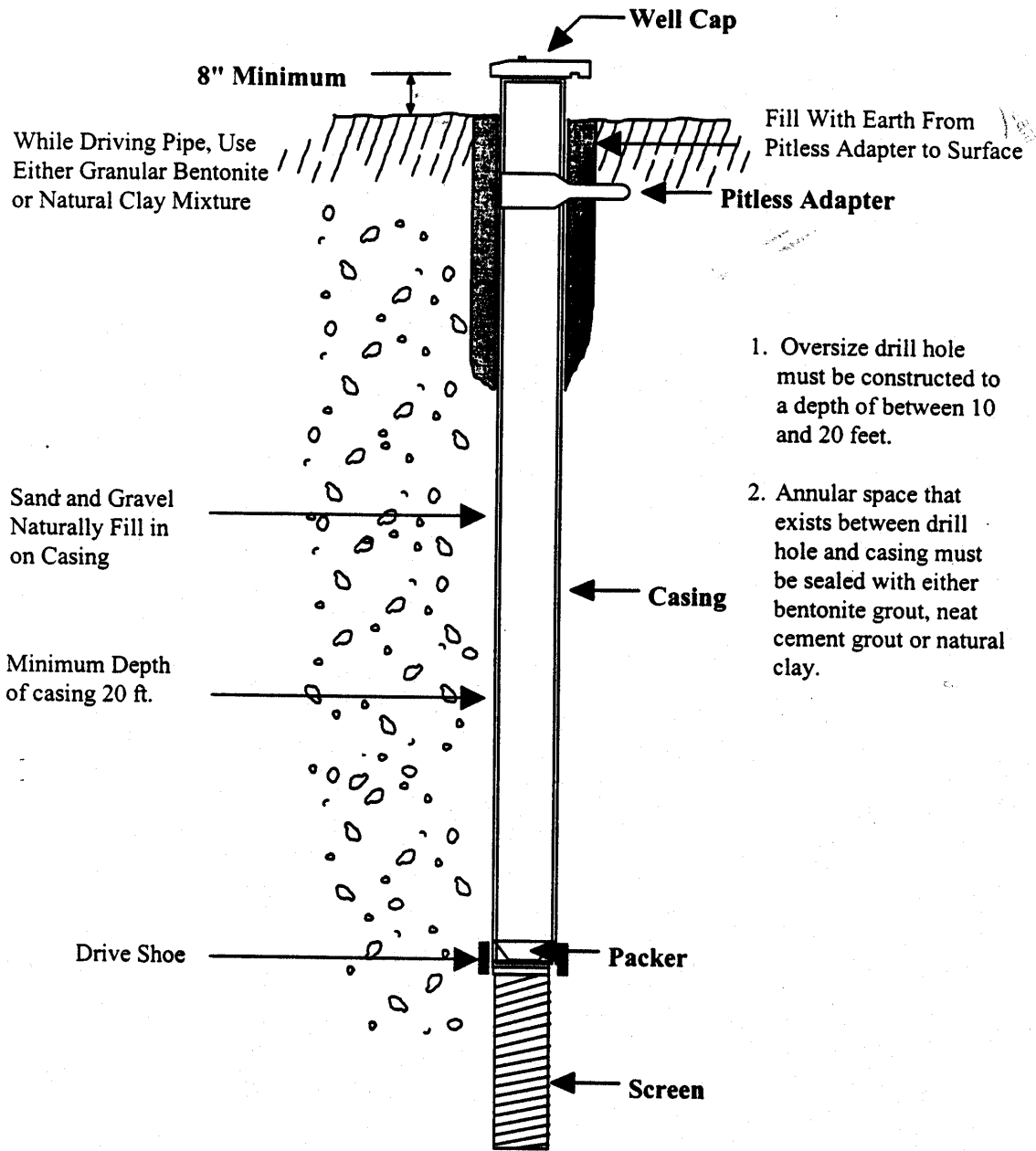
## Section 920.ILLUSTRATION A Unconsolidated Formations: Oversized Drill Hole



1. Diameter of drill hole must be 3" larger than the outer diameter of the casing or coupling, whichever is greater.
2. Casing must extend a minimum of 20'.
3. Annular space that exists between hole and casing must be filled with bentonite grout or neat cement grout within a maximum of 10 feet of the top of the screen to finished ground surface.

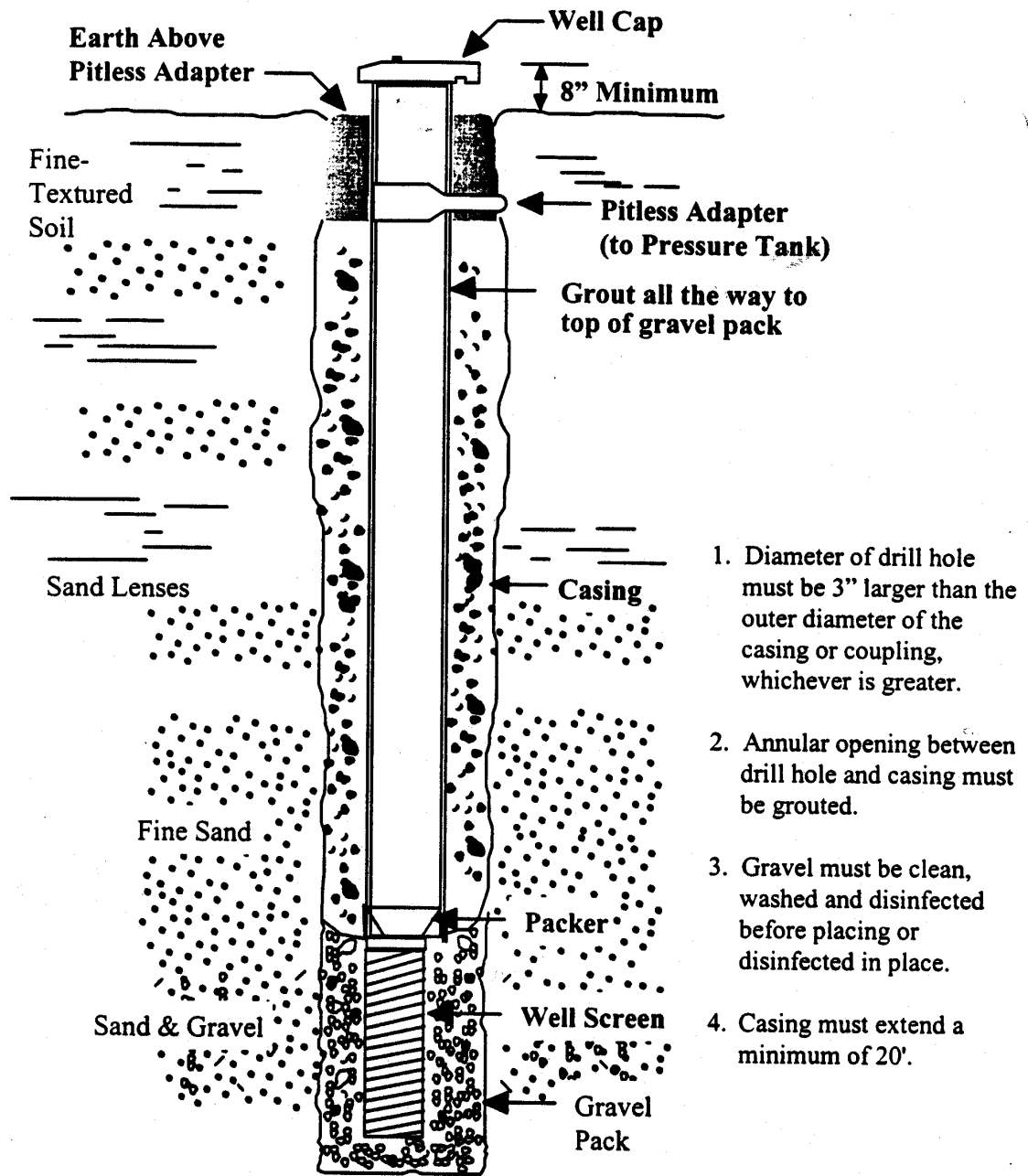
(Source: Amended at 37 Ill. Reg. 19676, effective November 25, 2013)

**Section 920.ILLUSTRATION B Unconsolidated Formations: Mechanically Driven Casing**



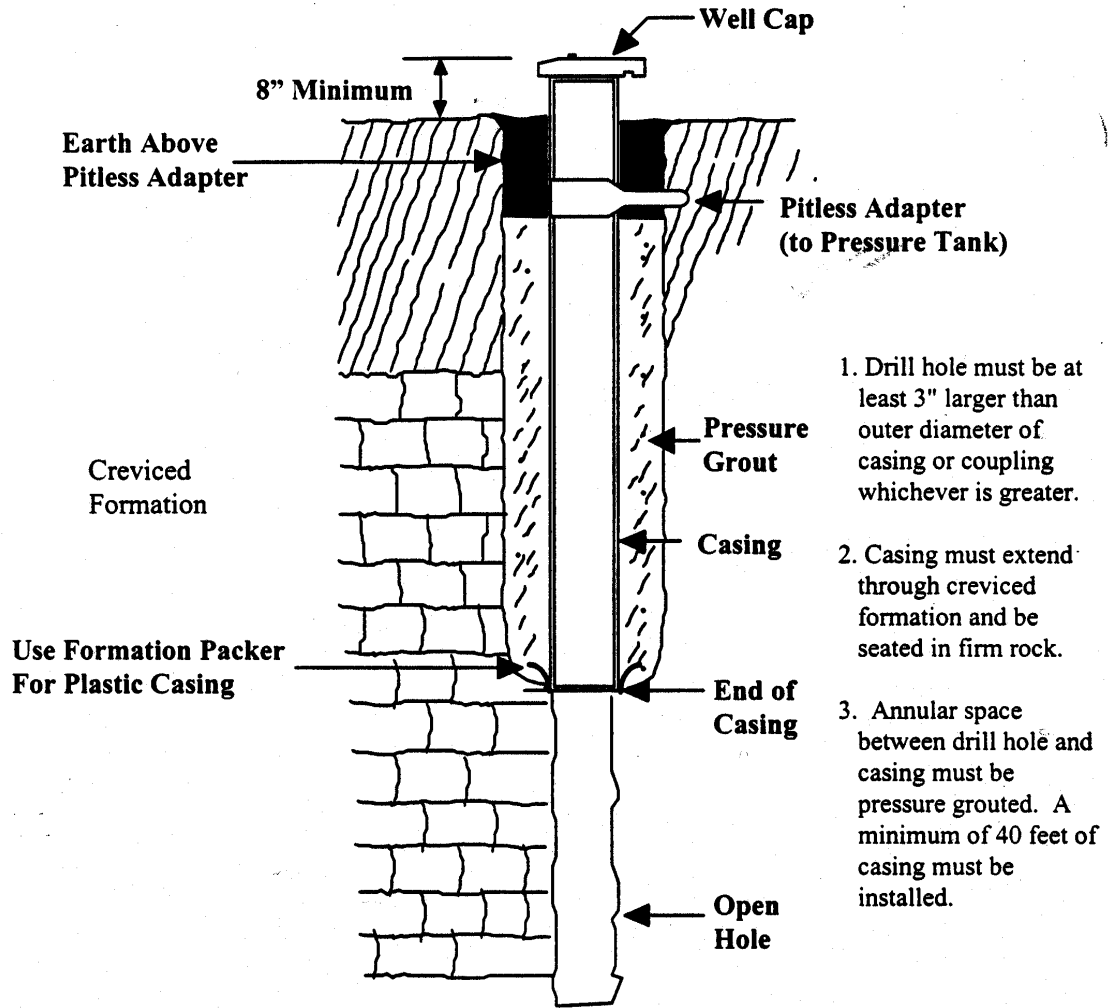
(Source: Amended at 24 Ill. Reg. 11934, effective August 1, 2000)

Section 920.ILLUSTRATION C Gravel Pack Construction



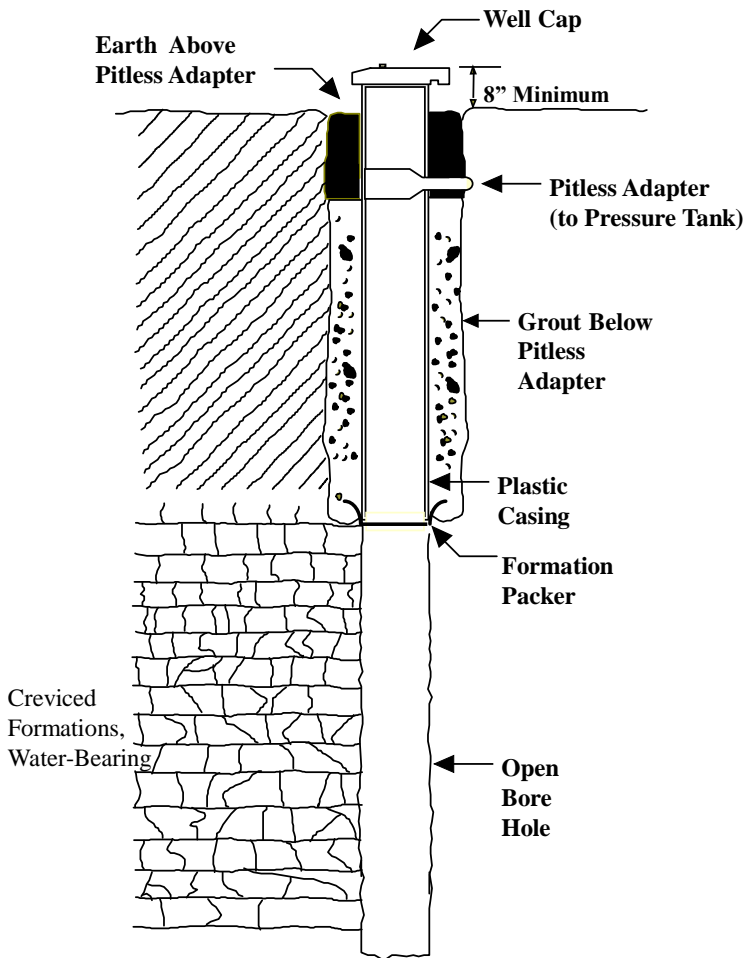
(Source: Amended at 24 Ill. Reg. 11934, effective August 1, 2000)

**Section 920. ILLUSTRATION D Creviced Formations: Earth Cover Less Than 30 Feet Thick**



(Source: Amended at 24 Ill. Reg. 11934, effective August 1, 2000)

**Section 920.ILLUSTRATION E Creviced Formations: Earth Mantle Cover Over 30 Feet Thick – Oversized Drill Hole**

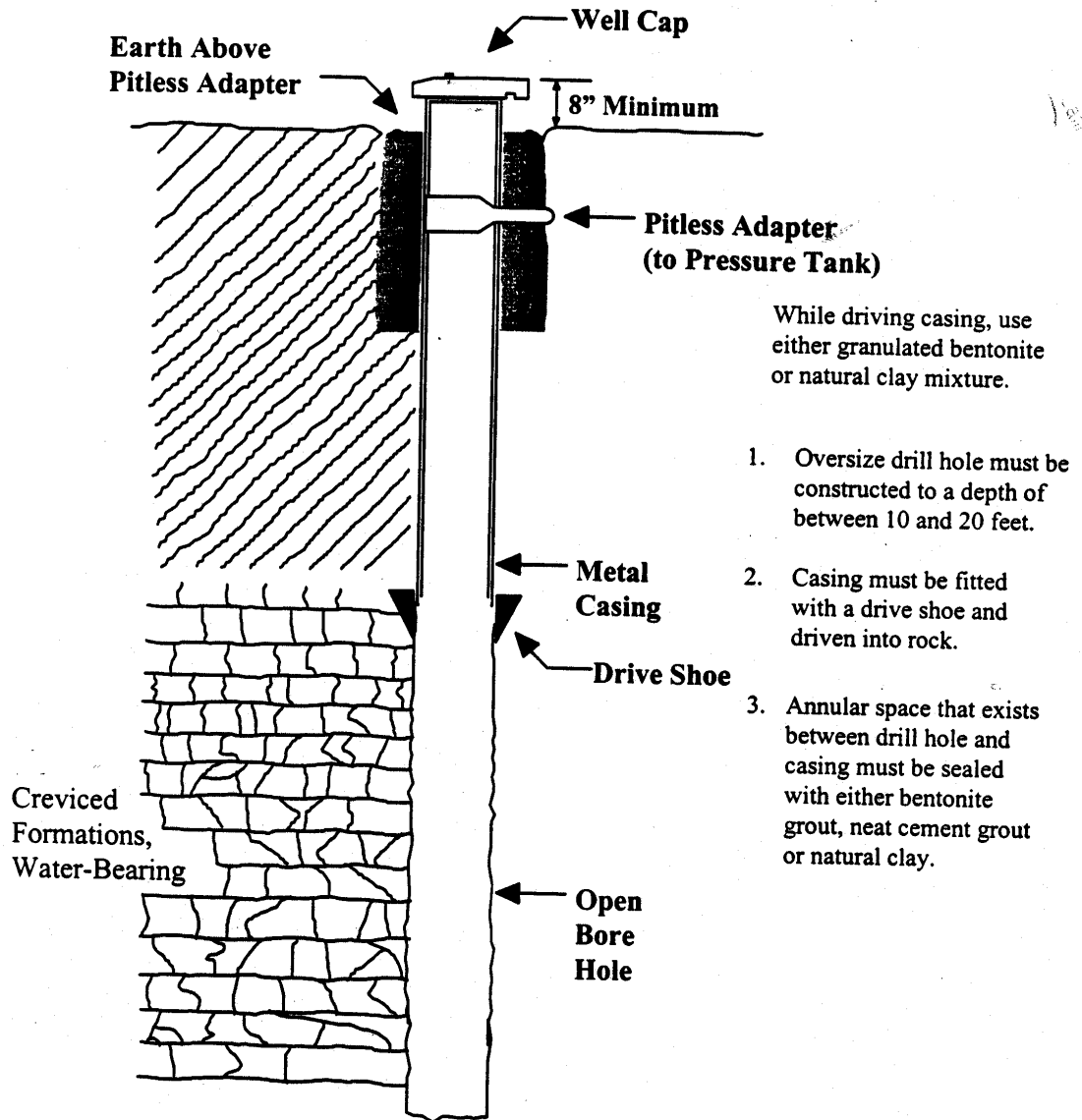


1. When a tremie pipe is used to grout, the diameter of the drill hole must be at least 3" larger than the outer diameter of the casing or coupling, whichever is greater.
2. When grout is pumped through the inside of the casing, the diameter of the bore hole must be at least 2" larger than the outer casing or coupling, whichever is greater.
3. The annular space must be grouted from the bottom of the casing to ground level.

(Source: Amended at 37 Ill. Reg. 19676, effective November 25, 2013)

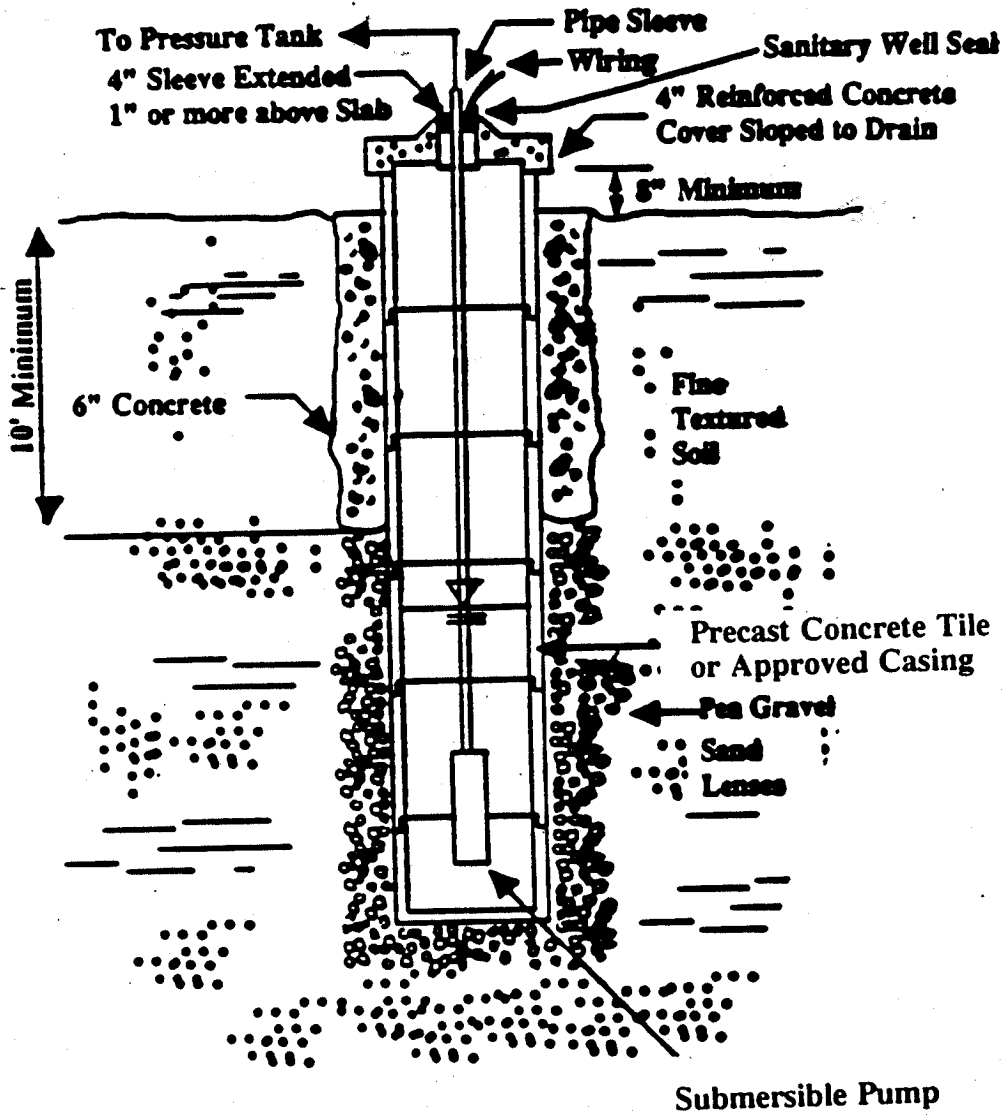


**Section 920.ILLUSTRATION F Creviced Formations: Earth Cover Over 30 Feet Thick – Mechanically Driven Casing**



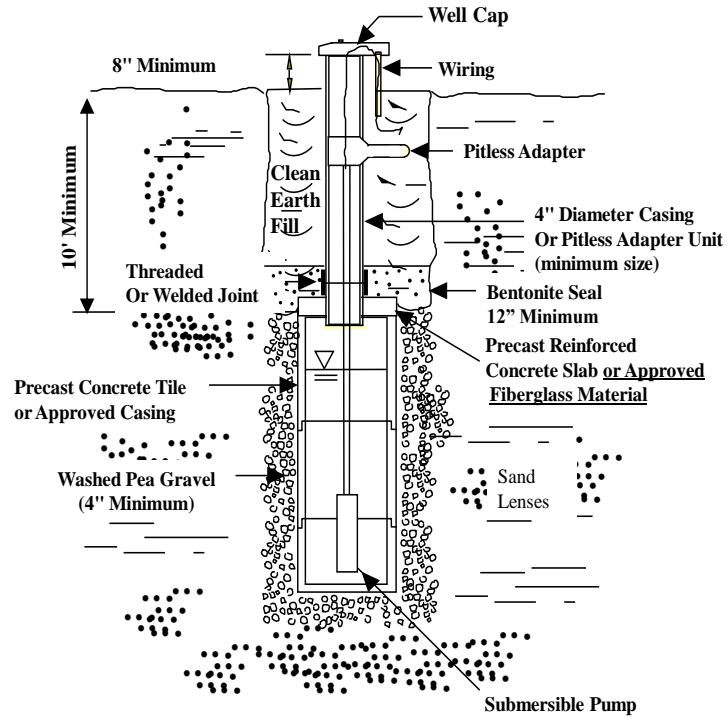
(Source: Amended at 24 Ill. Reg. 11934, effective August 1, 2000)

Section 920.ILLUSTRATION G Bored or Dug Well – Well Not Finished With Buried Slab



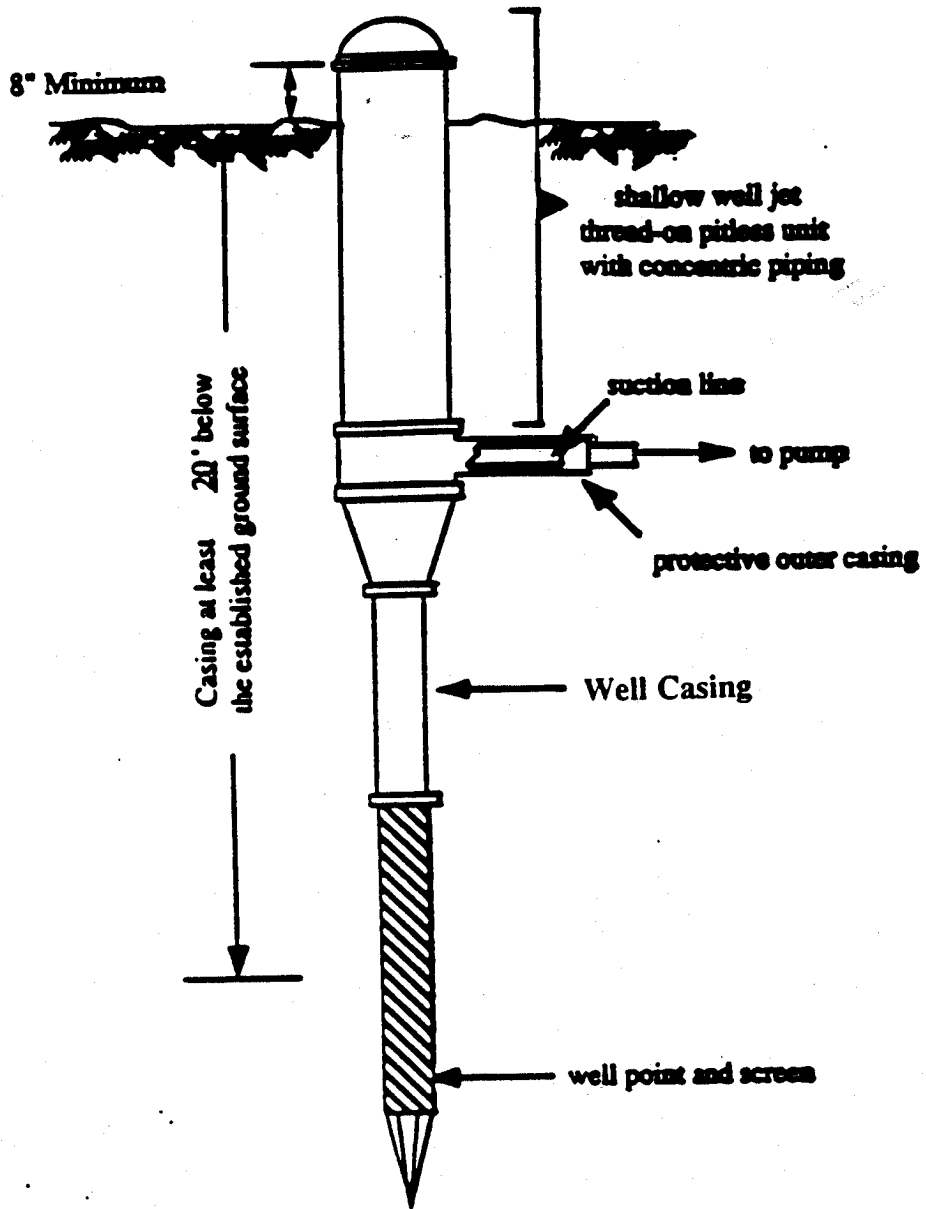
(Source: Former Section 920.Illustration G renumbered to Section 920.Illustration H; new Section 920.Illustration G renumbered from Section 920.Illustration F and amended at 22 Ill. Reg. 3973, effective April 1, 1998)

**Section 920.ILLUSTRATION H Bored or Dug Well – Buried Slab Construction**



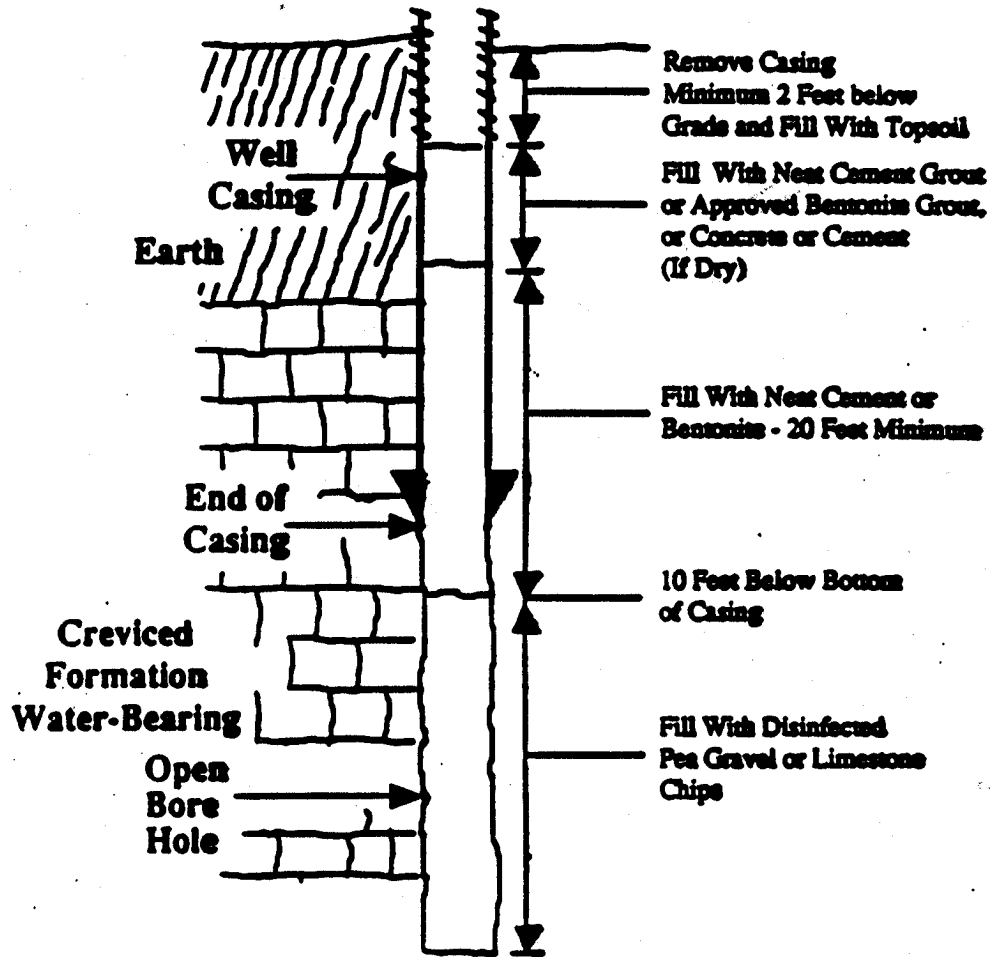
(Source: Amended at 37 Ill. Reg. 19676, effective November 25, 2013)

Section 920.ILLUSTRATION I Installation of a Driven Well



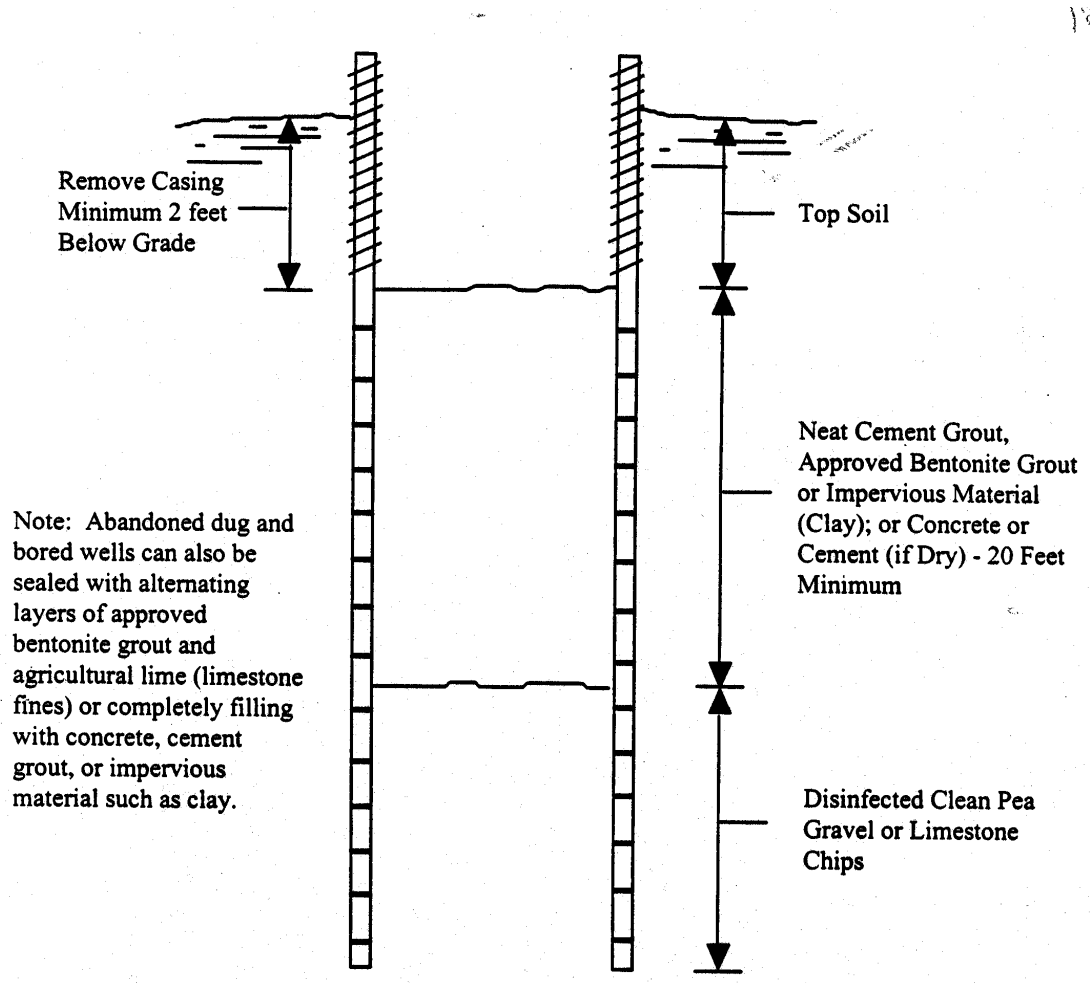
(Source: Former Section 920.Illustration H renumbered to Section 920.Illustration I and amended at 22 Ill. Reg. 3973, effective April 1, 1998)

**Section 920.ILLUSTRATION J Sealing an Abandoned Well – Extending into a Creviced Formation**



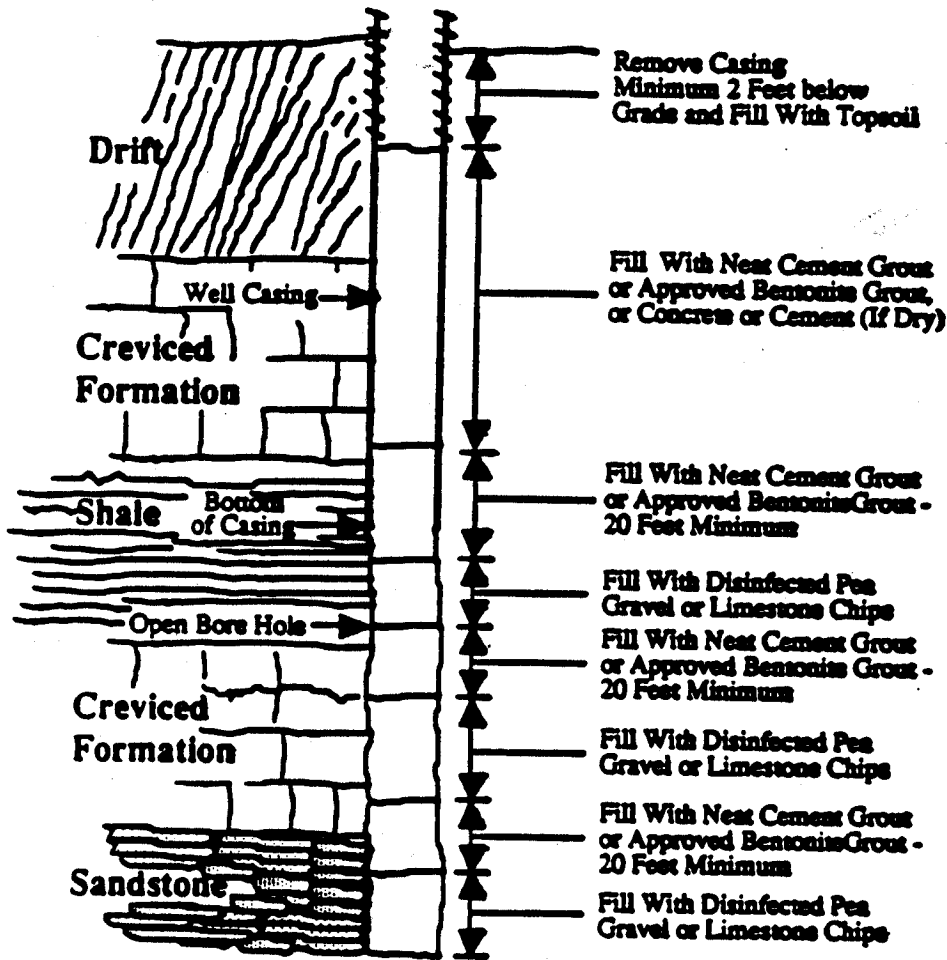
(Source: Added at 22 Ill. Reg. 3973, effective April 1, 1998)

**Section 920.ILLUSTRATION K Sealing an Abandoned Dug or Bored Well**



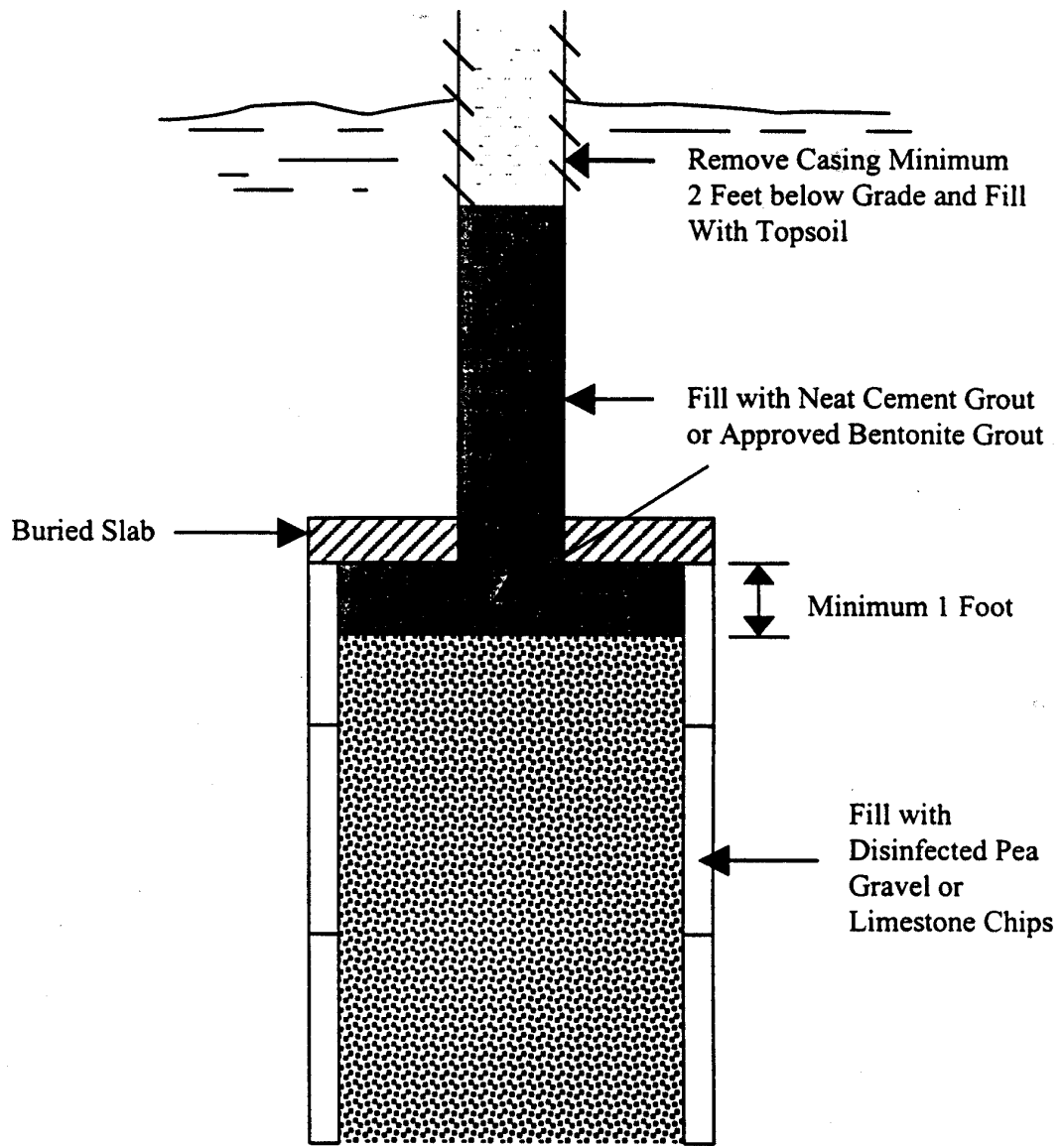
(Source: Amended at 24 Ill. Reg. 11934, effective August 1, 2000)

**Section 920. ILLUSTRATION L Sealing an Abandoned Well Extending into More Than One Water Bearing Formation**



(Source: Added at 22 Ill. Reg. 3973, effective April 1, 1998)

**Section 920.ILLUSTRATION M Sealing an Abandoned Buried Slab Bored Well**



(Source: Added at 24 Ill. Reg. 11934, effective August 1, 2000)



**Section 920.TABLE A Steel Casing and Liner Pipe Weights and Dimensions**

SIZE	DIAMETER (in.)		THICKNESS	WEIGHT (lbs. per ft.)	
	in.	External		Internal	Plain ends (calculated)
1	1.315	1.049	0.133	1.68	1.70
1¼	1.660	1.380	0.140	2.27	2.30
1½	1.900	1.610	0.145	2.72	2.75
2	2.375	2.067	0.154	3.65	3.75
2½	2.875	2.469	0.203	5.79	5.90
3	3.500	3.068	0.216	7.58	7.70
3½	4.000	3.548	0.226	9.11	9.25
4	4.500	4.026	0.237	10.79	11.00
5	5.563	5.047	0.258	14.62	15.00
6	6.625	6.065	0.280	18.97	19.45
8	8.625	8.071	0.277	24.70	25.55
10	10.750	10.136	0.307	34.24	35.75
12	12.750	12.090	0.330	43.77	45.45
14	14.000	13.250	0.375	54.57	57.00
16	16.000	15.250	0.375	62.58	65.30
18	18.000	17.250	0.375	70.59	73.00
20	20.000	19.250	0.375	78.60	81.00

Pipe sizes not listed that are less than 8 inches in diameter shall be Schedule 40 pipe as a minimum.

Pipe sizes not listed that are 8 inches in diameter or greater shall be Schedule 30 pipe as a minimum.

Pipes for driven wells shall be Schedule 40 as a minimum.

(Source: Amended at 18 Ill. Reg. 17684, effective November 30, 1994)

**Section 920.TABLE B Plastic Casing and Liner Pipe Specifications**

SIZE (Inches)	SDR	EXTERNAL DIAMETER (Inches)	MINIMUM WALL THICKNESS (Inches)
2	-	2.375	0.154
2½	-	2.875	0.203
3	-	3.500	0.216
3½	-	4.000	0.226
4	-	4.500	0.237
4½	-	4.950	0.248
5	21	5.563	0.265
6	21	6.625	0.316
8	26	8.625	0.332
10	26	10.750	0.413
12	26	12.750	0.490
14	26	14.000	0.539
16	26	16.000	0.616

Pipe sizes 2 inches, 2½ inches, 3 inches, 3½ inches, 4 inches and 4½ inches shall be Schedule 40 pipe as a minimum.

(Source: Amended at 18 Ill. Reg. 17684, effective November 30, 1994)

**Section 920. Table C Minimal Lateral Distances in Feet Between Water Wells, Closed-Loop Wells, and Sources of Contamination**

SOURCES OF CONTAMINATION OR EXISTING WATER WELL	MINIMUM LATERAL DISTANCES FOR CLAY AND LOAM SOILS (FEET)	
	WATER WELL	CLOSED LOOP WELL
Cesspool	150	150
Closed Loop Well <sup>1</sup>	200	NA
Water Well <sup>1</sup>	NA	200
Water Well (when the owner of the closed loop well and a water well serving a private water supply is the same) <sup>1</sup>	75	75
Leaching Pit	100	100
Pit Privy	75	75
Subsurface Seepage System, Distribution Box, Sand Filter, Waste Stabilization Pond, Effluent Receiving Trench	75	75
Manure Pile	75	75
Septic Tank, Aerobic Treatment Plant, Surface Discharge Effluent Line, Treated Effluent Discharge Point	50	50
Barnyard or Animal Confinement Lot	50	50
Footing Drains (No connection to a sewer or sump handling sewage is allowed.)	10	10 <sup>2</sup>
Pump House Floor Drain	2	2 <sup>2</sup>
Pit, Crawl Space or Basement	5	5 <sup>2</sup>
Lake, Pond or Stream	25	25 <sup>3</sup>
Potential Primary Source, Potential Secondary Source, or Potential Route	200	200
Potential Primary Source, Potential Secondary Source, or Potential Route (where the owner of the source or route, and a water well serving a private water supply or closed loop well, is the same)	75	75
Abandoned Wells	200	200
Sewers (Storm, Sanitary or Combined) <sup>4</sup>	50 <sup>5</sup>	50 <sup>5</sup>

<sup>1</sup> A closed loop well utilizing USP food grade propylene glycol may be located to within 25 feet of a water well.

<sup>2</sup> These setbacks do not apply when the closed loop well is installed prior to the construction of the building.

- <sup>3</sup> The 25 feet separation distance for a retention or detention pond does not apply to a closed loop well when:
- 1) The borehole is grouted the same day the borehole is constructed;
  - 2) The borehole is grouted to the surface; and
  - 3) The borehole is topped off, between 24 and 48 hours after the borehole is grouted, with a bentonite chip product manufactured for water well sealing.
- <sup>4</sup>) A water well or closed loop well may be located to within 10 feet of a sewer provided the sewer consists of cast iron pipe with watertight mechanical joints or rubber gasket sealed joints that meet ASTM Standard C564-11, SDR 26 PVC pipe or schedule 40 PVC pipe or heavier with solvent welded watertight joints or elastomeric seals (gaskets) used for push-on joints that meet ASTM Standard F477-10.
- <sup>5</sup> If the sewer pipe material is unknown, the 50 feet separation distance may be reduced based upon the site specific conditions. Both the water well permit application and the closed loop well permit application will have a section to identify the site specific conditions for reducing the 50 feet separation distance.

(Source: Added at 37 Ill. Reg. 19676, effective November 25, 2013)