

## CHAPTER 43-02-02.2

### IN SITU LEACH URANIUM MINERAL MINING RULES

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#### **43-02-02.2-01. Definitions.**

Terms in this chapter have the same meaning as in North Dakota Century Code chapter 38-12, except:

1. "Abandoned well" means a well whose use has been permanently discontinued or that is in such a state of disrepair that it cannot be used for its intended purpose or for observation purposes.
2. "Background" means the ambient condition that exists as part of the natural environment at a particular location.
3. "Baseline" means a premining condition, concentration, quantity, or quality that is set as a specific value or guideline against which future values are compared.
4. "Baseline well" means a well from which ground water is analyzed to define baseline water quality in the permit area.

5. "Beneficial use" means a practical use of land that has economic or social value and that allows other sustainable uses.
6. "Best available technology" means the best technology, treatment techniques, or other means that the department finds, after examination for efficacy under field conditions and not solely under laboratory conditions, that are available, subject to cost considerations. For the purposes of setting maximum contaminant levels for synthetic organic chemicals, any best available technology must be at least as effective as granular activated carbon.
7. "Byproduct material" means surface wastes or material resulting from in situ leach mining. Underground ore bodies depleted by in situ leach mining do not constitute byproduct material.
8. "Casing" means a pipe or tubing of appropriate material lowered into a borehole during or after drilling to support the sides of the hole to prevent the walls from caving; to prevent loss of drilling mud into porous ground; and to prevent water, gas, or other fluid from entering or leaving the hole.
9. "Catastrophic collapse" means the sudden and complete failure of overlying strata caused by removing underlying materials.
10. "Cementing" means the process of mixing and placing cement grout in a hole to prevent the vertical movement of fluids in the hole or the annulus.
11. "Class III well" means under the federal underground injection control program promulgated under part C of the Safe Drinking Water Act, 42 U.S.C. 300 et seq. (2003), a well that injects fluids for extraction of minerals, including solution mining of minerals. The term includes any well used in:
  - a. Mining of sulfur by the Frasch process;
  - b. In situ leach mining of uranium or other metals (This category includes only in situ production from ore bodies that have not been conventionally mined. Wells used for solution mining, such as stope leaching, are classified as class V wells.); or
  - c. In situ mining of salts, trona, or potash.
12. "Composite liner" means a liner made of two components, typically a geomembrane and a soil liner.
13. "Confining zone" means a geological unit that is stratigraphically adjacent to one or more aquifers and restricts the movement of ground water into and out of the aquifer or aquifers it confines.
14. "Contaminant" means any physical, chemical, biological, or radiological substance or matter in water, soil, or air that is potentially harmful to human health or the health of animals or plants.
15. "Contiguous land" means land bordering the land within the permit area.
16. "Control parameter" means a chemical constituent of ground water monitored on a routine basis and used to detect the presence of recovery fluids in a monitoring well.
17. "Department" means the department of mineral resources of the industrial commission.
18. "Ephemeral drainage" means a stream or reach of a stream that flows only in direct response to precipitation or to the melting of snow or ice in the immediate watershed.
19. "Excursion" means any unauthorized movement of recovery fluid out of the production zone as a result of mining.

20. "Exempted aquifer" means an aquifer or portion of an aquifer that meets the criteria in the definition of "underground source of drinking water" but which has been exempted under section 33-25-01-05.
21. "Facility" means all contiguous land and all structures and improvements on the permit area used for mining.
22. "Filing date" means the date on which the department notifies the applicant that its application is complete.
23. "Final reclamation" means reclamation performed that satisfies the requirements of the approved reclamation plan and attains the intended postmining land use.
24. "Fluid" means any material or substance that flows or moves whether in a semisolid, liquid, sludge, gas, or other form.
25. "Formation" means a body of consolidated or unconsolidated rock characterized by a degree of lithologic homogeneity that is prevailing, but not necessarily, tabular and is mapable on the earth's surface or traceable in the subsurface.
26. "Formation fluid" means fluid present in a formation under natural conditions. It does not include introduced fluids.
27. "Geomembrane" means a synthetic, impermeable membrane used in contact with soil or other materials in geotechnical and civil engineering applications to contain liquids. Geomembranes are made of various materials, with each type having different characteristics that affect installation procedures, lifespan, and performance.
28. "Geotechnical analysis" means a study of the engineering characteristics and properties of the site's soils, rocks, and other materials for suitability in construction.
29. "Ground water" means water below the land surface that is in the zone of saturation.
30. "Ground water restoration" means the condition achieved when the quality of ground water affected by injecting mining solution in production and nonproduction zones is returned to restoration values.
31. "Grout" means a slurry used to form a permanent, impervious seal in the annular space or to fill and seal abandoned holes or wells.
32. "Hazardous waste" has the meaning given in subsection 1 of section 33-24-02-03 and North Dakota Century Code section 23-20.3-02.
33. "In situ leach mining" means a method of in-place surface mining in which limited quantities of overburden are disturbed to install a conduit or well and ~~uranium is~~ minerals are mined by injecting or recovering a liquid, solid, sludge, or gas that causes the leaching, dissolution, gasification, liquefaction, or extraction of ~~uranium~~ minerals. In situ leach mining does not include the primary or enhanced recovery of naturally occurring oil and gas.
34. "Injection well" means a class III well.
35. "Injection zone" means a geological formation, group of formations, or part of a formation receiving fluids through a well for the purposes of mineral recovery.
36. "Intermittent drainage" means a stream or reach of a stream that flows for at least some part of the year and obtains its flow from surface runoff and ground water discharge.

37. "Mechanical integrity" means the condition of an injection well, when there is no significant leak in the casing, tubing, or packer, and there is no significant fluid movement into an unauthorized zone or underground source of drinking water through vertical channels adjacent to the injection well bore. The determination that there are no significant leaks or fluid movement is based on the results of mechanical integrity testing.
38. "Mining" means in situ leach mining, unless the context requires otherwise.
39. "Mining solution" means the injected fluid containing the chemicals used to mobilize the uranium minerals into solution.
40. "Monitoring well" means any cased excavation or opening into the ground made by digging, boring, drilling, driving, jetting, or other methods to determine the physical, chemical, biological, or radiological properties of ground water.
41. "Negative pressure gradient" means the condition that results from the creation of a localized hydrological cone of depression or pressure sink within the production zone caused by the production of more fluid than was injected. The purpose of this pressure gradient is to contain the recovery fluid by causing natural ground water to move from the surrounding area toward the production zone.
42. "Nonproduction zone" means an aquifer that is above or below the production zone.
43. "Occupied dwelling" means a residence that is lived in by a person at least six months throughout a calendar year.
44. "Operator" means the principal that is on the bond covering the facility.
45. "Perennial drainage" means a stream or reach of a stream that flows continuously during all of the calendar year as a result of ground water discharge or surface runoff.
46. "Permit amendment" means a change to an approved mining permit that requires department approval.
47. "Permit application" means a mining permit application.
48. "Permit area" means the area approved by the department in which mining may occur.
49. "Plugging" means the process of filling a borehole or a well to restore hydrologic conditions and to prevent migration of ground water between strata.
50. "Postmining land use" means the beneficial land use or uses upon which a mining operation reclamation plan is based, including forest planting, agriculture or horticulture, rangeland, wildlife habitat, recreation, residential and industrial sites, and future mineral exploration and development.
51. "Pressure" means the total force per unit area acting on a surface.
52. "Process solution" means a solution used in extracting minerals from ore during the milling process.
53. "Production" means removing or processing at least ten percent of the permitted annual uranium minerals or the conduct of other activities, including reclamation, which significantly move the operation toward completion.
54. "Production area" means the area in which mining takes place.

55. "Production well" means a well or conduit through which a recovery fluid, mineral, or product is produced from the subsurface. If a well is used for both injection and recovery, it is considered an injection well for the purposes of this chapter until the operator demonstrates to the department that the well has been converted to uses other than injection.
56. "Production zone" means the geologic interval into which mining solutions are to be injected and recovery fluids extracted.
57. "Radioactive waste" means any waste that contains radioactive material in concentrations that exceed those listed in chapter 33-10-04.1, appendix B, table II, column 2.
58. "Receiving strata" means the geologic units within which the production zones are contained.
59. "Recovery fluid" means the fluid resulting from injecting mining solution that has dissolved or mobilized ~~uranium~~ minerals from the production zone for extraction and recovery.
60. "Restoration table" means a list of parameters in the mining permit with assigned ground water quality restoration values that are the compliance requirements for restoring production and nonproduction zones.
61. "Restored aquifer" means that portion of an aquifer within a restoration area where the water quality has, by natural or artificial processes, returned to restoration values.
62. "Satellite facility" means a ~~uranium~~ mineral recovery or ion exchange facility set up at a remote distance from a central processing plant. ~~The satellite facility extracts uranium from an in situ recovery fluid by loading it on an ion exchange resin. The loaded resin is then transported to a central processing plant where the uranium is removed from the resin and processed into yellowcake. Many of the in situ leach plants operating today process the yellowcake at the plant site and do not utilize satellite facilities.~~
63. "Slope" means the average inclination of a surface measured from the horizontal.
64. "Solid waste" has the meaning given in North Dakota Century Code section 23-29-03.
65. "Submission" means the initial physical delivery of an application to the department.
66. "Surface impoundment" means a natural or artificial closed basin that holds water, slurry, or other liquid or semiliquid material. A permanent surface impoundment is a structure that will remain after final bond release.
67. "Tailings impoundment" means a structure designed to hold tailings, including leach pads and dumps containing treated spent ~~uranium~~ ore of the mined mineral(s).
68. "Technical revision" means a change in the operating plan, reclamation plan, or permit that the department determines has only a minimal effect on the interests this chapter seeks to protect or advance.
69. "Topsoil" means soil at the earth's surface that will easily produce and sustain vegetation growths specified in an approved reclamation plan.
70. "Treatment" means any method or process, including neutralization, designed to change the physical, chemical, or biological character or composition of a waste for the purpose of disposal or final reclamation.
71. "Unauthorized zone" means the area outside the production zone that is not permitted for injecting mining solution or extracting recovery fluid, or authorized for any excursion of recovery fluid out of the production zone.

72. "Underground source of drinking water" means an aquifer or part of an aquifer that meets any one of the following:
- a. Supplies any public water system;
  - b. Contains a sufficient quantity of ground water to supply a public water system and either currently supplies drinking water for human consumption or contains fewer than ten thousand milligrams per liter total dissolved solids; or
  - c. Is not an exempted aquifer.
73. "Upper limit value" means a chemical or physical concentration greater than the maximum value of a parameter that can be attributed to natural fluctuations and analytical variability. Upper limit values are determined by the department from the baseline sampling prior to initiation of mining. Upper limit values are used to determine when there is movement of recovery fluid out of authorized areas or unapproved changes to a chemical or physical parameter. For certain parameters, such as pH, an upper limit value may be defined as an acceptable range of values.
74. "Verifying analysis" means a second sampling and analysis of control parameters for the purpose of confirming a routine sample analysis that indicates an increase in a control parameter to a level exceeding the upper limit value.
75. "Well" means an artificial excavation or opening in the ground with a depth greater than the largest surface dimension by which ground water is sought or through which ground water flows under natural pressure or is artificially withdrawn. A well is made by digging, boring, drilling, jetting, or another artificial method, and is often walled or cased to prevent the sides from caving.
76. "Yellowcake" means a processed oxide of uranium,  $U_3O_8$ , that is extracted and concentrated from uranium ore.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-02. Scope of chapter.**

This chapter contains general rules adopted to conserve the natural resources of North Dakota and to prevent pollution of freshwater supplies, to provide for the protection of the environment and public safety, to ensure the optimum recovery of the mineral resource, and the reclamation of all land disturbed by operations regulated by this chapter to a condition consistent with prior land use and productive capacity. Special rules and orders will be issued when required and prevail over general rules, and orders if in conflict. The commission may grant exceptions to this chapter, after due notice and hearing, when such exceptions will result in the prevention of waste and operate in a manner to protect correlative rights.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-03. Permit required.**

A permit is required prior to commencement of mining. The commission shall review the facility permit at least once every five years to determine whether it should be amended, modified, or revoked.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-03

**Law Implemented:** NDCC 38-12-03

#### **43-02-02.2-04. Submission of permit application.**

Any person who conducts or expects to conduct mining operations shall file with the department a complete permit application and all required materials. The applicant shall file with the department proof that it submitted a copy of the application to the county recorder in the county in which the proposed permit area is located.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-03

**Law Implemented:** NDCC 38-12-03

#### **43-02-02.2-05. Review for completeness.**

The department will determine whether the application is complete. The department will notify the applicant in writing, within thirty days after the application is submitted, whether the application is complete or specify deficiencies that must be corrected in order to complete the application. If the application is substantially deficient, it will be rejected. The department will notify the applicant when the application is considered complete.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-03

**Law Implemented:** NDCC 38-12-03

#### **43-02-02.2-06. Review period.**

1. The department will have one hundred eighty days after the filing date to approve or disapprove the application.
2. The department may extend the review period not to exceed an additional one hundred eighty days if:
  - a. Additional time is needed to correct application deficiencies.
  - b. Significant changes are submitted that in the department's judgment require additional time to review. The department may require additional public notification of the amended application.
  - c. The department requires additional time to conduct an informal conference or a formal hearing or complete the decision.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-03

**Law Implemented:** NDCC 38-12-03

#### **43-02-02.2-07. ~~Permit applications – Fees.~~ Permit application and annual operating fees.**

A fee of twenty thousand dollars must accompany the permit application. Permit revisions may require additional fees not to exceed ten thousand dollars.

The annual operating fee will be based upon the costs to monitor and inspect the facility.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-03

**Law Implemented:** NDCC 38-12-03



#### **43-02-02.2-08. Notice of hearing.**

The commission will give thirty days' notice (except in an emergency) to the general public of the time and place of the hearing on the application. Immediately upon receiving notice of the hearing date, the permit applicant shall give notice by certified mail to surface and subsurface owners within the permit application area and to the county recorder in the county or counties in which the proposed permit area is located.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-03

**Law Implemented:** NDCC 38-12-03

#### **43-02-02.2-09. Information added after filing date.**

Additional information submitted to the department by the applicant to supplement, correct, amend, or clarify an application following the filing date must also be submitted with the county recorder in the county or counties in which the proposed permit area is located. The additional information must be submitted at least thirty days before the hearing date. The applicant must transmit proof of submission to the department. The department shall give notice to the public of the additional information at least fifteen days before the scheduled hearing date.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-03

**Law Implemented:** NDCC 38-12-03

#### **43-02-02.2-10. Notice to agencies.**

Within the first ten days of the review period of a permit application, the department shall send copies of the application to the department of agriculture, the state department of health, and to the state water commission.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-03

**Law Implemented:** NDCC 38-12-03

#### **43-02-02.2-11. Summary document.**

The permit application must contain a summary document that describes the main elements of the operation and identifies the major environmental issues involved.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-03

**Law Implemented:** NDCC 38-12-03

#### **43-02-02.2-12. Permit approval or denial.**

Within ninety days of the hearing, or a reasonable time thereafter, the department will notify the applicant of the commission's decision as to whether the permit is approved or denied.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-03

**Law Implemented:** NDCC 38-12-03

#### **43-02-02.2-13. Bond.**

1. Before any person receives a mining permit, the person shall submit to the department and obtain its approval of a surety bond or cash bond. An alternate form of security may be

approved by the department. Each such surety bond must be executed by a responsible surety company authorized to transact business in North Dakota.

2. The amount of the bond must be commensurate with size and scope of the mining operation and the cost of abandoning operation and reclamation.
3. The information provided in section 43-02-02.2-18, along with any additional information available to the department, will be used to determine the reclamation costs.
4. The size and the scope of the operation will be evaluated annually and the department may increase or decrease the bond amount to reflect the results of the evaluation.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-14. Permit application - General requirements.**

1. All applications must be submitted in a format satisfactory to the department. The applicant shall provide information that is complete, current, presented clearly and concisely, and supported by appropriate references to technical and other written material. All technical analyses must have been conducted by a qualified individual. The department may require the applicant to supplement the application with information beyond that specifically required by these rules if the department believes that additional information is necessary to make an informed decision.
2. The applicant shall provide four copies of the application to the department and one copy to the county recorder in the county in which the proposed permit area is located.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-15. Permit application - General contents.**

1. The application must:
  - a. Describe by legal description the land for which a permit is sought.
  - b. Identify all property interests the applicant holds, including options, in the lands for which a permit is sought and in all contiguous land. This identification must cover surface and subsurface interests and legal descriptions must be provided identifying the location of each interest and option.
  - c. List the names and addresses of the following:
    - (1) The permit applicant.
    - (2) Every legal or equitable owner of record (surface and subsurface) of the property for which a permit is sought.
    - (3) The holders of record (surface and subsurface) of any leasehold interest in the property.
    - (4) Any purchaser of record (surface and subsurface) of the property under a contract.
    - (5) The operator, if the operator is a person different from the permit applicant.

- (6) If any of the above are business entities other than a single proprietor, the names and addresses of the principals, officers, and resident agent.
    - (7) Every owner of record of all surface and subsurface interests in contiguous land.
  - d. State, if the applicant is a partnership, corporation, limited liability company, association, or other business entity. State that the applicant is registered with the North Dakota secretary of state to do business in North Dakota and state:
    - (1) The names and addresses of every officer, manager, partner, director, governor, or person performing a function similar to a director.
    - (2) The name and address of any person owning of record ten percent or more of any class of voting stock or membership interests of the applicant.
  - e. All names under which the applicant, and any partner, principal shareholder, or principal member of the applicant, was involved in a mining operation within any state during the five years preceding the date of the application.
  - f. A description of any pending, current, or previous permits for mining operations in any state being sought or held by the applicant and any partner, principal shareholder, or principal member of the applicant.
  - g. A description of any instance in which the applicant has been formally notified that it violated any law of the United States or the state of North Dakota, or of any agency of the United States or of the state of North Dakota, pertaining to air or water protection in connection with any mining operation during the five years prior to the date of application. The applicant must also explain the final resolution of any such notice.
  - h. Whether the applicant, any subsidiary, affiliate, or persons controlled by or under common control with the applicant, has ever held any federal or state permit for a mining operation that in the five years prior to the date of the application has been suspended or revoked, or has had a bond or similar security for a mining operation forfeited and, if so, explain the facts involved.
  - i. In this subdivision, "mining operations" is interpreted broadly to cover all kinds of mining.
- 2. The application must provide the names of persons that collected and analyzed data referred to in the application, as well as:
    - a. Dates of collection and analyses.
    - b. Descriptions of methodology used.
  - 3. The application must provide the name, address, and position of officials of each private or academic research organization or governmental agency consulted in preparing the application.
  - 4. Maps must accompany the application to aid the department's understanding and analysis of it.
    - a. Maps must be legible and drawn to a scale that clearly shows the elements being delineated. Permit area map scales must be 1:2,400 or larger. Maps showing lands and water in contiguous areas must be at a scale 1:24,000 or larger. The department may approve requests for map scale changes. Maps must:
      - (1) Show the name of the applicant;

- (2) Be prepared and signed by a person qualified to prepare the map;
  - (3) Give the date prepared;
  - (4) Identify the purpose the map fulfills;
  - (5) Include a legend;
  - (6) Indicate township, range, and section boundaries; and
  - (7) Identify scale.
- b. Base maps are required and must identify all major topographic features and landmarks, streams, towns, subdivisions, historic or archaeologic sites, utilities, roads, and buildings. In lieu of delineating these items on the map, the use of a standard United States geological survey seven-and-one-half-minute quadrangle map may be used as a base map. Contour (topographic) maps must accurately locate and identify the permit area, the proposed permit boundary, and the location of any public highways, dwellings, utilities, and easements within the permit area and contiguous lands in relation to all proposed affected lands and proposed activities associated with the mining, including all processing facilities, chemical storage areas, production areas, and roads. The map shall also clearly illustrate the location of monitoring wells.
5. The application must describe the activities to be conducted by the applicant for which permits are required from state, federal, and local governments. It must also list all permits or construction approvals received or applied for in association with the proposed mining activity under the following:
- a. The hazardous waste management program under article 33.1-24;
  - b. The underground injection control program under article 33.1-25 and chapter 43-02-02.1 and under North Dakota Century Code chapter 61-28;
  - c. The control, prevention, and abatement of pollution of surface waters program under article 33.1-16 and under North Dakota Century Code chapter 61-28;
  - d. The air quality program under article 33.1-15 and under North Dakota Century Code chapter 23.1-2506;
  - e. Section 404 of the Clean Water Act;
  - f. The radiation control program under article 33.1-10 and under North Dakota Century Code chapters 23.1-202, 23-20.1, 23-20.2, and 23-20.5; when radioactive elements will be produced in sufficient quantities;
  - g. A United States nuclear regulatory commission source and byproduct material license; when radioactive elements will be produced in sufficient quantities;
  - h. Laws administered by the state engineer, state water commission, and water resource districts; and
  - i. Any other federal, state, and local permits or approvals.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-03

**Law Implemented:** NDCC 38-12-03

#### **43-02-02.2-16. Permit application - Additional baseline information.**

1. Baseline water quality and water level data must be submitted with the application. The data must represent at least a one-year period during which data is collected monthly unless the applicant can demonstrate to the department's satisfaction that less frequent sampling or sampling for a shorter period for specific locations is hydrologically justifiable. In no case may baseline sampling be less frequent than quarterly.
2. The following information is required:
  - a. Ground water baseline information, including:
    - (1) A geochemical, lithological, and mineralogical description of the receiving strata and any aquifers that may be affected by injecting mining solution;
    - (2) Aquifer characteristics for the water-saturated portions of the receiving strata and aquifers that may be affected by the mining process. Characteristics must include aquifer thickness, velocity and direction of ground water movement, potentiometric gradient, storage coefficients or specific yields, transmissivity or hydraulic conductivity, water level data, recharge and discharge areas, and the directions of preferred flow under hydraulic stress in the saturated zones of the receiving strata. The extent of hydraulic connection between the receiving strata and overlying and underlying aquifers and the hydraulic characteristics of any influencing boundaries in or near the proposed production areas must be determined and described; and
    - (3) The volume and areal extent of ground water anticipated to be influenced by the injection activities. The area of review must include the area within a one-quarter mile [.40 kilometer] radius of the injection wells, or as determined by the department.
  - b. Geology of the land within the proposed permit area and contiguous lands, including representative geologic cross sections and structure contour maps or three-dimensional fence diagrams of the target ~~uranium~~-mineral deposit.
  - c. A surface water inventory map on a topographic base map, depicting all identifiable surface water resources potentially affected by the proposed mining process, including seeps, springs, rivers, streams, lakes, ponds, wetlands, and reservoirs. The map must also address surface water quality and quantity, discharge rates, and other information necessary to characterize the hydrologic system.
  - d. A well location inventory map depicting any identifiable wells and exploration test holes, located within one mile [1.61 kilometers] of the boundary of the permit area accompanied by a table of all known existing water wells, producing wells, injection wells, abandoned wells, and exploration holes, giving location, depth, producing intervals, type of use, condition of casing, plugging procedures and date of completion for each well or drill hole within that same area to the extent such information is available in public records and from a reasonable inspection of the property.
  - e. A potentiometric surface map of the mining zone and the overlying and underlying hydrostratigraphic units on a topographic base map as well as any near-surface aquifers.
  - f. A geochemical characterization of the ore rock. The EP toxicity test must be used.
  - g. A surface and ground water monitoring plan for the life of the mine.
  - h. Meteorologic data and a meteorologic monitoring plan.

- i. A drainage, erosion, and sedimentation control plan.
  - j. For operations using chemicals in the milling process, a description of the proposed methods to monitor and collect leakage or spills and a spill contingency plan.
  - k. An estimate of the water requirements, including flow rates and volumes for each phase of the mining and restoration operation. This estimate must include a description of the potential effect on the quality and quantity of the proposed water source.
  - l. A description of the chemical characteristics of process solutions and the chemicals used to process ore, including a range of operating concentrations.
  - m. Preliminary engineering plans and specifications for pollution control facilities and a quality control plan for constructing those facilities.
  - n. Site-specific background radiological data, including the results of measurements of radioactive materials occurring in important species, soil, air, and in surface and ground waters that could be affected by the proposed mining operations- when radioactive elements will be produced in sufficient quantities. The applicant shall develop a preoperational environmental radiological monitoring plan. The plan must include a radiation survey of proposed mine facilities area to include process or recovery facility, ponds, impoundments, and wellfields.
  - o. Identification of unstable or seismic areas.
  - p. A list and map of all adjudicated and permitted ground water and surface water rights within a six-mile [9.65-kilometer] radius of the mine permit boundary.
  - q. Land use and zoning laws within the mine permit and within a one-mile [1.61-kilometer] radius of the mine permit boundary.
  - r. A list of occupied dwellings within the mine permit and within a one-mile [1.61-kilometer] radius of the mine permit boundary.
3. The department may require presubmission meetings to discuss the procedures for baseline data and site characterization.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-03

**Law Implemented:** NDCC 38-12-03

#### **43-02-02.2-17. Permit application - Mine operations plan.**

Applications must include a mining plan, which must include:

- 1. A narrative description of the mining and milling techniques to be employed, including plan view maps of the proposed mining;
- 2. A narrative description of the proposed depth and direction of mining including representative maps and cross sections;
- 3. A map depicting the proposed locations of all buildings and infrastructure, including pipelines, surface impoundments, waste dumps, and other mine-related facilities;
- 4. Discussion and illustration of the estimated mining schedule, including:
  - a. A list of the proposed wellfields;
  - b. A map showing the proposed sequence for mining the wellfields;

- c. An estimated time schedule for mining each wellfield; and
  - d. The capacity of the water and wastewater treatment systems and correlation of their capacity with the mining and restoration schedules;
5. Conceptual plans and specifications for mining facilities in accordance with section 43-02-02.2-35;
  6. ~~In accordance with United States nuclear regulatory commission requirements,~~ a A plan for ground water monitoring adjacent to ponds and surface impoundments and a leak response plan detailing actions that will be taken in response to detecting leaks from these areas; The plan must be in accordance with United States nuclear regulatory commission requirements when radioactive elements will be produced in sufficient quantities;
  7. ~~In accordance with United States nuclear regulatory commission requirements,~~ a A plan for the periodic inspection and maintenance of mine facilities to include pipelines and lined impoundments. The plan must include criteria for repair or replacing equipment or infrastructure to keep mine facilities in good repair and order, and a quarterly report to include inspection logs, problems identified, and repair or replacement work completed; The plan must be in accordance with United States nuclear regulatory commission requirements when radioactive elements will be produced in sufficient quantities;
  8. The composition of all known and anticipated wastes and procedures for their disposal;
  9. Procedures for ensuring that all radioactive, toxic, acid-forming, or other materials constituting a fire, health, safety, or environmental hazard encountered during or created by the mining are promptly treated, confined, or disposed of in a manner designed to prevent pollution of air, surface water, or ground water, degradation of soils or vegetation, or a threat to human or animal health and safety, and according to state law;
  10. A site monitoring plan to include:
    - a. Ground water quality for both production and nonproduction zones;
    - b. Surface water quality and quantity, including discharge points, streams and lakes, and general direction of flow off the site;
    - c. Requirements for water quality sampling and analysis to include:
      - (1) A description of, or reference for, the procedures and methods used for sample collection, preservation, quality control, and detection levels;
      - (2) The name, address, and telephone number of the laboratory performing the analyses, and the laboratory identification number; and
      - (3) Signatures of the laboratory manager or technician performing the analyses for the prepermit baseline study and permit requirements;
    - d. Air quality, including process facilities and other enclosed facilities;
    - e. Soils;
    - f. Wildlife and aquatics;
    - g. Subsidence;
    - h. Vegetation; and
    - i. Environmental radiological monitoring of surface water, air, soils, and vegetation;

11. A description of the location within the permit area where underground injection is proposed;
12. A description of the proposed method of operation, including:
  - a. Injection rate, with the average and maximum daily rate and the volume of fluid to be injected;
  - b. Injection pressures, with average and maximum injection pressures;
  - c. A description of how a negative pressure gradient will be maintained within the production zone;
  - d. Proposed well stimulation program;
  - e. Type of mining solution to be used;
  - f. Proposed injection procedure; and
  - g. Expected changes in pressure, native ground water displacement, and direction of movement of mining solution;
13. The following information concerning the production zone:
  - a. If the receiving strata is naturally a water-bearing formation:
    - (1) Fluid pressure;
    - (2) Fracture pressure;
    - (3) Physical and chemical characteristics of the receiving strata fluids; and
    - (4) Compatibility of injected fluids with formation fluids; and
  - b. If the receiving strata is not a water-bearing formation, the fracture pressure in the production zone;
14. The procedures to ensure that installing recovery, injection, and monitoring wells will not result in hydraulic communication between the production zone and overlying or underlying stratigraphic horizons;
15. The procedures used to verify that the injection and production wells are in communication with monitoring wells completed in the receiving strata and employed for the purpose of detecting excursions;
16. The well construction method must be stated in the permit application. Descriptions of the construction and completion details for all injection and production wells in accordance with sections 43-02-02.2-25 through 43-02-02.2-27, and for monitoring wells in accordance with sections 43-02-02.2-25, 43-02-02.2-26, and 43-02-02.2-28;
17. A schedule for and description of the procedures to demonstrate and maintain mechanical integrity of all injection and production wells in accordance with section 43-02-02.2-30;
18. A corrective action plan in accordance with section 43-02-02.2-33 for wells that are improperly sealed, completed, or abandoned, consisting of the steps or modifications necessary to prevent movement of fluid into unauthorized zones;
19. A description of the proposed mining solution and the chemical reactions that may occur during mining as a result of injecting the mining solution;
20. A subsidence analysis, using established geotechnical principles, that estimates, based upon the proposed mining operation, the effect of subsidence upon the land surface and overlying aquifers;



21. A spill contingency plan in accordance with section 33-16-02.1-01 to include reporting, response, assessment, and remedial actions;
22. A description of measures employed to prevent an excursion, and in the event of an excursion, the plans to report or to verify the excursion, and plans for remedial action in accordance with sections 43-02-02.2-48 through 43-02-02.2-53;
23. An assessment of impacts that mining may reasonably be expected to have on water resources and water rights inside the permit area and on contiguous land, and the steps that will be taken to mitigate these impacts;
24. A well maintenance plan to ensure:
  - a. Wells are sufficiently covered to protect against entrance of undesirable material into the well;
  - b. The wells are marked and can be clearly seen;
  - c. The area surrounding each well is kept clear of brush or debris; and
  - d. Monitoring equipment is appropriately serviced and maintained so monitoring requirements can be met;
25. To the extent that existing information or data is available, a determination of whether the annulus of existing water wells has been properly sealed and whether former producing wells, former injection wells, former monitoring wells, abandoned wells, and exploration holes in the proposed production area have been appropriately plugged and abandoned, and if not, a plan for replugging these wells;
26. A plan to minimize a mining operation's adverse impacts, including:
  - a. Design, construction, and location of facilities to minimize impacts to surface water and ground water;
  - b. Design and location of facilities so they are compatible with surrounding land uses;
  - c. Control of access;
  - d. Preventive measures to minimize harmful impacts to wildlife;
  - e. Minimizing the production of mine waste; and
  - f. Integrating mine operations planning with the reclamation plan;
27. A plan to ensure that all refuse from the mining operation, including garbage and rubbish, is disposed of in a permitted solid waste facility and that all special and hazardous wastes are handled in accordance with North Dakota Century Code chapter ~~32~~33.1-204; and 23.1-08; and
28. A plan for drill hole plugging and well repair, plugging, and conversion must be included in the permit application and constitutes a condition of the permit.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-18. Permit application - Reclamation plan.**

Applications must include a reclamation plan that contains the following:

1. Discussion and information necessary to demonstrate that ground water restoration will be achieved, including:
  - a. A list of the proposed wellfields;
  - b. A map showing the estimated sequence for restoring the wellfields;
  - c. A potentiometric map of the ground water surface in the shallowest aquifer, production zone, and adjacent aquifers;
  - d. The geochemistry of the shallowest aquifer and the production zone and of up-gradient and down-gradient aquifers, to include oxidation-reduction conditions and common ions;
  - e. The direction and velocity of ground water movement through the producing zone;
  - f. The proposed methods to restore ground water quality, based on the geochemistry of the production zone and the chemistry of the mining solutions;
  - g. An estimated time schedule for restoring each wellfield; and
  - h. Proposed ground water quality restoration values;
2. A plan for well repair, abandonment, plugging, and conversion;
3. A plan for disposing drill cuttings;
4. An estimated time schedule for achieving reclamation, including ground water restoration and surface reclamation to be completed in not more than five years unless such period is extended by the department upon a finding that additional time is necessary to complete the reclamation plan;
5. Procedures for reestablishing any surface water quality and surface drainage that may be impacted by the mining operation;
6. Procedures for permanently disposing of any radioactive, toxic, or acid-forming materials;
7. Procedures for removing and disposing of structures used in conjunction with the mining operation;
8. Procedures for mitigating or controlling the effects of subsidence;
9. The removal and proper disposal of sludges from impoundments;
10. The removal and proper disposal of geomembranes from impoundments; and
11. On department forms, a cost-estimate for each activity needed for full reclamation, as computed in accordance with established engineering and accounting principles, including:
  - a. The cost of removing and disposing of structures;
  - b. The cost of regrading, depositing topsoil, and reseeding affected lands;
  - c. The cost of facilities, materials, and chemicals used for ground water restoration;
  - d. The cost of ground water restoration in the production zone;
  - e. The cost of water treatment;
  - f. The cost of capping, plugging, and sealing all wells;

- g. The cost for collecting and analyzing samples from surface and ground water monitoring sites;
- h. The cost for disposing of solid or hazardous waste, such as pond sludges or, when applicable, uranium byproduct material handling and disposal systems, including costs for onsite disposal systems; and
- i. The cost for personnel working on reclamation-related activities.

A cost analysis for each activity to be conducted in implementing reclamation of the components of the proposed operation must be included. The method for calculating estimated reclamation costs must be described in detail and is subject to department approval.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-19. Determination of ground water restoration demonstration.**

In deciding whether a sufficient demonstration has been made by the operator under subsection 1 of section 43-02-02.2-18, the department shall consider the premining baseline water quality and geochemistry, including up-gradient and down-gradient aquifers and the direction and velocity of ground water movement through the producing zone.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-20. Ground water restoration values.**

1. Based upon the information submitted under subsection 1 of section 43-02-02.2-18 and the determination under section 43-02-02.2-19, the department shall develop a tabulation of assigned ground water quality restoration values that are the compliance requirements for restoring the production and nonproduction zones. The restoration values must be based on premining baseline conditions. If the ground water restoration demonstration under subsection 1 of section 43-02-02.2-18 indicates that the operation will be unable to return affected ground water to baseline conditions by applying best available technology, the department may set the restoration values as follows:
  - a. To not exceed concentration levels listed in the North Dakota water quality standards (chapter 33-16-02.1) or narrative standards; or
  - b. To not exceed the health advisory levels or secondary drinking water regulations set by the United States environmental protection agency; and
2. Modifying the restoration values must be done in accordance with section 43-02-02.2-63.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-21. Establishing baseline water quality and control parameters in new mining areas.**

1. Before mining a new area in a production zone, the operator shall submit a baseline ground water quality sampling plan that includes an adequate number of wells and samples to adequately characterize baseline water quality in production and nonproduction zones in and

adjacent to the new mining area, including all aquifers potentially affected by the proposed mining operation. Water samples may not be taken until the specific conductivity, temperature, and pH have stabilized. These parameters are considered stabilized when there is less than 0.2 pH unit change and ten percent change in conductivity and temperature for at least three consecutive well volumes. These samples must be analyzed for the following parameters: ammonia, antimony, arsenic, barium, beryllium, bicarbonate, boron, cadmium, calcium, carbonate, chloride, chromium, conductivity, copper, dissolved oxygen, fluoride, gross alpha, gross beta, iron, lead, magnesium, manganese, mercury, molybdenum, nitrate, nitrate + nitrite, pH, potassium, selenium, sodium, sulfate, radium-226 and 228, thallium, total dissolved solids, uranium, vanadium, and zinc, and any other parameter specified by the department.

2. All baseline wells must be sampled at least once every month for a minimum of twelve months before any mining activities may occur. If a well shows results indicating a statistically significant variance for a parameter, whether due to laboratory error or natural fluctuation, the department may require additional samples. Sample results for each well must be submitted to the department.
3. The department shall consider the baseline water quality to determine the control parameter and the upper limit value of a control parameter that, if exceeded, indicates that an injected fluid may be present.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-22. Technical revisions to an in situ leach mine permit.**

The department, through permit conditions, may approve proposed technical revisions to the injection well portion of a permit without requiring a permit amendment. These revisions may include the following:

1. Correcting typographical errors;
2. Modifying monitoring plan reporting requirements;
3. Modifying quantities or types of fluids injected that are within the capacity of the facility as permitted and would not interfere with its operation or its ability to meet permit conditions and would not change its classification;
4. Well construction requirements;
5. Adding wells to the wellfield within the permit area if the requirements of section 43-02-02.2-34 are met;
6. Modifying injection rates and pressures;
7. Modifying a well repair, abandonment, plugging, or conversion plan; and
8. Delaying the plugging requirement of subsection 4 of section 43-02-02.2-32 for an unused well.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-23. Designation of exempted aquifers.**

The department, after notice and hearing, may exempt an aquifer or a portion of an aquifer and designate it as an exempted aquifer for class III underground injection control if it meets the following criteria:

1. It does not currently serve as a source of drinking water; and
2. It cannot now and will not in the future serve as a source of drinking water for any of the following reasons:
  - a. It produces minerals, hydrocarbons, or geothermal energy, or can be demonstrated to contain minerals or hydrocarbons that, considering their quantity and location, are expected to be produced commercially;
  - b. It is situated at a depth or location that makes recovery of water for drinking water purposes economically or technologically impractical;
  - c. It is so contaminated that it would be economically or technologically impractical to render the water fit for drinking; or
  - d. It is located over an injection well mining area subject to subsidence or catastrophic collapse; or
3. The total dissolved solids content of the ground water is more than three thousand and less than ten thousand milligrams per liter and it is not reasonably expected to be used as a drinking water source.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-24. Injection wells subject to this chapter.**

An injection well for mining must comply with this chapter.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-25. Well location and protection.**

In selecting well locations, protecting wells, and maintaining well covers, the following requirements apply:

1. The top of the casing must end at least twelve inches [30.48 centimeters] above grade. The top of the casing must end at least twenty-four inches [60.96 centimeters] above any known high water conditions of flooding from runoff or ponded water, and the immediate area around the well's collar must slope away from the well to direct surface runoff away from the well;
2. Installing wells in the channels and floodplains of perennial drainages is prohibited;
3. Wells installed in an ephemeral or intermittent drainage may not be located in the channel of the drainage. During well construction and use, steps must be taken to minimize the potential for damage to the channel, to protect the well from damage due to erosion, and to prevent surface water runoff from entering the well;

4. The well opening must be closed with a cover to prevent introducing undesirable material into the well. This cover must be locked unless access to the well opening is controlled through another method;
5. If a well is to be constructed near buildings or power lines, the well must be located at a distance from the buildings and power lines to provide access for repairs, maintenance, sampling, and similar work. A well must clear any projection from any building by three feet [.91 meter] and clear any power line by ten feet [3.05 meters]; and
6. No injection or production well shall be drilled less than five hundred feet [152.40 meters] from an occupied dwelling unless agreed to in writing by the surface owner or authorized by order of the commission.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-26. Well construction requirements - General.**

1. Construction requirements listed in this section apply to all wells installed for activities related to mining.
2. The department may grant a deviation from the requirements through a technical revision, if the operator proves that alternative requirements are reliable, ensure mechanical integrity, and will protect ground water.
3. Injection and production wells must be generally constructed as follows:
  - a. Annular seals must be installed to protect the casing against corrosion, ensure the casing's structural integrity, stabilize the upper formations, protect against contamination or pollution of the well from the surface, and prevent migration of ground water from one aquifer or water-bearing strata to another in accordance with the following requirements:
    - (1) The drill hole must have a sufficient annular opening to allow for one and one-half inches [38.1 millimeters] of grout around the casing and couplings as per section 33-18-01-06. The department may approve an alternative casing design if it provides an equivalent degree of ground water protection;
    - (2) Before placing the annular seal, the well bore must be under static conditions and all loose drill cuttings, rock chips, or other obstructions must be removed from the annular space by circulating the borehole with water or drilling mud slurry;
    - (3) Grout must be placed to fill all voids as required in section 33.1-18-01-06.10 using a bottom-up trimmie grouting method. Grout must be injected into the subsurface in a sequence beginning at the bottom of the void and progressing upward in two-foot [.61-meter] increments;
    - (4) Sealing material must consist of neat cement grout or bentonite grout mixtures meeting the following requirements:
      - (a) Cement grout must be composed of high sulfate-resistant Portland cement and no more than six gallons [22.71 liters] of clean water for each ninety-four-pound [42.64-kilogram] sack of cement to yield a slurry weight of approximately thirteen pounds per gallon. Cement grout must conform to the requirements of subsection 10 of section 33.1-18-01-06;

- (b) Bentonite grout must conform to subsection 10 of section 33-18-01-06 requirements. High-solids bentonite clay grout, bentonite chips, or bentonite tablets must be commercially prepared specifically for the purpose of sealing water wells;
  - (c) The sealing material must be thoroughly mixed before applied so there are no balls, clods, or other features that could reduce the seal's effectiveness;
  - (d) Special quick-setting cement, cement accelerators, retarders, fluid-loss additives, dispersants, extenders, loss-of-circulation materials, and other additives, including hydrated lime to make the mix more fluid or bentonite to make the mix more fluid and reduce shrinkage, may be used, if approved by the department; and
  - (e) Used drilling mud or drill cuttings from the borehole may not be used as sealing material;
- b. Well casing must conform to the requirements in subsections 2 and 3 of section 33-18-01-06. The casing must be of sufficient strength and diameter to prevent casing collapse during installation, convey liquid at a specified injection/recovery rate and pressure, and allow for sampling. Casing must be installed to avoid damage to casing sections and joints. All joints in the casing above the perforations or screens must be watertight. Casing must be equipped with centralizers placed at a maximum spacing of one per forty feet [12.19 meters] to ensure even thickness of annular seal and gravel pack; and
  - c. Well development must be by methods that will not cause damage to the well or cause adverse subsurface conditions that may destroy barriers to the vertical movement of water between water-bearing strata.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-27. Well construction requirements - Injection wells.**

The following construction requirements apply to injection wells and are in addition to the requirements of section 43-02-02.2-26:

1. Appropriate logs and other tests must be maintained and conducted during the drilling and construction of injection wells. A descriptive report prepared by a knowledgeable log analyst interpreting the results of such logs must be submitted to the department. The logs and tests appropriate to each type of injection well must be determined based on the intended function, depth, construction, and other well characteristics, availability of similar data in the area of the drilling site, and the need for additional information that may arise from time to time during the well's construction; and
2. All injection wells must be constructed to prevent the migration of fluids to unauthorized zones. The casing and annular sealing material used in each newly drilled well must be designed for the well's life expectancy. In determining these requirements the following factors must be considered:
  - a. Depth to the deepest injection zone;
  - b. Injection pressure, external and internal pressure, axial loading, and related information;
  - c. Hole size;

- d. Size and grade of all casing strings, including well thickness, diameter, nominal weight, length, joint specification, and construction material;
- e. Corrosiveness of injected fluids and formation fluids;
- f. Lithology of injection zone and confining zones; and
- g. Type and grade of cement used to seal the annular space between the outer casing and the borehole.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-28. Monitoring wells - Minimum requirements.**

In determining the number, location, and construction of monitoring wells, and the frequency of sampling from monitoring wells, the following must be considered:

- 1. Whether any person relies on the underground source of drinking water affected or potentially affected by the injection operation;
- 2. The proximity of the injection operation to points of withdrawal of drinking water;
- 3. The local geology and hydrology;
- 4. The operating pressures and whether a negative pressure gradient is being maintained;
- 5. The toxicity and volume of the injected fluid, the formation water, and the process byproducts; and
- 6. The spatial distribution of the injection wells.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-29. Disposal of drill cuttings.**

- 1. The operator may dispose and bury drill cuttings in a pit at the well site, such as the mud pit used to circulate drilling fluids, once the drilling operation is complete, if:
  - a. The drill cuttings are generated from the well at the well site;
  - b. The drill cuttings are not contaminated with brines, oil, production fluids, or drilling fluids other than tophole water or fresh water;
  - c. The pit is backfilled and topsoil replaced, and the site is graded to promote runoff with no depression that would accumulate or pond water on the surface. The stability of the backfilled pit must be compatible with the adjacent land;
  - d. The surface of the backfilled pit area is revegetated under the approved reclamation plan to stabilize the soil surface; and
  - e. The surface of the backfilled drill cutting pit will not exceed the limits set by the United States nuclear regulatory commission.
- 2. If not disposed at the well site, contaminated cuttings must be disposed at an approved facility.



**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

**43-02-02.2-30. Mechanical integrity.**

1. Injection and production wells must maintain mechanical integrity until the wells are plugged under the approved plugging and abandonment plan.
2. Before putting a new injection well into service, its mechanical integrity must be tested. A schedule and methods for mechanical integrity testing must be included in the permit, and are permit conditions. The schedule and methods must meet the following requirements:
  - a. One of the following methods must be used to evaluate the absence of significant leaks in the casing, tubing, or packer:
    - (1) Following an initial pressure test, the tubing casing annulus pressure must be monitored with sufficient frequency to be representative, as determined by the department, while maintaining an annulus pressure different from atmospheric pressure measured at the surface;
    - (2) Pressure test with liquid or gas; or
    - (3) An alternative method if specified in the permit or is approved by the department through a technical revision.
  - b. The absence of significant fluid movement into any unauthorized zone through vertical channels adjacent to the injection bore must be shown by the results of a temperature, neutron, or noise log, e.g., cement bond log. If the nature of the casing precludes using a log, then sealing records may be used to prove that the sealing material will prevent significant fluid movement. If sealing records are used, the monitoring program must be designed to verify the absence of significant fluid movement.
  - c. Mechanical integrity of each injection well that has not been plugged or converted must be demonstrated at least once every five years or on a schedule determined by the department.
  - d. Before resuming injection into any injection well that has been damaged by surface or subsurface activity or that has undergone an activity that may jeopardize its mechanical integrity, such as the use of downhole cutting and under reaming tools, the operator must demonstrate the well's mechanical integrity.
  - e. If the department determines that an injection well lacks mechanical integrity, it must give written notice of this determination to the well's operator. Unless the department requires immediate cessation, the operator shall cease injection into the well within forty-eight hours upon receipt of the notice. The department will either require the plugging of the well or require the operator to perform such work as is necessary to prevent the movement of fluid into unauthorized zones. Well repair or plugging must be completed within one hundred twenty days upon receipt of the notice. If the well is repaired rather than plugged, retesting of the well must be completed within one hundred twenty days after the repair is completed. The operator may resume injection upon the department's written approval.
  - f. Results of mechanical integrity testing must be reported under the requirements of section 43-02-02.2-55.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-31. Supervision of well construction and testing.**

All phases of well construction and testing must be done under the supervision of a water well or monitoring well contractor pursuant to chapter 33, 1-18-01 and North Dakota Century Code chapter 43-35.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-32. Requirements for plugging drill holes and repair, conversion, and plugging wells.**

The requirements for plugging drill holes and repairing, converting, and plugging wells are as follows:

1. All drill holes must be plugged under subsection 19 of section 33-18-01-06 requirements, as applicable, in a manner that will not allow fluids to move either into or between water-bearing strata;
2. The operator shall notify the department forty-five days before plugging a well within a production area or converting a well to other than injection well uses;
3. All abandoned wells must be plugged or converted, in accordance with the permit's plugging or conversion plan, to ensure that ground water is protected and preserved for future use and to eliminate any potential physical hazard. A well is considered abandoned if it has not been used for two years, unless the operator submits to the department and receives approval for a technical revision demonstrating the operator's intention to use the well again and the actions and specifying procedures that will be taken to ensure that the well's mechanical integrity is maintained and the well will not endanger any unauthorized zone, underground source of drinking water, or water-bearing strata;
4. All wells completed in confined aquifers or encountering more than one aquifer must be plugged in accordance with subsection 19 of section 33, 1-18-01-06;
5. All wells completed in unconfined aquifers or with only one aquifer encountered must be plugged in accordance with subsection 19 of section 33, 1-18-01-06;
6. To ensure that the locations of abandoned wells are identified:
  - a. The boundaries of each wellfield and the location of all monitoring wells around the wellfield must be described in an affidavit and the affidavit must be filed with the appropriate county recorder; and
  - b. The top of the plugging mixture in each abandoned well must clearly show on a steelplate placed atop the sealing mixture the permit number and the well identification number. All steelplates must be installed at a minimum depth of two feet [.61 meter] below the land surface; and
7. Plugging and conversion activities must be reported in accordance with subdivision d of subsection 3 of section 43-02-02.2-55.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**43-02-02.2-33. Corrective actions for improperly sealed wells.**

1. Improperly sealed, completed, or abandoned wells must be corrected. The operator shall submit a plan, for department approval, that sets forth actions to be taken to prevent movement of fluid between or into water-bearing strata, including underground sources of drinking water, and otherwise into unauthorized zones. The plan must provide information on each well to be remedied, including whether it is a production, monitoring, or abandoned well; the well name or number; and a description of the well's condition.
2. In determining the adequacy of corrective plans, the department shall consider the following:
  - a. Nature and volume of injected fluid;
  - b. Nature of native fluids or byproducts of injection;
  - c. Geology;
  - d. Hydrology;
  - e. History of the injection operation;
  - f. Completion and plugging records;
  - g. Abandonment procedures in effect at the time the well was abandoned; and
  - h. Hydraulic connections between water-bearing strata, including underground sources of drinking water.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

**43-02-02.2-34. Authorizing new injection wells within permit area boundary.**

The department may approve proposed technical revisions under section 43-02-02.2-22 to allow the operator to construct and operate new injection wells within the permit area if:

1. The wells meet the construction requirements; and
2. The cumulative effect of drilling and operating additional injection wells is considered and accepted by the department.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-03

**Law Implemented:** NDCC 38-12-03

**43-02-02.2-35. Design and construction of surface facilities.**

1. The operator shall submit plans and specifications to the department before constructing the following surface facilities:
  - a. Process or recovery plants and satellite facilities;
  - b. Ponds and impoundments;
  - c. Pipelines;

- d. Well houses or transfer stations;
  - e. Fuel storage areas;
  - f. Byproduct disposal areas; and
  - g. Any other facility that may contain substances that could impact human health or degrade the environment if spilled, discharged, or released.
2. Facilities that produce radioactive elements in sufficient quantities, must be designed and operated to comply with the United States nuclear regulatory commission licensing requirements and regulations of the state department of ~~health~~. environmental quality.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-03

**Law Implemented:** NDCC 38-12-03

**43-02-02.2-36. Construction quality assurance plan.**

1. The operator shall develop, for the department's approval, a construction quality assurance plan that addresses all aspects of constructing surface facilities. The plan must include the following:
  - a. A description of the responsibilities and authorities of key personnel, including the level of experience and training;
  - b. A description of the required level of experience, training, and duties of the contractor, the contractor's employees, and the quality assurance inspectors;
  - c. A description of the testing protocols for every major phase of construction, including the frequency of inspections, field testing, and sampling for laboratory testing;
  - d. The sampling and field testing procedures and the equipment to be used;
  - e. The calibration of field testing equipment;
  - f. The laboratory procedures to be used; and
  - g. Documentation to be maintained.
2. The operator shall submit the construction quality assurance plan at the same time the plans and specifications required in section 43-02-02.2-35 are submitted.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

**43-02-02.2-37. Pipeline design and construction requirements.**

1. Pipeline systems must be constructed with materials that have the strength, thickness, and chemical properties that prevent failure due to pressure gradients, physical contact with the waste or fluids to which the pipes are exposed, climatic conditions, stress of installation, seismic, and stress of daily operation.
2. Design and construction requirements for wellfield pipelines and pipelines between the wellfield and processing and satellite facilities must include an early detection and shutdown capability in the event of pressure drop or loss of flow. This may include automatic motor-operated valves with pressure transmitters and manually operated valves or devices.

3. Alternative pipeline designs may be used if they provide an equivalent degree of protection to surface and ground water. Pipelines, for facilities that produce radioactive elements, must be designed and constructed in accordance with United States nuclear regulatory commission requirements.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

**43-02-02.2-38. Radioactive element rRecovery plant and satellite facility design and construction requirements.**

Radioactive element mMine recovery plants and satellite facilities must be designed and constructed in accordance with United States nuclear regulatory commission requirements.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

**43-02-02.2-39. Uranium Radioactive element byproduct material handling and disposal systems.**

Radioactive solids must be disposed of in accordance with title 33, 1-10, United States nuclear regulatory commission source and byproduct material license requirements, and North Dakota Century Code chapters 23, 1-20, 102, 23-20, 2, and 23-20, 5. 38-23.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

**43-02-02.2-40. Disposal of liquid waste.**

All liquid waste streams must be:

1. Collected and retained in lined evaporation ponds or impoundments constructed in accordance with chapter 33, 1-20, 08, 1;
2. Disposed of in a permitted class I or V underground injection control disposal well under a state department of ~~health~~ environmental quality underground injection control program permit in accordance with chapter 33, 1-25, 01;
3. Land applied under a solid waste permit in accordance with chapter 33, 1-20, 09; or
4. Treated if necessary and discharged under a North Dakota pollution discharge elimination system surface water discharge permit in accordance with chapter 33, 1-16, 01.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

**43-02-02.2-41. Disposal of nonradioactive solid waste.**

All nonradioactive solid waste must be disposed of offsite at a permitted solid waste facility or may be disposed of onsite if disposal occurs in a solid waste facility permitted according to the North Dakota solid waste rules in article 33, 1-20. In addition, the demolition and disposal of any structure must comply with the asbestos requirements in section 33, 1-15, 13, 02.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-42. Prohibitions - Injection volumes and pressure.**

The permit must include maximum injection volume and pressure limits that may not be exceeded, except during well stimulation, to ensure that fractures are not created in the confining zone or zones, injected fluids do not migrate into any unauthorized zone or underground source of drinking water, and formation fluids are not displaced into any unauthorized zone or underground source of drinking water. Operating requirements must specify that injection pressure be calculated at the wellhead. Injection between the outermost casing protecting unauthorized zones and the well bore is prohibited.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-43. Production area operational monitoring requirements.**

The permit's monitoring plan must describe the procedures for monitoring the quantity and quality of mining solution and ground water in the production area and must include provisions for:

1. The analysis of the physical and chemical characteristics of the injected fluid, with sufficient frequency, and at least monthly, to yield representative data. Manifold monitoring may be used in cases of facilities consisting of more than one injection well operating with a common manifold. Separate monitoring systems for each well are not required provided the operator demonstrates to the department that manifold monitoring is comparable to individual well monitoring;
2. Monitoring injection pressure and either flow rate or volume every two weeks, or metering and recording daily injected and produced fluid volumes;
3. Monitoring the fluid level in the injection zone every two weeks;
4. Monitoring wells in the injection zone shall be sampled every two weeks for chloride, total dissolved solids, alkalinity, conductivity, and any additional parameters requested by the department;
5. Monitoring ground water quality, including the control parameters, and fluid levels in monitoring wells completed above and below the production zone a minimum of every two weeks; and
6. A minimum of quarterly monitoring of department-specified wells within one-quarter mile [.40 kilometer] of the production site to detect migration of recovery fluids from the production zone.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-03

**Law Implemented:** NDCC 38-12-03

#### **43-02-02.2-44. Production area monitoring well location and spacing requirements.**

Production area monitoring wells may be located no more than three hundred feet [91.44 meters] from the production area and with spacing no greater than four hundred feet [121.92 meters] between monitoring wells. Alternative monitoring well locations and spacing may be considered if the operator demonstrates that the proposal will adequately provide monitoring coverage to detect excursions in a timely manner. The department may require closer well spacing in the down gradient ground water flow direction from the production zone.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

**43-02-02.2-45. Nonproduction zone monitoring.**

The majority of monitoring wells in nonproduction zones must be located in the down gradient direction of ground water flow in the aquifer in which the wells are completed. In addition:

1. Nonproduction zone monitoring wells must be completed in any aquifer potentially affected by injection into the production zone. These monitoring wells must be located in two general localities:
  - a. Inside the production area; and
  - b. Within a radius of no more than three hundred feet [91.44 meters] from the edge of the production area.
2. Monitoring wells will be spaced:
  - a. A minimum of one well for every one acre of production area must be completed for the first overlying aquifer above the production zone;
  - b. A minimum of one well for every three acres of production area must be completed for each additional overlying aquifer; and
  - c. Based upon a monitoring well spacing plan approved by the department for each underlying aquifer potentially affected by injection.
3. Alternative nonproduction zone monitoring well locations may be considered if the operator demonstrates that the proposal will adequately provide monitoring coverage.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

**43-02-02.2-46. Subsidence monitoring.**

Subsidence must be controlled to ensure that the values and uses of the aquifers and the surface resources will not be degraded. If the injection wells penetrate an aquifer in an area subject to subsidence or catastrophic collapse, an adequate number of monitoring wells must be completed into that aquifer to detect any movement of injected fluids. The monitoring wells must be located outside the physical influence of the subsidence or collapse.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

**43-02-02.2-47. Confinement of recovery fluid.**

Recovery fluid must be restricted to those production zones that have been classified by the department as an exempted aquifer within the area of production. If recovery fluids migrate outside the production zone or into aquifers above or below the production zone, the operator shall report, monitor, and remediate the excursion in accordance with sections 43-02-02.2-48 through 43-02-02.2-53. Recovery fluids are assumed to be present in an unauthorized zone if a verifying analysis confirms that a control parameter in a monitoring well is detected at a concentration equal to or greater than the upper limit value.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

**43-02-02.2-48. Excursions - Reporting requirement.**

The operator shall report any suspected excursion to the department within twenty-four hours of detection and initiate actions required by section 43-02-02.2-49. The operator shall provide monitoring data or other information that indicates any contaminant may cause adverse impacts to an unauthorized zone or underground source of drinking water. The operator shall report within twenty-four hours any noncompliance with a permit or malfunction of the injection system that may cause fluid migration into or between unauthorized zones.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

**43-02-02.2-49. Excursions - Verifying analysis.**

1. If a routine sample analysis ("initial sampling") indicates a control parameter is exceeding its upper level value in a monitoring well, the operator shall complete a verifying analysis ("second sampling") of samples taken from the affected well and the monitoring wells adjacent to the affected well. The operator shall take the second sampling within two working days after being notified by the laboratory of the initial sampling results. If the results from the first and second sampling event both indicate an excursion has occurred, then an excursion is considered verified for the purpose of initiating remedial action in accordance with section 43-02-02.2-51. If the results of the second sampling are not complete within seven days after the initial sampling event that indicated an excursion might be present, the excursion will be considered verified.
2. If the results from the first and second sampling events provide conflicting information about whether or not an excursion has occurred, then a third sampling event must be conducted within two working days after receipt of the results from the second sampling event. If the results of the third sampling are not complete within seven days after the second sampling event, the excursion will be considered verified.
3. All sample analyses results for excursion events must be submitted to the department within two business days after the operator receives them.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

**43-02-02.2-50. Excursions - Sampling frequency.**

Throughout the time when any control parameter is present in a monitoring well, a water sample must be taken at least two times a week from the well. The samples must be analyzed for all control parameters within one week after the sample is taken.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

**43-02-02.2-51. Excursions - Remedial action.**

1. If the verifying analysis indicates that an excursion has occurred, the operator shall submit to the department for review and approval a remedial plan and a ground water analysis report to include the following:



- a. A description of the excursion and its cause;
  - b. The period of excursion, including exact dates and times;
  - c. If the excursion has not been corrected, the time it is expected to continue;
  - d. Steps taken or planned to reduce and prevent recurrence of the excursion; and
  - e. Sample analyses for pH, calcium, magnesium, sodium, potassium, carbonate, bicarbonate, sulfate, chloride, silica, uranium, ammonia, nitrate, total dissolved solids (one hundred eighty degrees Celsius), specific conductance, and any other parameter specified by the department. One or more of these parameters may be excluded if the department determines that the concentration or value of a specific parameter is not likely to occur as a result of the mining operation.
2. The operator shall submit a remedial action report every two weeks. All reports must be mailed to the department, postmarked within two days after the end of each report period. The first report period begins the day the presence of a control parameter exceeding its upper limit value in a monitoring well is verified. The operator shall continue to submit remedial action reports until cleanup is accomplished. The operator may use any method the operator judges necessary and prudent to define the extent of the excursion and to clean up recovery fluids in an expeditious manner.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-52. Excursions - Controlled.**

1. An excursion is controlled if it can be demonstrated through water quality and ground water gradients or, if applicable, pressure measurements, that recovery fluid in unauthorized areas is declining.
2. If the excursion is controlled, but the control parameters have not been restored to values consistent with local baseline water quality within sixty days following confirmation of the excursion, the operator shall submit, within ninety days following confirmation of the excursion, a plan, for approval by the department, to bring the well or wells off excursion. The plan can be submitted as part of the remedial action report required every two weeks in section 43-02-02.2-51.
3. Cleanup is considered accomplished if the water quality in the affected monitoring wells has been restored to values consistent with local baseline water quality and the restoration is confirmed by three consecutive weekly samples. The department may determine that cleanup is not necessary if the operator demonstrates that the change in water quality is not due to the presence of recovery fluids.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-53. Excursions - Not controlled.**

1. If an excursion is not controlled within thirty days following its confirmation, a sample must be collected from each of the affected monitoring wells and analyzed for the following: ammonia, antimony, arsenic, barium, beryllium, bicarbonate, boron, cadmium, calcium, carbonate, chloride, chromium, conductivity, copper, fluoride, gross alpha, gross beta, iron, lead, magnesium, manganese, mercury, molybdenum, nitrate, nitrate + nitrite, pH, potassium,

selenium, sodium, sulfate, radium-226 and 228, thallium, total dissolved solids, uranium, vanadium, and zinc, and any other parameter specified by the department, unless the department determines that the concentration or value of one or more parameters is not likely to occur as a result of the mining.

2. If an excursion is not controlled within sixty days following its confirmation, the department may require the operator to conduct additional sampling of monitoring wells, install additional monitoring wells, terminate injection in the portion of the wellfield in which the excursion originated, or a combination of approaches to assure control within a timely manner.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-54. Criteria for determination of adequacy of remedial action plan.**

In determining the adequacy of the remedial action plan required in section 43-02-02.2-51 proposed by the operator and in determining the additional steps needed to prevent an excursion into unauthorized zones or underground sources of drinking water, the department shall consider the following:

1. Toxicity and volume of the injected fluid;
2. Toxicity of formation fluids or byproducts of injection;
3. Whether or not any person, animal, wildlife, aquatic life, and plant life is potentially affected by the injection;
4. Geohydrology;
5. History of the injection operation;
6. Completion and plugging records;
7. Abandonment procedures in effect at the time the well was abandoned; and
8. Hydraulic connections with underground sources of drinking water.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-55. General reporting requirements.**

The operator's reporting requirements are as follows:

1. A qualitative analysis and ranges in concentrations of all constituents of injected fluids at least once within the first year of authorization and thereafter whenever the mining solution is modified to the extent that the initial data are incorrect or incomplete. The data so submitted are confidential for one year when requested by the operator and this period of confidentiality can be extended upon approval by the commission;
2. All chemical analyses submitted to the department in accordance with the permit must include the requirements of subdivision c of subsection 10 of section 43-02-02.2-17;
3. Quarterly monitoring reports must include:

- a. The results of any periodic tests required by the permit or a remedial plan performed during the reported quarter;
  - b. The results of all mechanical integrity testing conducted during the reported quarter, including the following information identified by injection well:
    - (1) Date of mechanical integrity testing;
    - (2) Identification of the method by which mechanical integrity was established; and
    - (3) Verification that mechanical integrity was or was not established for a well, and if any well failed mechanical integrity testing a description of the method of plugging or repair;
  - c. The status of corrective action on defective wells, required under section 43-02-02.2-33; and
  - d. The results of well repair and plugging required under section 43-02-02.2-32, including a statement that the wells were plugged in accordance with the permit, or documentation that prior approval was obtained from the department if plugging procedures differed from the procedures approved in the permit. This documentation must be included in the report and contain a description of the procedures used specifying the differences between the approved method and the alternate method. To ensure the well is plugged and there has been no bridging of the sealing material, the operator must provide the department with documentation that the volume of material placed in the well at least equals the volume of the empty hole;
4. During excursions, results from excursion-related monitoring must be reported in accordance with the requirements of section 43-02-02.2-51;
  5. A map of the permit area showing reclamation and any derivation from the approved operation and reclamation plan; and
  6. An annual report that includes:
    - a. The operator's name, address, and permit number;
    - b. A map showing the location of all production and monitoring wells installed during the reporting year and showing all new areas where mining is expected to begin during the next year;
    - c. A map showing where ground water restoration has been achieved, is actively taking place, and is expected to begin during the next year;
    - d. A description of ground water restoration methods used and an expected timeline to achieve ground water restoration;
    - e. The total and the reporting year's amount of affected land;
    - f. The progress of all reclamation work, including the total and the reporting year's amount of land that has undergone final reclamation and that meets the required postmining land use and that does not meet the required postmining land use;
    - g. The total quantity of mining solution injected and the total quantity of recovery fluid extracted during the reporting year for each wellfield area, including a description of how these quantities were determined;
    - h. Monitoring program results that have not been previously reported;

- i. An updated potentiometric surface map for all aquifers that are or may be affected by the mining operation;
- j. Supporting data sufficient to demonstrate ground water restoration;
- k. A summary of all excursions for the reporting year, including remediation progress;
- l. A brief discussion of the next year's operational plans, including any anticipated technical revisions or amendments that might require department approval; and
- m. The mine facilities inspection and maintenance report required by subsection 7 of section 43-02-02.2-17.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-56. Well construction records.**

For all wells constructed for a mining operation, the person constructing the well shall prepare and submit well construction records as required by section 33-18-01-06.12. The well construction records shall be submitted to the department and to the department of water well contractors within sixty days after well completion.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-57. Well plugging records.**

For any well plugged and abandoned as part of a mining operation, the person performing plugging and abandonment work shall prepare and submit well plugging records as required by section 33-18-01-06.19. The plugging records shall be submitted to the department and the state department of health within sixty days after plugging or at the time of the next quarterly report, whichever is sooner.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-58. Maintenance and retention of records.**

The operator shall retain records of all monitoring information at the mine site, including the following:

1. Laboratory analyses, including a description of or reference for the procedures and methods used for sample collection, preservation, and quality control and the name, address, telephone number, and laboratory identification number of the laboratory performing the analyses;
2. Records of all data used to complete permit and license applications and any supplemental information;
3. Calibration and maintenance records and all original records of continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the permit application;
4. The nature and composition of all injected fluids until three years after the completion of any plugging and abandonment procedures; and

5. Information requested by the department for inclusion in the annual report.

These records must be retained for at least three years from the date of the sample, measurement, or report. This period may be extended by the department. The department may require the operator to deliver a complete set of copies of the records to the department when the retention period ends.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-59. Ground water restoration requirements.**

When the mining of a production area is completed, the operator shall notify the department and immediately proceed to reestablish ground water quality in the affected production area to levels consistent with the values in the permit's restoration table.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-60. Restoration sampling procedure.**

After notifying the department that mining in a production area is complete and that ground water restoration has begun, the operator shall sample and complete an analysis of the baseline wells in the mine production area or as directed by the department. The samples and analysis must be done monthly and are to be conducted to assess the restoration values listed in the permit restoration table. If this analysis indicates that approved restoration values have been achieved, the operator shall submit to the department a written report of the results. After submitting the report, restoration sampling shall be conducted every two months. The department is to receive copies of all analyses.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-61. Restoration progress reports.**

Beginning six months after initiating restoration of a production area, the operator shall provide semiannual progress reports to the department until restoration is accomplished.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-62. Final restoration - Restoration values achieved.**

The operator shall notify the department if the results of six consecutive sample sets taken once every two months show that ground water quality in the production zone meets the restoration values on the restoration table and that the restoration values indicate stable trends. After the department in writing confirms ground water restoration, the operator may request, through a technical revision, that the department modify the site water quality monitoring plan, which may include a reduction in sampling frequency, substances to be measured, and the number of wells to be sampled in the restored production zone.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-63. Restoration values not achieved.**

1. If the restoration values established in the restoration table of the mine permit are not met after application of best available technology, the operator may submit an amendment to establish alternative restoration values. A one thousand dollar amendment application fee must accompany this submittal.
2. To justify alternative values, the amendment must include all available water quality data for the restoration unit, a narrative discussing the restoration techniques used, including a demonstration that best available practicable technology was applied, and the rationale for altering the restoration values.
3. In determining whether the restoration table should be altered for a particular restoration zone, the department shall consider the following:
  - a. Uses for which the ground water was suitable at baseline quality levels;
  - b. Actual existing use of the ground water in the area before and during mining;
  - c. Potential for future use of the ground water at baseline quality and at proposed restoration values;
  - d. The effort made by the operator to restore the ground water to the restoration values;
  - e. The availability of existing technology to restore the ground water to the restoration values; and
  - f. The potential harmful effects of levels of particular parameters.
4. Alternative restoration values must conform to the requirements of section 43-02-02.2-20.
5. The commission will make a decision on the proposed amendment only after notice and hearing.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-64. Closure of mine site following restoration.**

After completing restoration of all permit area aquifers, the operator shall plug wells that will not be used for postclosure monitoring, and reclaim the facilities in accordance with plans in the permit and reclamation plan. When well plugging and surface reclamation are complete, the operator shall notify the department. A final closure inspection and a review of water quality data shall be conducted by the department. The commission shall hold a hearing to determine if the operator has restored the aquifers and reclaimed the surface facilities and affected lands. Upon successful restoration and reclamation by the operator, the postclosure care and maintenance period will begin.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-65. Postclosure plan - Postclosure bond - Estimated costs for postclosure care.**

Prior to the start of the postclosure period, the operator shall submit to the department the estimated costs for postclosure care and maintenance as computed in accordance with established engineering principles. This information will be used to determine the amount of the postclosure bond. The estimated costs must include:

1. The cost of long-term ground water restoration to ensure continued compliance consistent with the values in the permit's restoration table for both production and nonproduction zones;
2. The cost of operating monitoring systems; and
3. The cost of inspection and maintenance activities to ensure compliance with all reclamation, design, and operating criteria.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-66. Reclamation of surface facilities.**

1. Unless otherwise approved by the department, the reclamation of surface facilities shall include the removal of all buildings, roads, and structures, and the surface restored to its original contour. Tailings impoundments and ponds must be reclaimed and filled in. All grading, backfilling, and topographic reconstruction must control erosion and sedimentation, protect areas outside the affected land from slides or other damage, and minimize the need for long-term maintenance.
2. Pond and impoundment reclamation must meet the following requirements:
  - a. Pond sludges must be chemically characterized to determine whether further treatment is necessary before disposal. Sludges must be removed for disposal at an offsite permitted solid waste facility or buried and covered onsite in a solid waste facility permitted in accordance with the applicable solid waste rules in article 33-20;
  - b. Geomembranes must be removed from impoundments, unless it is demonstrated to the department's satisfaction that they will serve a useful function consistent with the approved postmining land use. The geomembrane material must be disposed of in a permitted landfill or may be disposed of onsite only if the operator first secures a solid waste permit in compliance with the North Dakota solid waste rules in article 33-20; and
  - c. Radioactive waste shall be disposed of in accordance with a United States nuclear regulatory commission source material license.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-67. Radiation survey of surface facilities at mine closure.**

At mine closure, the operator shall comply with all United States nuclear regulatory commission radiation standards in preparing a radiation sampling and survey plan for mines that produced radioactive elements. A copy of that plan must be filed with the department.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-68. Radiation standards for closure of surface facilities.**

The operator of a radioactive element mine shall comply with all United States nuclear regulatory commission radiation standards. Closed surface facilities must be considered suitable for release for unrestricted use if those standards are met. Copies of all radiological analysis performed both within and outside of the mine permit boundary must be filed with the department.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

**43-02-02.2-69. General postclosure inspection, annual report, and maintenance activities.**

During the postclosure period, the operator shall conduct site maintenance and other activities in accordance with the approved postclosure plan, including the following, as applicable:

1. Conduct quarterly inspections of the entire mine site to monitor the following:
  - a. Condition of vegetation;
  - b. Erosion and sediment controls;
  - c. Wellheads;
  - d. Subsidence;
  - e. Impoundments;
  - f. Safety hazards; and
  - g. Other potential problems;
2. Maintain vegetation and repair damage to vegetation by taking such steps as adding topsoil, seeding, planting, fertilizing, and mulching;
3. Control noxious weeds;
4. Maintain erosion and sediment control structures. If sediment and erosion controls in an area become unnecessary the structures may be removed for aesthetic purposes;
5. Repair leaking wellheads and replug wells as necessary;
6. Maintain and repair impoundments to ensure stability;
7. Monitor areas of subsidence, fencing subsidence areas as necessary, or undertaking slope reduction as necessary;
8. Maintain locking gates, fences, and warning signs to limit access to the site;
9. Remove or dispose of trash and other waste;
10. Maintain fire protection;
11. Provide equipment, tools, and power to conduct maintenance activities; and
12. As required by the department, all maintenance and repair work must be documented in annual postclosure reports submitted to the department.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

**43-02-02.2-70. Postclosure operation of monitoring systems.**

During the postclosure period, the operator shall continue surface and ground water quality monitoring in accordance with the approved postclosure plan or water quality monitoring plan. The



results of all water quality monitoring and laboratory analyses must be included in the annual postclosure reports as required by the department.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

**43-02-02.2-71. Ground water contamination during the postclosure period.**

1. Ground water contamination detected during the postclosure period must be confirmed by additional sampling conducted by the operator as required by the department and must be evaluated to determine whether remedial action is required. The remedial action required by the operator depends upon the extent of the contamination, based upon the following:
  - a. Whether the contamination is a result of the mining operation;
  - b. The impacts to the health and well-being of the people, animals, wildlife, aquatic life, and plant life affected;
  - c. The social and economic value of the affected aquifer;
  - d. The technical means required to, and the cost of, reducing or eliminating the contamination;
  - e. The effect upon the environment; and
  - f. The potential impacts to other waters of the state.
2. Based upon the evaluation, the department shall determine whether remedial action is required. If it is, the operator shall submit a remedial action plan. Depending upon the severity of the contamination and its consequences, the remedial actions may range from additional monitoring to a resumption of ground water restoration activity. The postclosure financial assurance must be recalculated to account for the cost of remedial actions.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

**43-02-02.2-72. Approval of the end of the postclosure period.**

The commission will give notice of public hearing to determine if the postclosure period shall end. The postclosure period ends when the restored aquifer's water quality consistently meets the restoration values on the permit restoration table and care and maintenance for the permit area are equal to ordinary care and maintenance for similar lands outside the permit area.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

**43-02-02.2-73. Available information on in situ leach mines.**

The department will provide on its website quarterly updates on the operational status, compliance status, technical revisions submitted or approved, and other pertinent information regarding an active in situ leach mine permit.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-74. Final bond release.**

All reclamation required by the approved reclamation plan must be completed prior to final bond release.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-75. Additional information may be required.**

The director has the authority to require additional reports, data, or information relative to mining.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 38-12-02

#### **43-02-02.2-76. Application for hearing.**

In any proceeding instituted upon application, the application must be signed by the applicant or by the applicant's attorney. An application shall state the name and general nature of the order sought.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 28-32-23, 38-12-02

**Law Implemented:** NDCC 28-32-21

#### **43-02-02.2-77. Hearing participants by telephone.**

In any hearing the commission may allow witnesses and interested parties to participate by telephone. The procedure to do so is as follows:

1. An applicant's participation by telephone will be considered if a written request is made at least ten business days before the hearing.
2. An interested party's participation by telephone will only be considered if the party notifies the applicant and the commission in writing at least three business days before the hearing. Such notice must include the subject hearing, the name and telephone number of the interested party, and the name and telephone number of the interested party's attorney or representative that will be present at the hearing.
3. In the event an objection to any person's participation by telephone is received, the hearing examiner may disallow participation by telephone and may reschedule the hearing. The department will notify all parties whether or not the request to participate by telephone is granted or denied.
4. All persons participating by telephone must have an attorney or other representative present at the hearing who shall be responsible for actually telephoning or otherwise connecting the person to the hearing, for providing the commission with any materials requested to be included in the record, and for any other matters necessary for the party to participate by telephone.
5. All parties participating by telephone shall file an affidavit verifying the identity of such party. The record of any telephonic participation will not be considered evidence in the case unless the affidavit is received by the department prior to an order being issued by the commission. The commission shall provide a form affidavit. The commission has the discretion to refuse to consider all or any part of the information received from any party participating by telephone.

6. For all hearings allowing participation by telephone, the department shall provide a hearing room equipped with a speaker telephone.
7. The cost of telephonic communication shall be paid by the party requesting its use.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 28-32-35

**43-02-02.2-78. Hearings - Complaint proceedings - Emergency proceedings - Other proceedings.**

1. Except as more specifically provided in North Dakota Century Code section 38-08-11, the rules of procedure established in North Dakota Century Code section 28-32-21, apply to proceedings involving a complaint and a named respondent.
2. For proceedings that do not involve a complaint and a named respondent the commission shall give at least thirty days' notice (except in an emergency) of the time and place of the hearing by one publication of such notice in a newspaper of general circulation in Bismarck and in a newspaper of general circulation in the county or counties where the land affected or some part of it is situated, unless in some particular proceeding a longer period of time or a different method of publication is required by law, in which event such period of time and method of publication will prevail.
3. If in its judgment the commission believes a rule or order must be issued without a hearing, the emergency rule or order has the same validity as if a hearing had been held after notice. The emergency rule or order remains in force no longer than forty days and expires earlier if withdrawn by the commission.

Within ninety days of the hearing, or a reasonable time thereafter, the department will notify the applicant of the commission's decision.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 28-32-21, 28-32-32

**43-02-02.2-79. Investigatory hearings.**

The commission may hold investigatory hearings. Notice of the hearing must be served upon all parties personally or by certified mail at least five days before the hearing.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 28-32-23

**43-02-02.2-80. Official notice.**

The evidence in each case heard by the commission, unless specifically excluded by the hearing examiner, includes all uranium and mineral production records on file with the commission.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 28-32-24, 28-32-35

**43-02-02.2-81. Notice of order by mail.**

The commission may give notice of an order by mailing the order to all parties by regular mail.

**History:** Effective January 1, 2009.  
**General Authority:** NDCC 38-12-02  
**Law Implemented:** NDCC 28-32-39

#### **43-02-02.2-82. Record of proceedings.**

All pleadings, notices, motions, requests, petitions, briefs, and correspondence between the commission or commission employee and a party relating to a pending proceeding must be filed with the director and entered into the commission's official record of the proceeding. Unless otherwise provided by law, filing is complete when the material is entered into the record of the proceeding.

**History:** Effective January 1, 2009.  
**General Authority:** NDCC 38-12-02  
**Law Implemented:** NDCC 28-32-31, 38-32-36

#### **43-02-02.2-83. Designation of examiners.**

The commission may designate examiners and may refer any matter or proceeding to its examiners.

**History:** Effective January 1, 2009.  
**General Authority:** NDCC 38-08-04.1  
**Law Implemented:** NDCC 38-08-04.1

#### **43-02-02.2-84. Powers and duties of examiner.**

The commission may by motion limit the powers and duties of any examiner in any particular case to such issues or to the performance of such acts as the commission deems expedient; however, subject only to such limitation, the examiner to whom any matter is referred has full authority to hold hearings in accordance with this chapter. The examiner has the power to regulate all proceedings before the examiner and to perform all acts and take all measures necessary for the efficient and orderly conduct of the hearing, including ruling on prehearing motions, swearing witnesses, receiving testimony and exhibits offered in evidence, ruling on objections, and shall cause a complete record of the proceeding to be made.

**History:** Effective January 1, 2009.  
**General Authority:** NDCC 38-08-04.1  
**Law Implemented:** NDCC 38-08-04.1

#### **43-02-02.2-85. Examiner's recommended findings, conclusions, and proposed order.**

Upon the conclusion of any hearing before an examiner, the examiner shall promptly consider the proceedings in such hearing, and based upon the hearing record the examiner shall prepare a recommendation for the commission's disposition of the matter. Such recommendations shall be accompanied by a proposed order.

**History:** Effective January 1, 2009.  
**General Authority:** NDCC 38-08-04.1  
**Law Implemented:** NDCC 28-32-31

#### **43-02-02.2-86. Commission order.**

After receipt and review of the hearing examiner's recommended findings of fact, conclusions of law, and proposed order, the commission shall enter its final order.

**History:** Effective January 1, 2009.  
**General Authority:** NDCC 38-08-04.1

**Law Implemented:** NDCC 28-32-39

**43-02-02.2-87. Prehearing motion practice.**

In a matter pending before the commission, all prehearing motions must be served by the moving party upon all parties. Service must be upon a party unless a party is represented by an attorney, in which case service must be upon the attorney. Service must be made by delivering a copy of the motion and all supporting papers in conformance with one of the means of service provided for in rule 5(b) of the North Dakota Rules of Civil Procedure. Proof of service must be made as provided in rule 4 of the North Dakota Rules of Civil Procedure or by the certificate of an attorney showing that service has been made. Proof of service must accompany the filing of a motion. Any motion filed without proof of service is not properly before the commission.

**History:** Effective January 1, 2009.

**General Authority:** NDCC 38-12-02

**Law Implemented:** NDCC 28-32-23