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CHAPTER 4727

DEPARTMENT OF HEALTH

EXPLORERS AND EXPLORATORY BORINGS

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4727.0100 DEFINITIONS.

Subpart 1. **Scope.** For the purpose of parts 4727.0100 to 4727.1300, the following terms or phrases shall have the meaning given them, except where the context clearly indicates otherwise.

Subp. 2. **Act.** "Act" means Minnesota Statutes, sections 156A.01 to 156A.08, as amended, under which parts 4727.0100 to 4727.1300 are promulgated.

Subp. 3. **Annular space.** "Annular space" means the space between two cylindrical objects one of which surrounds the other, such as the space between a drillhole and a casing pipe, or between a casing pipe and liner pipe.

Subp. 4. **APA.** "APA" means the Administrative Procedure Act, Minnesota Statutes, chapter 14.

Subp. 5. **Aquifer.** "Aquifer" means a water-bearing formation (soil or rock horizon).

Subp. 6. **Casing.** "Casing" means an impervious durable pipe placed in a boring to prevent the walls from caving and to seal off surface drainage or undesirable water, gas, or other fluids to prevent their entering the boring and the groundwater.

Subp. 7. **Commissioner.** "Commissioner" means the commissioner of health or his or her authorized representative.

Subp. 8. **Concrete.** "Concrete" means a mixture of Portland cement, sand, and water in the proportion of one bag (94 pounds) of Portland cement meeting the standard specifications of ASTM C150-69a, and an equal volume of dry sand and not more than six gallons of clean water. Where large volumes are required to fill annular openings, gravel not larger than one-half inch size may be added.

Subp. 9. **Council.** "Council" means the Water Well Contractors and Exploratory Borers Advisory Council, created pursuant to the provisions of Minnesota Statutes, section 156A.06.

Subp. 10. **Established ground surface.** "Established ground surface" means the intended or actual finished grade (elevation) of the surface of the ground at the site of the exploratory boring.

Subp. 11. **Exploratory boring.** "Exploratory boring" means any surface drilling done for the exploration of oil, natural gas, or metallic minerals as defined in Minnesota Statutes, section 156A.02, subdivision 5.

Subp. 12. **Explorer.** "Explorer" means a person who has the right to drill any exploratory boring.

Subp. 13. **Geological material.** "Geological material" means all materials penetrated in drilling an exploratory boring. The following table lists materials other than consolidated rock classified according to average particle size (Wentworth 1922):

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Particle Diameters

Material	Millimeters	Inches	Screen Slot No.	
			From	To
Clay	Up to - 0.005	Up to 0.0002		
Silt	0.005 - 0.062	0.0002 - 0.0025		
Fine Sand	0.062 - 0.250	0.0025 - 0.010	2	10
Medium Sand	0.250 - 0.50	0.010 - 0.020	10	20
Coarse Sand	0.50 - 1.00	0.020 - 0.040	20	40
Very Coarse Sand	1.00 - 2.00	0.040 - 0.080	40	80
Fine Gravel	2.00 - 4.00	0.080 - 0.160	80	160
Coarse Gravel	4.00 - 62.50	0.160 - 2.50	160 & larger	
Cobbles	62.5 - 250.0	2.50 - 10.0		
Boulders	250.0 and larger	10.0 and larger		

Subp. 14. Groundwater. "Groundwater" means the water in the zone of saturation in which all of the pore spaces of the subsurface material are filled with water.

Subp. 15. Grout. "Grout" means neat cement, concrete, heavy drilling fluid, or heavy bentonite slurry.

Subp. 16. Heavy drilling fluid. "Heavy drilling fluid" or "heavy bentonite slurry" shall contain a high percentage of clay or bentonite to minimize shrinkage of the slurry. Bentonite shall contain at least 85 percent of the mineral montmorillonite and shall meet American Petroleum Institute specification standard 13A (March 1966). Heavy drilling fluid or heavy bentonite slurry shall be of sufficient viscosity to require a time of at least 70 seconds to discharge one quart of the material through an API Marsh funnel viscometer. Saline, acid, or alkaline substances or other additives that cause a temporary increase in viscosity of the bentonite slurry are not permitted.

Subp. 17. Limestone. "Limestone" means rock which contains at least 80 percent of carbonates of calcium and has strong reaction with HCl (muriatic acid).

Subp. 18. Neat cement. "Neat cement" means a mixture of one bag (94 pounds) of Portland cement meeting the standard specifications of ASTM C150-69a, and not more than six gallons of clean water. Bentonite up to two percent by weight of cement may be used to reduce shrinkage. Other admixtures meeting the standard specifications of ASTM C494-68 may be used to reduce permeability and/or control time of set.

Subp. 19. Person. "Person" means any natural person, corporation, partnership, or other business association.

Subp. 20. Pollution or contamination. "Pollution" or "contamination" means the presence or addition of any substance to water which is or may become injurious to the health, safety, or welfare of the general public or private individuals and which is or may become injurious to domestic, commercial, industrial, agricultural, or other uses which are being made of such water.

Subp. 21. Responsible individual. "Responsible individual" means a person who has met the qualifications prescribed in part 4727.0600 and has been approved for designation by the commissioner in accordance with the terms of part 4725.0700.

Statutory Authority: *MS s 156A.01 to 156A.08*

4727.0200 POLICIES.

Parts 4727.0100 to 4727.1300 shall apply to all exploratory borings constructed in the state of Minnesota except those specifically exempted by Minnesota Statutes, section 156A.02, subdivision 5. Those aspects covered are the licensing

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of explorers, the examination of responsible individuals, and the proper abandonment of exploratory borings to protect the quality of groundwater aquifers. The explorer shall be responsible for the construction and abandonment of all exploratory borings completed under his license.

Statutory Authority: *MS s 156A.01 to 156A.08*

4727.0300 MODIFICATION BY THE COMMISSIONER.

When the strict application of any provision of parts 4727.0100 to 4727.1300 presents practical difficulties or unusual hardships, the commissioner, in a specific instance, may modify the application of such provision consistent with the general purpose of parts 4727.0100 to 4727.1300 and the act and upon such conditions as are necessary, in the opinion of the commissioner, to protect the groundwater of the state and the health, safety, and general well-being of persons using or potential users of groundwater.

Any request for modification shall be submitted to the commissioner in writing and shall be signed by the licensed explorer and the designated responsible individual. Such request shall specify in detail the nature of the modification being sought, the reasons therefor, and the special precautions to be taken to avoid contamination of the groundwater. The request shall also include the proposed boring depth, casing type and depth, method of construction and grouting, geological conditions likely to be encountered, and location of the boring and of possible sources of contamination. Whether or not the request is granted, the commissioner shall state in detail the reasons for the decision.

Statutory Authority: *MS s 156A.01 to 156A.08*

LICENSING OF EXPLORERS

4727.0400 LICENSING REQUIRED.

No person shall drill, construct, or otherwise cause to be made, an exploratory boring unless he possesses, or is employed by one who possesses, a valid explorer's license issued by the commissioner. An explorer engaging in exploratory boring shall obtain a license in accordance with parts 4727.0100 to 4727.1300.

Statutory Authority: *MS s 156A.01 to 156A.08*

4727.0500 LICENSE APPLICATION.

A person shall annually apply for an explorer's license by submitting to the commissioner a properly completed application accompanied by a \$50 license fee, payable to the treasurer, state of Minnesota. An explorer's license shall be effective for the calendar year for which it is issued. The person applying for an explorer's license shall include the name of the responsible individual who will supervise or oversee the location, construction, and abandonment of exploratory borings on behalf of the explorer. If the person applying for the explorer's license does not designate a responsible individual, the commissioner shall issue a conditional license. Such a license is not considered valid for the purpose of engaging in the construction of exploratory borings until a responsible individual has been designated and the commissioner has been notified of such designation. The notification of designation shall be made at least ten days prior to the commencement of exploratory boring.

Statutory Authority: *MS s 156A.01 to 156A.08*

4727.0600 QUALIFICATION AS RESPONSIBLE INDIVIDUAL.

A person who seeks to qualify for designation as a responsible individual shall:

- A. complete and submit an application for qualification to the commissioner, along with a \$50 fee which is payable to the treasurer, state of Minnesota;
- B. take and pass an examination on the portions of this rule which relate

to mineral exploration activities, or document the fact that he or she is a registered professional engineer or certified professional geologist, in accordance with Minnesota Statutes, section 156A.071, subdivision 2. A person may take the examination as many times as he desires. Each new application for qualification shall be accompanied by a new fee. All applicants in any one examination session will be given the same combination of written, oral, or practical work based on the substance of parts 4727.0100 to 4727.1300.

Statutory Authority: *MS s 156A.01 to 156A.08*

4727.0700 COMMISSIONER ACTION.

The commissioner shall not act upon the application for qualification until he has received all the information required by parts 4727.0100 to 4727.1300. When the commissioner determines that an individual has met all the qualifications prescribed in part 4727.0600, the commissioner shall notify the person and shall enter that person's name on a list of persons who qualify for designation as responsible individuals.

Statutory Authority: *MS s 156A.01 to 156A.08*

4727.0800 REVOCATION OF LICENSE; DISQUALIFICATION.

The commissioner or council may cause an investigation to be made in any case in order to determine whether there has been a violation of the act or parts 4727.0100 to 4727.1300, and, in so doing may request the explorer and/or the designated responsible individual to appear before them to determine the merits of the situation in question. The council may make a recommendation to the commissioner as to whether proceedings under the act and the APA would be appropriate. Any disciplinary action taken under parts 4727.0100 to 4727.1300 shall comply with the APA.

The commissioner may revoke the license of an explorer and may disqualify a responsible individual upon finding that the explorer or the designated responsible individual has violated the act or parts 4727.0100 to 4727.1300. The commissioner may initiate such proceedings upon his own motion or upon recommendation of the council. A license may be revoked and a responsible individual may be disqualified until certain conditions specifically related to the violations giving rise to the revocation are fulfilled and/or for a specified period of time as determined to be most appropriate by the commissioner and as specified in the commissioner's order of revocation. A revoked license shall be returned to the commissioner.

Statutory Authority: *MS s 156A.01 to 156A.08*

4727.0900 REINSTATEMENT.

An explorer who has had his license revoked may be relicensed by submitting the usual application and fee. A responsible individual who has been disqualified may be requalified by following the procedure prescribed in part 4727.0600. The commissioner shall require an investigation or hearing to determine whether an explorer should be issued a new license or a responsible individual should be requalified provided, however, that in no case shall a new license be issued or a responsible individual be requalified prior to one year after revocation or disqualification has taken effect.

Statutory Authority: *MS s 156A.01 to 156A.08*

EXPLORATORY BORINGS

4727.1000 ABANDONMENT OF EXPLORATORY BORINGS.

Abandonment of all exploratory borings shall be carried out in accordance with the provisions of Minnesota Statutes, chapter 156A and parts 4727.0100 to 4727.1300. Abandonment, whether temporary or permanent, shall be undertaken immediately upon completion of drilling activities. The commissioner may

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order that an exploratory boring be sampled and any contamination be removed prior to abandonment. If an exploratory boring provides a potential or actual source or channel of contamination for an aquifer, the commissioner may order that the boring be permanently abandoned.

Statutory Authority: *MS s 156A.01 to 156A.08*

4727.1100 TEMPORARY ABANDONMENT OF EXPLORATORY BORINGS.

A temporarily abandoned exploratory boring shall be maintained whereby it is not a source or channel of contamination for any aquifer.

Until a boring is permanently abandoned, all provisions for protection of the groundwater against contamination and pollution and for maintaining satisfactory sanitary conditions around the boring shall be carried out.

A boring which is temporarily abandoned shall be constructed to prevent the introduction of surface contaminants into the boring to prevent the passage of water from one aquifer to another. At the minimum, a temporarily abandoned boring shall be cased from bedrock or from the bottom of the boring if the boring terminates in unconsolidated materials, to a point one foot above the ground surface, or if in a floodplain, at least two feet above the level of the highest flood of record. The casing shall be protected with an overlapping cap which will prevent any surface contamination from entering the boring.

Any boring which is temporarily abandoned shall be marked and protected with four steel posts (schedule 40 steel pipe) of at least four-inch diameter at equal distances from each other and which are placed two feet from the center of the casing. Such posts shall be installed to a depth of four feet into solid ground, or to a depth of two feet if each post is surrounded with one foot of concrete to a depth of two feet.

A boring shall not be temporarily abandoned for more than five years.

Statutory Authority: *MS s 156A.01 to 156A.08*

4727.1200 PERMANENT ABANDONMENT OF EXPLORATORY BORINGS.

Subpart 1. Abandoning the exploratory boring. Whenever the explorer determines that a boring need not remain open any longer, or whenever he is about to lose the right to explore, the explorer shall permanently abandon the boring. The boring shall be filled with grout to prevent contaminating materials from entering the water-bearing ground formations. All materials, debris, and obstructions that may interfere with sealing operations shall be removed from the boring. Liner pipe shall be removed or perforated when necessary to assure placement of an effective seal. The commissioner shall be consulted for instruction in case of abandonment of a contaminated boring or where there is a question of proper procedure. All casing and screen may be salvaged except casing that has been cemented in place. The boring shall be filled with appropriate sealing materials as described in subpart 4 prior to removal of the casing.

Subp. 2. Grouting. The top of the hole shall be filled with ten feet of cement or concrete grout to within two feet of the land surface. Casing remaining in the hole shall be cut off at least two feet below land surface. The remaining top two feet of hole shall be filled with native topsoil. When concrete, cement, or heavy drilling fluid is used as a grout material, it shall be inserted in the boring through a grout pipe from the bottom of the boring upward to the surface under pressure.

Subp. 3. Confining the flow. The flow in a boring, encountering flowing artesian conditions shall be confined if possible; and the boring abandoned in accordance with parts 4727.0100 to 4727.1300.

Proper judgment shall be exercised in the feasibility and practicability of sealing a boring encountering flowing artesian conditions. In some cases the

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confining formation may have been so badly disturbed that sealing may only cause the flow to discharge in a less appropriate location. In other situations, the flow may have eroded so much material that the landscape has taken on the appearance of a natural spring. The sealing in this case may be impractical, if not impossible.

Subp. 4. Grout materials. A permanently abandoned boring shall be filled and sealed using one or more of the following substances in accordance with the geological materials penetrated:

A. The section of a boring in unconsolidated deposits shall be filled with neat cement, concrete, or heavy drilling fluid to provide a permeability no greater than the natural condition.

B. The section of a boring in a rock formation shall be filled with neat cement or concrete.

C. The section of a boring in a cavernous or creviced rock (such as cavernous limestone or creviced granite, etc.) shall be filled with concrete or neat cement or alternate layers of concrete or neat cement and gravel or stone aggregate. At the top of the cavernous or creviced formation, the filling shall be completed by a layer of neat cement or concrete extending at least ten feet into the above overlying formation, and finished as provided in these rules.

D. A boring so large that the use of neat cement, concrete, or heavy drilling fluid is impractical may be sealed with other materials subject to the approval of the commissioner.

Statutory Authority: *MS s 156A.01 to 156A.08*

4727.1300 ABANDONMENT REPORT.

Within 30 days of temporary or permanent abandonment, the explorer shall submit an abandonment report, as required by Minnesota Statutes, section 156A.071, subdivision 8, to the commissioner. The abandonment report shall specify whether the boring is being temporarily or permanently abandoned. A separate abandonment report shall be filed when a temporarily abandoned boring is permanently abandoned.

Statutory Authority: *MS s 156A.01 to 156A.08*