

§ 201-10. Wells. *[Amended 10-3-2001, effective 10-10-2001]*

A. Purpose and authority. The Board of Health of the Town of Northbridge, to protect the public health, and acting under the authority of Chapter 111 of the Massachusetts General Laws, hereby makes the following health regulations. The intent of these regulations is to protect the quality and quantity of drinking water supplies within the Town of Northbridge. These regulations are to be inserted into the Code of Regulations of the Board of Health § 201-10, replacing any and all existing regulations previously adopted by the Board of Health regarding the construction and/or abandonment of wells, except as to those matters currently pending. Any condition that existed prior to the effective date of these regulations shall not be grandfathered or regarded as exempt from these regulations.

B. Definitions.

APPLICANT -- Any person who intends to have a private well constructed.

BEDROOM -- Any room providing privacy, intended primarily for sleeping and consisting of floor space of no less than 70 square feet, electrical service, ventilation and at least one window.

BOARD -- The Board of Health of the Town of Northbridge, Massachusetts or its authorized agent.

CERTIFIED LABORATORY -- Any laboratory currently certified by the Department of Environmental Protection for drinking water. Provisional certification shall also qualify.

CROSS-CONNECTION -- Any physical connection or arrangement between two otherwise separate piping systems, one of which contains potable water and the other, water of unknown or questionable safety, whereby water may flow from one system to the other, the direction of flow depending on the pressure differential between the two systems.

HYDROFRACTURING -- A process whereby water is pumped under high pressure into a well to fracture the surrounding rock thereby increasing the well yield.

GROUND SOURCE HEAT PUMP (GSHP) WELL -- Well constructed for the purpose of transferring heat to or from the earth for heating and cooling purposes. GSHP wells may be Open-loop, closed-loop, or Direct Exchange. **(Added 10-24-2011; Effective 12-1-2011)**

POTABLE WATER -- Water that is tested by a state certified laboratory and satisfies state drinking water standards for culinary and domestic purposes.

PRIVATE WELL -- A water supply well which will not serve either a number of service connections or a number of individuals sufficient to qualify as a public water system as defined in 310 CMR 22.02.

PUMPING TEST -- A procedure used to determine the characteristics of a well and adjacent aquifer by installing and operating a pump.

REGISTERED WELL DRILLER -- Any person registered with the Department of Environmental Management/Office of Water Resources to dig or drill wells in the Commonwealth of Massachusetts.

REQUIRED VOLUME -- The volume of water necessary to support the household's daily needs based on number of bedrooms and storage capacity of the drilled well.

STATIC WATER LEVEL -- The level of water in a well under non-pumping conditions.

C. Well construction.

- (1) Pursuant to 313 CMR 3.00, Water Well Diggers and Drillers Registration Regulations, no person in the business of digging or drilling shall construct a well unless registered with the Department of Environmental Management -- Office of Water Resources.
- (2) No person shall drill, dig, or otherwise develop any new well for water or engage in the destruction of a private well within the Town of Northbridge without first obtaining a permit issued by the Board of Health. Said permit shall be valid for a one-year period. Permits may be extended for one additional six-month period, provided that a written request is received by the Board prior to the one-year expiration date.
- (3) A plan and application form must be submitted to the Board of Health with required fee. The plan must be prepared by a registered sanitarian, professional engineer, or other professional person authorized by the Commonwealth of Massachusetts and/or the Board of Health to prepare such plan, showing, at a minimum, the property owner, the address, the bounds of the lot, the proposed well, proposed water line, the building(s) to be served, any subsurface sewage disposal systems and well, both proposed and existing within 200 feet, and any waste disposal sites within 1,000 feet. The proposed well must be located on the lot which it serves and must meet these minimum distance requirements:

Distance From	Feet
Leaching facility	100
Leaching reserve area/existing cesspool	100
Septic tank	50

Any structure or dwelling	20
Property line	10
Driveway	25
Public/private way	25
Rights-of-way	15
Stable/manure storage	100
Storm drain	25
Underground storage tank (exception: propane tanks) [Amended 3-6-2002]	200
Wetland	50
Waste disposal site/landfill (Amended 10-24-2011; Effective 12-1-2011)	500

- (4) All wells shall be constructed in compliance with the recommendations of the latest edition of the Department of Environmental Protection Private Well Guidelines.
- (5) All lines from a well shall be located a minimum of 10 feet from a building sewer constructed of durable corrosion-resistant material with watertight joints, or 50 feet from a building sewer constructed of any other type of pipe.
- (6) Pressure water supply lines shall be installed at least 10 feet from and 18 inches above any sewer line. Whenever water supply lines must cross sewer lines, both pipes shall be pressure-tested to assure watertightness.
- (7) The Board reserves the right to impose minimum lateral distance requirements from other potential sources of contamination not listed above or to increase the above distances when the Board deems it necessary. All such special well location requirements shall be listed, in writing, as a condition of the well construction permit.
- (8) A well from which the water is not intended for human or animal consumption or for the irrigation of foods or food ingredients must meet the same requirements as a drinking water well.
- (9) The Board of Health may refuse to issue a permit if it deems that the location of the proposed well will unreasonably interfere with the probable future installation or repair of

a septic system on a neighboring lot of land, or for any reason which may be contrary to sound public health policy as determined by the Board of Health.

- (10) No person shall allow the connection of any building, or other facility, to the municipal water supply and to a private water supply concurrently. Such constitutes a cross-connection and is prohibited.
- (11) When the Board of Health determines that the supply of potable water from privately operated wells may be jeopardized with respect to drinking water quality and/or supply due to prolonged drought and potentially affect the health of those using such wells, the use of private wells for irrigation purposes may be prohibited until such time as the Board determines.
- (12) The Board of Health may require the connection to a municipal water line, where available, when it determines that the supply of potable water from a private well may be jeopardized with respect to drinking water quality and the potential health effects to those using said well.

D. Water quality.

- (1) Before use or, in the case of new construction, before the issuance of a building permit, the well water must be tested by a laboratory that is certified by the Department of Environmental Protection to test drinking water for the parameters analyzed. All analyses shall be performed in accordance with US EPA methods for drinking water analysis.
- (2) The laboratory performing the testing must collect such samples. Written proof of the individual's certification must be supplied to the Board of Health upon request. The original results of the water quality tests, chain of custody, and verification of the laboratory's certification for the parameters analyzed must be submitted directly to the Board of Health within two weeks of sampling. In no event shall a water treatment device be installed prior to sampling.
- (3) If the initial test did not pass and a filter or other treatment system is necessary, a second representative sample for laboratory analysis must be collected in accordance with Subsection D(2) above after the treatment system is installed. The second sample shall be retested for all failed parameters, plus any other parameters deemed necessary by the Board. A laboratory report indicating all test results meet EPA drinking water standards must be submitted to the Board prior to issuing a certificate of occupancy.
- (4) The following parameters shall be tested:
 - (a) Total bacteria.
 - (b) Coliform bacteria.

(c) Turbidity.

(d) Inorganic compounds:

- [1] Antimony.
- [2] Arsenic.
- [3] Barium.
- [4] Beryllium.
- [5] Cadmium.
- [6] Chromium.
- [7] Copper.
- [8] Cyanide.
- [9] Flouride.
- [10] Lead.
- [11] Mercury.
- [12] Nitrate.
- [13] Nitrite.
- [14] Selenium.
- [15] Sodium.
- [16] Thallium.

(e) Volatile organic compounds (VOC's) (using EPA method 524.2).

(f) Radon. [Amended 3-6-2002]

(g) Secondary standards for drinking water:

- [1] Aluminum.
- [2] Chloride.
- [3] Color.
- [4] Copper.
- [5] Flouride.
- [6] Iron.
- [7] Manganese.
- [8] Odor.
- [9] Ph.
- [10] Silver.
- [11] Sulfate.
- [12] Total dissolved solids.
- [13] Zinc.
- [14] Ammonia (Added 10-24-2011; Effective 12-1-2011)

(h) Hardness. [Added 3-6-2002]

NOTES:

1.High concentrations of nitrate, chloride, and ammonia could indicate that well is drawing in septic effluent. Further testing of VOC's may be requested by the Board of Health.

2.High concentrations of iron, manganese, total dissolved solids, nitrogen (as ammonia or nitrate) and hardness could indicate that well is drawing in landfill leachate. Further testing of regulated and unregulated VOC's may be requested by the Board of Health.

- (5) The Board of Health may require that any well drilled within 500 feet of a landfill, waste site, or 21E site, may be required to conduct water quality analysis of synthetic organic chemicals (SOC's).
- (6) The US EPA Drinking Water Standards for Primary and Secondary Drinking Water Maximum Contaminant Levels (MCL's) shall be used as the guidelines for private water supplies.
- (7) All costs and laboratory arrangements for collections of water samples and testing are the responsibility of the applicant.

E. Water Supply Certificate.

- (1) The issuance of a Water Supply Certificate by the Board shall certify that the private well may be used as a drinking water supply. A Water Supply Certificate must be issued for the use of a private well prior to the issuance of an occupancy permit for an existing structure or prior to the issuance of a building permit for new construction which is to be served by the well.
- (2) The following shall be submitted to the Board of Health to obtain a Water Supply Certificate:
 - (a) A well construction permit.
 - (b) A copy of the Water Well Completion Report as required by the DEM Office of Water Resources (313 CMR 3.00).
 - (c) A copy of the Pumping Test Report required pursuant to Subsection F of these regulations.
 - (d) A copy of the Water Quality Report required pursuant to Subsection D of these regulations.
- (3) Upon the receipt and review of the above documents, the Board shall make a final decision on the application for a Water Supply Certificate. A final decision shall be in writing and shall comprise of one of the following actions:

- (a) Issue a Water Supply Certificate.
- (b) Deny the applicant a Water Supply Certificate and specify the reasons for the denial.
- (c) Issue a conditional Water Supply Certificate with those conditions which the Board deems necessary to ensure fitness, purity and quantity of the water derived from that private well. Said conditions may include but not be limited to requiring treatment or additional testing of the water.

F. Water quantity.

- (1) A completed Department of Environmental Management Well Completion Report shall be submitted to the Board of Health by the driller within 30 days of drilling the well.
- (2) In order to demonstrate the capacity of the well to provide the required volume of water, a pump test shall be conducted.
- (3) Required volume shall be calculated by adding volume of water and storage capacity as defined below:

$\text{Volume of Water} = (\text{Number of bedrooms} + 1) \times (110 \text{ gallons/BR}) \times (\text{safety factor of } 2) = \text{Number of Gallons Needed Daily}$

Storage Capacity of Well = Calculated using the measured static water level and the depth and radius of the drill hole or casing. (See Table 1 below.)

Table 1**Gallons of Water per Foot of Depth
for Various Casing or Hole Diameters**

Diameter of Well Casing in Inches	<u>Gallons of Water</u>	<u>Gallons of Water</u>	Diameter of Well in Feet	Gallons of Water per Foot of Water Depth
	Per Foot of Water Depth	Per 100 Feet of Water Depth		
1 ½	0.092	9.2	2	23.5
2	0.163	16.3	3	52.9
3	0.367	36.7	4	94.0
4	0.653	65.3	5	146.9
5	1.020	102.0	6	211.5
6	1.469	146.9	7	287.9
8	2.611	261.1	8	376.0
10	4.080	408.0	9	475.9
12	5.876	587.6	10	587.6

Example: For a four-bedroom house with a well that is six inches in diameter and contains 100 feet of standing water:

Volume of Water = (4 bedrooms + 1 bedroom) = (5 bedrooms) x (110 gallons per bedroom) x (2) = 1,100 gallons needed daily

(a) Storage Capacity = Volume of 6-inch well is 1.47 gallons for every foot of length; therefore: (100 feet of standing water) x (1.47 gallons/foot) = 147 gallons.

Required Volume = 1100 gallons + 147 gallons = 1,247 gallons that must be pumped from the well in 24 hours or less to demonstrate suitable capacity.

(4) All wells shall be tested in the following manner:

(a) The well will be pumped at whatever rate is desired.

- (b) Following the pump test the water level in the well must be shown to recover to within 85% of the prepumped static water level within a twenty-four-hour period.
- (c) If the well fails to yield the required volume within a twenty-four-hour period or if the water level in the well fails to recover to within 85% of the prepumped static water level within the twenty-four-hour period, the well shall be redeveloped, hydrofractured and/or deepened. Another pump test shall be conducted.
- (d) The results of the pump test shall be recorded and certified by the well driller on a form approved by the Board of Health and submitted to the Board of Health within 30 days of the test.
- (5) The results of the pump test and water quality test must be received and reviewed by the Board of Health prior to use of the water supply.
- (6) The well must be capable of producing an amount greater than .5 gpm.

Table 2

**Flow Volumes in Gallons per Minute and
Corresponding Flow Volumes in Gallons per Day**

Flow Volume (gpm)	Flow Volume (gpd)
0.3	432
0.4	576
0.5	720
0.6	864
0.7	1008
0.8	1152
0.9	1296
1.0	1440
1.5	2160
2.0	2880
2.5	3600
3.0	4320
3.5	5040
4.0	5760
4.5	6480
5.0	7200

A. Abandonment of wells.

- (1) All abandoned private water supply wells, test holes, and dry or inadequate borings associated with private well installation and not used for water quality monitoring shall be plugged in a manner that will permanently prevent vertical movement of water within the borehole, the well, and the annular space between the well casing and the wall of the boring.
- (2) No person shall engage in the business of destruction of private wells within the Town unless registered as a well driller/digger with the Department of Environmental Management -- Office of Water Resources, pursuant to 313 CMR 3.00.
- (3) The destruction or abandonment of a well shall be done in compliance with the recommendations of the latest edition of the Department of Environmental Protection Private Well Guidelines.
- (4) No person shall allow a well to be left uncovered or in an unsafe condition.

B. Variances. The Board of Health may vary the application of any provision of these regulations to any particular case when in its opinion the enforcement thereof would manifest an injustice, provided that the decision of the Board of Health shall not conflict with the spirit of these regulations and the applicant has proven that the same degree of public health and environmental protection can be achieved without strict application of a particular provision(s). The applicant for any variance shall pay for any advertising and/or mailings required for processing the variance.

C. Enforcement and penalties.

- (1) Any member of the Board of Health or its agents, or other person designated by the Board of Health, may enforce this section. Any violation of this regulation, of the regulations of the Department of Environmental Protection or of the Laws of the Commonwealth of Massachusetts by the permittee shall be grounds for suspension, modification, or revocation of the permit.
- (2) Criminal complaint. Whoever violates any provision of these rules and regulations may be penalized by complaint brought in the District Court or Housing Court. Each day on which a violation exists shall be deemed to be a separate offense.
- (3) Noncriminal complaint.
 - (a) Under MGL c. 40, § 21D, and the Northbridge Code of Bylaws § 1-109A, any person who violates any provision of these rules and regulations as adopted by the Board of Health pursuant to MGL c. 111, § 31A, shall be subject to a penalty in the amount of:
[1] First offense: \$25.

[2] Second offense: \$50.

[3] Third and subsequent offenses in a calendar year: \$150.

(b) Each day or portion thereof during which a violation continues shall constitute a separate offense, and each provision of the chapter or regulation violated shall constitute a separate offense.

(4) Enforcing persons: Northbridge Board of Health, its agents or its designee.

D. Severability. If any section, paragraph, sentence, clause, phrase, or word of these regulations shall be declared invalid for any reason whatsoever, that decision shall not affect any other portion of these regulations, which shall remain in full force and effect, and to the end the provisions of this Code are hereby declared separable.

E. Fees. **(Amended 10-24-2011; Effective 12-1-2011)**

(1) The fee for installing a well shall be set by the Board. [See § 201-23 Fee Schedule]

(2) The fee for abandoning a well shall be set by the Board. [See § 201-23 Fee Schedule]

F. Effective date. These regulations were adopted by vote of the Northbridge, Massachusetts Board of Health, at their regularly scheduled meeting held on October 3, 2001, and are to be in full force and effect on and after October 10, 2001. Before said date, these regulations shall be published and a copy thereof be placed on file in the Board of Health Offices and filed with the Department of Environmental Protection, Division of Wastewater Management (formerly Division of Water Pollution Control) in Boston. These regulations or any portions thereof may be amended, supplemented or repealed from time to time by the Board, with notice as provided by law, on its own motion or by petition.

G. Disclaimer. The issuance of a well permit shall not be construed as a guarantee by the Board or its agents that the water system will function satisfactorily nor that the water supply will be of sufficient quality or quantity for its intended use.

H. GSHP Wells. Open-Loop GSHP Wells must meet DEP Primary Drinking Water Standards and Northbridge Board of Health Water Quality Standards. **(Added 10-24-2011; Effective 12-1-2011)**

I. GSHP Wells UIC Registration. No well permit shall be issued for an Open Loop system without a DEP Underground Injection Control Registration Number. Closed Loop and Direct Exchange wells also require a UIC registration unless a Ground-Water discharge permit is required. **(Added 10-24-2011; Effective 12-1-2011)**

J. GSHP Wells – Setback Requirements Open-loop, Closed-loop and Direct Exchange (DX) GSHP Wells shall be set back a minimum of 25-feet from potential sources of contamination

including but not limited to, septic tanks/fields, lagoons, livestock pens, and oil or hazardous materials storage tanks and 10-feet from any property line. Closed loop and DX wells shall be sited at least 50-feet from any private potable water supply well and 10-feet from any surface water bodies. If a dual purpose well, then all Primary Potable water setbacks must be met. **(Added 10-24-2011; Effective 12-1-2011)**