

## **CHAPTER 43-02-07**

### **GEOTHERMAL ENERGY PRODUCTION**

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#### **43-02-07-01. Definitions.**

The terms used throughout this chapter have the same meaning as in North Dakota Century Code chapter 38-19, except:

1. "Closed-loop system" means any geothermal energy extraction facility, vertical, horizontal, or otherwise, in which a fluid is permanently confined within pipe or tubing and does not come in contact with the outside environment.
2. "Commission" means the industrial commission of this state.
3. "Contaminant" means any physical, chemical, biological, or radiological substance or matter in water.
4. "Deep well" means any well drilled into rocks older than the Greenhorn Formation or which encounters brackish or saline formation waters to develop or produce geothermal energy.
5. "Injection well" means a well into which fluids are being injected.
6. "Open-loop system" means any geothermal energy extraction facility in which water is extracted for heating or cooling purposes and is reinjected into the subsurface or disposed of at the surface.
7. "Person" means and includes any natural person, corporation, association, partnership, receiver, trustee, executor, administrator, guardian, fiduciary, or other representative of any kind and includes any department, agency or instrumentality of the state, or of any governmental subdivision thereof.
8. "Shallow well" means any well drilled into rocks younger than the Belle Fourche Formation and does not encounter saline or brackish formation waters to develop or produce geothermal energy.
9. "Substantial modification" means the construction or installation of any addition, or any restoration or renovation, of a geothermal energy extraction facility which increases or decreases its heating or cooling capacity, significantly alters its physical configuration, or

impairs or improves its physical integrity. In all cases, the determination of "substantial modification" must be made by the state geologist.

10. "Underground source of drinking water" means an aquifer or its portion which supplies drinking water for human consumption or in which the ground water contains fewer than ten thousand milligrams per liter total dissolved solids.
11. "Well" means a bored, drilled or driven shaft, or a dug hole, whose depth is greater than the largest surface dimension.

**History:** Effective March 1, 1984; amended effective October 1, 1990; December 1, 1992.

**General Authority:** NDCC 38-19-03

**Law Implemented:** NDCC 38-19-03

#### **43-02-07-02. Scope of chapter.**

This chapter is of statewide application and has been adopted by the commission to conserve the natural resources of this state, to prevent waste, to protect the correlative rights of all owners, to prevent the contamination of underground sources of drinking water, and to avoid creation of secondary hazards of geologic nature. These rules do not apply to deep-well geothermal resources regulated under North Dakota Administrative Code chapter 43-02-07.1. The commission may grant exceptions to this chapter, after due notice and hearing, when such exceptions will result in the prevention of waste and operation in a manner to protect correlative rights.

**History:** Effective March 1, 1984.

**General Authority:** NDCC 38-19-03

**Law Implemented:** NDCC 38-19-03

#### **43-02-07-03. Powers and duties.**

The state geologist shall act as a supervisor charged with the duty of enforcing the regulations and orders of the commission applicable to geothermal energy extraction facilities. All applications, correspondence, protests, and other communications shall be addressed to the state geologist as follows:

State Geologist  
600 East Boulevard  
Bismarck, ND 58505  
(701) 328-8000

**History:** Effective March 1, 1984; amended effective October 1, 1990.

**General Authority:** NDCC 38-19-03

**Law Implemented:** NDCC 38-19-03

#### **43-02-07-04. Authority to cooperate with other agencies.**

The commission may from time to time enter into arrangements with state and federal agencies, industry, and individuals with respect to special projects, services, and studies relating to geothermal energy.

**History:** Effective March 1, 1984; amended effective October 1, 1990.

**General Authority:** NDCC 38-19-03

**Law Implemented:** NDCC 38-19-03

#### **43-02-07-05. Prohibition of movement of fluids into underground sources of drinking water.**

No producer may construct, operate, maintain, convert, plug, or abandon any geothermal energy extraction facility in a manner which causes or allows movement of fluid containing any contaminant

into underground sources of drinking water or which may adversely affect human health. The applicant for a permit has the burden to prove that the requirements of this section are met.

**History:** Effective March 1, 1984; amended effective October 1, 1990.

**General Authority:** NDCC 38-19-03

**Law Implemented:** NDCC 38-19-03

#### **43-02-07-06. Permit required.**

A permit is required prior to the commencement of operations for the drilling, boring, excavating, or construction, of a new geothermal energy extraction facility, or substantial modification of an existing geothermal energy extraction facility loop field. A permit is not required for facilities that use a treated municipal water supply as its sole source of water. A permit may be required by the state department of health or the water utility, or both, for facilities hooked into a municipal water supply. The state geologist may grant a permit ~~for up to ten years~~ upon receipt of a permit application on a form provided by the commission, the furnishing of a bond (if required) as provided in section 43-02-07-08, and the payment of a fee of one hundred dollars for each commercial facility permit or twenty dollars for each residential facility permit. The state geologist may waive the fee requirement if the applicant is an instrumentality of the state. The application for a permit must be accompanied by an accurate plat showing the location of the proposed facility with reference to the nearest lines of a governmental section.

The state geologist may deny all or part of an application for permit if the construction of a geothermal energy extraction facility would violate correlative rights or would cause, or tend to cause, waste, damage to the environment, or contaminate underground sources of drinking water. The applicant may appeal the decision of the state geologist to the commission. The state geologist may add stipulations to the permit.

**History:** Effective March 1, 1984; amended effective October 1, 1990; December 1, 1992; January 1, 2008.

**General Authority:** NDCC 38-19-03

**Law Implemented:** NDCC 38-19-03, 38-19-04

#### **43-02-07-07. Modification or revocation and reissuance of permit - Termination of permit - Transfer or renewal of permit.**

##### **1. Modification or revocation and reissuance of permit.**

- a. The commission may modify or revoke and reissue a permit if there are substantial alterations or additions to the permitted facility, or if the standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued.
- b. When a permit is modified, only the conditions subject to modification are reviewed. If a permit is revoked and reissued, the entire permit is reviewed and subject to revision and the permit is reissued for a new term.

##### **2. Termination of permit.**

- a. The commission may terminate a permit during its term or deny a renewal application for noncompliance by the permittee with any condition of the permit, the rules or regulations, or failure to disclose fully or misrepresent all relevant facts.
- b. A permit may be terminated if the permitted activity endangers human health or the environment, or causes pollution to underground sources of drinking water.

##### **3. Transfer or renewal of permit.**

- a. A permit may be renewed or transferred to a new owner or operator if the current permittee notifies the commission at least thirty days in advance of the proposed renewal or transfer date and provided the permit does not need to be modified or revoked and reissued.
- b. A notice of transfer must include a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them. The notice must demonstrate that the financial responsibility requirements of section 43-02-07-09 will be met by the new permittee.

**History:** Effective March 1, 1984; amended effective October 1, 1990.

**General Authority:** NDCC 38-19-03

**Law Implemented:** NDCC 38-19-03, 38-19-04

#### **43-02-07-08. Bond.**

Before any person receives a permit to drill, bore, excavate, or construct a geothermal energy extraction facility, the person shall submit to the commission and obtain its approval of a surety bond or cash bond. An alternate form of security may be approved by the commission after notice and hearing, as provided by law. At the discretion of the state geologist, an installation or facility bond may be required for the substantial modification of a geothermal energy extraction facility in existence prior to December 1, 1992. The state geologist has the discretion to waive the requirement for a facility bond if the applicant is an instrumentality of the state. Each such bond must be executed by a responsible surety company authorized to transact business in this state.

The amount and type of the bond is as follows:

#### **4. ~~Shallow-well and horizontal-loop facilities.~~**

- a. The state geologist has the discretion to require a facility bond in the amount of fifteen thousand dollars for any ~~shallow-well or horizontal-loop~~ geothermal energy extraction facility that, for any reason, constitutes a special threat to important ground water resources or the environment, or otherwise poses a significant public health hazard.
- b. An installation bond in the amount of ten thousand dollars is required of installers of all ~~shallow-well and horizontal-loop~~ geothermal energy extraction facilities. This is a blanket bond and must cover all permits for ~~shallow-well and horizontal-loop~~ geothermal energy extraction facilities issued in one year commencing on the date the first permit covered by the bond is issued. Alternately, at the discretion of the state geologist, an installation bond in the amount of one hundred dollars for each well or horizontal loop ~~(loop)~~ installed per year may be submitted.
- c. The geothermal system installer must comply with North Dakota Century Code chapter 38-19 and all rules and orders of the commission as a condition of the installer's bond. Any violation of either North Dakota Century Code chapter 38-19 or the rules or orders of the commission makes the installer liable under the bond and the bond shall be subject to immediate forfeiture. The installer remains liable under the installation bond until construction of the geothermal energy extraction facility has been completed and the work has been approved by the state geologist. At the discretion of the state geologist, the installer's liability under the bond may be terminated at an earlier date when it can be demonstrated that only minor interior work remains to be completed and when completion of this work is subject to inordinate delays beyond the control of the geothermal system installer.

#### **2. ~~Deep-well facilities.~~** ~~A facility bond is required for all deep-well facilities. The amount of the facility bond must be a five thousand dollar bond for a deep-well facility with one supply well.~~

~~The bond must increase in five thousand dollar increments for each additional supply well and each injection well.~~

The owner of a geothermal energy extraction facility is responsible for obtaining the facility bond in subdivision a of subsection 1 ~~and subsection 2~~.

The owner of the geothermal energy extraction facility who is required to obtain a facility bond under ~~either~~ subdivision a of subsection 1 ~~or subsection 2~~ must comply with North Dakota Century Code chapter 38-19 and all rules and orders of the commission as a condition of the owner's bond. Any violation of either North Dakota Century Code chapter 38-19 or the rules or orders of the commission makes the owner liable under the facility bond, and the bond shall be subject to immediate forfeiture. The owner of the geothermal energy extraction facility remains liable under the bond until either of the following occurs: (1) the wells or loop systems have been satisfactorily plugged as provided in this chapter, the sites disturbed by any method of production of geothermal energy have been reclaimed in a manner approved by the state geologist, and all logs, plugging records, and other pertinent data required by statute or rules and orders of the commission are filed and approved; or (2) the liability on the bond has been transferred to another bond and such transfer approved by the commission.

The commission shall advise the surety and the principal when liability on a surety bond is terminated.

The state geologist is authorized to act for the commission as to all matters within this section.

**History:** Effective March 1, 1984; amended effective October 1, 1990; December 1, 1992; April 1, 1994; May 1, 1994; May 1, 2004.

**General Authority:** NDCC 38-19-03

**Law Implemented:** NDCC 38-19-03

#### **43-02-07-09. Proof of financial responsibility.**

The permittee shall maintain financial responsibility and resources to close, plug, and abandon the geothermal energy extraction facility according to this chapter. The permittee shall show evidence of financial responsibility to the commission by the submission of surety bond, or other adequate assurance, such as financial statements or other materials acceptable to the commission.

**History:** Effective March 1, 1984.

**General Authority:** NDCC 38-19-03

**Law Implemented:** NDCC 38-19-03

#### **43-02-07-10. Technical requirements.**

All wells must be made by a certified water or monitoring well contractor. All open-loop geothermal energy extraction facility wells must be in compliance with article 33-18. The location and construction of the borehole of closed-loop geothermal energy extraction facilities must be in compliance with article 33-18.

All geothermal energy extraction facilities, including horizontal-loop facilities, must be approved by the state geologist prior to installation.

All heat transfer fluids and additives must be approved for use by the state geologist.

**History:** Effective March 1, 1984; amended effective December 1, 1992.

**General Authority:** NDCC 38-19-03

**Law Implemented:** NDCC 38-19-03

#### **43-02-07-11. Completion report and basic data collected.**

Within thirty days after the completion of any geothermal energy extraction facility, a completion report must be filed with the state geologist, on a form prescribed by the commission.

The following basic data developed by the producer must be delivered, free of charge, to the state geologist, if requested, within six months of the filing of the completion report:

1. Washed and packaged sample cuts, core chips, or whole cores minus those portions of cores used for necessary testing or analysis in which case the results of testing, the analysis, and the description of missing portions shall be submitted to the state geologist upon request. Sample cuttings must be packaged in standard sample envelopes which in turn must be placed in proper order in a standard sample box and carefully identified as to producer, well location, and depth of sample.
2. Sample logs, radioactivity logs, resistivity logs, or other types of electrical or mechanical logs.
3. Elevation and location information on the data collection points.
4. Other pertinent information as may be requested by the state geologist.

**History:** Effective March 1, 1984; amended effective October 1, 1990.

**General Authority:** NDCC 38-19-03

**Law Implemented:** NDCC 38-19-03

#### **43-02-07-12. Production reports.**

The producer of each and every open-loop geothermal energy extraction facility shall on or before the first day of February of each year file with the state geologist a sworn statement showing the quantities, temperatures, and nature of products extracted from or by means of any facility during the month and the ultimate disposition of such products.

**History:** Effective March 1, 1984; amended effective October 1, 1990; December 1, 1992.

**General Authority:** NDCC 38-19-03

**Law Implemented:** NDCC 38-19-03

#### **43-02-07-13. Records to be kept.**

All producers of geothermal energy within this state shall make and keep appropriate books and records for a period not less than ten years, from which they may be able to make and substantiate the reports required by this chapter.

**History:** Effective March 1, 1984; amended effective October 1, 1990.

**General Authority:** NDCC 38-19-03

**Law Implemented:** NDCC 38-19-03

#### **43-02-07-14. Disposal of unusable products.**

The surface disposal or underground injection of unusable products or waste produced from a geothermal energy extraction facility must satisfy additional state laws and regulations. The state department of health must be notified of the disposal method and may require a permit under North Dakota Century Code chapter 61-28 or North Dakota Administrative Code article 33-25.

**History:** Effective March 1, 1984.

**General Authority:** NDCC 38-19-03

**Law Implemented:** NDCC 38-19-03

#### **43-02-07-15. Plugging and abandonment.**

Notice of intention to abandon any geothermal energy extraction facility must be filed with the state geologist by the producer prior to the commencement of plugging operations, on a form prescribed by the state geologist. The notice must state the name and location of the well or well field and the name of the producer.

Before any geothermal energy extraction facility is abandoned, it must be plugged in a manner which will confine permanently all subsurface minerals, oil, gas, and water in the separate strata originally containing them. This operation must be accomplished by the use of mud-laden fluid, cement, and plugs, used singly or in combination as may be approved by the state geologist. Casing must be cut off three feet [.91 meters] below the surface of the ground. The top plug in any hole must be set at least three feet [.91 meters] below ground level, and the land surface must be restored as nearly as possible to its original condition.

Shallow closed-loop systems using an approved heat transfer fluid may, upon approval of the state geologist, be abandoned by permanently sealing all of the loop ends and burying all pipes at least three feet [.91 meters] below ground. Closed-loop systems must be completely purged of heat transfer fluid prior to plugging. This fluid must be disposed of in accordance with the provisions of North Dakota Century Code chapter 61-28 and other state laws and regulations.

**History:** Effective March 1, 1984; amended effective October 1, 1990; December 1, 1992; January 1, 2008.

**General Authority:** NDCC 38-19-03

**Law Implemented:** NDCC 38-19-03