

**CHAPTER 69-05.2-08**  
**PERMIT APPLICATIONS - PERMIT AREA - REQUIREMENTS FOR INFORMATION ON ENVIRONMENTAL RESOURCES**

Section

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**69-05.2-08-01. Permit applications - Permit area - Environmental resources information.**

1. Each application must include a description of the premining environmental resources of the permit and adjacent areas that may be affected by mining.
2. When the permit area contains a logical pit sequence where the coal removal area is larger than that needed for the initial five-year term, the applicant shall identify the size, sequence, and timing of mining individual coal removal subareas.
3. Lands in the application must be described by metes and bounds or standard government land survey descriptions, except that government lots must be described only by metes and bounds.

**History:** Effective August 1, 1980; amended effective June 1, 1983; May 1, 1990; January 1, 1993.

**General Authority:** NDCC 38-14.1-03

**Law Implemented:** NDCC 38-14.1-14

**69-05.2-08-02. Permit applications - Permit area - General map requirements.**

1. The application must include a 1:4,800 planimetric mine map, together with as many separate detail maps as necessary, to show:
  - a. Land boundaries and names of present surface and subsurface owners of record in the permit area and contiguous lands extending one-fourth mile [402.23 meters] from the permit boundary.
  - b. The scale, date, location, company name, legal subdivision boundaries, and legend.
  - c. The exact area being considered for permit.
  - d. The locations and elevations of drill holes used for collecting geologic, ground water, and overburden information.

- e. The location and current use of all buildings on and within one-half mile [804.67 meters] of the permit area.
  - f. The location of surface and subsurface manmade features within, passing through, or passing over the permit area, including major electric transmission lines, pipelines, agricultural drainage tile fields, wells, roads, highways, and railroads.
  - g. Each public road in or within one hundred feet [30.48 meters] of the permit area.
  - h. Each public or private cemetery or native American burial ground in or within one hundred feet [30.48 meters] of the permit area.
  - i. Elevations and locations of monitoring stations used to gather environmental resource data for water quality and quantity, fish and wildlife, and air quality.
  - j. Location and extent of known underground mines, including openings to the surface within the permit and adjacent areas.
  - k. Location and extent of existing or previously surface-mined areas within the permit and adjacent area.
  - l. Location and dimensions of existing areas of spoil, coal and noncoal waste disposal, dams, embankments, other impoundments, and water treatment and air pollution control facilities within the permit area.
  - m. Location, and depth if available, of gas and oil wells within the permit area.
  - n. The boundaries of any public park within or adjacent to the permit area.
2. The application must contain a 1:24,000 planimetric map showing:
- a. The boundaries of the extended mining plan area.
  - b. The area being considered for permit.
  - c. The boundaries of previously permitted areas.
3. The application must include:
- a. Five-foot [1.52-meter] contour interval topographic maps of the permit area.
  - b. An area slope map showing three percent intervals, unless otherwise approved by the commission.

**History:** Effective August 1, 1980; amended effective May 1, 1990; January 1, 1993.

**General Authority:** NDCC 38-14.1-03

**Law Implemented:** NDCC 38-14.1-14

**69-05.2-08-03. Permit applications - Permit area - Description of the cultural and historic resources.**

Repealed effective June 1, 1986.

**69-05.2-08-04. Permit applications - Permit area - Description of hydrology and geology - General requirements.**

- 1. Each application must describe the geology, hydrology, and water quality and quantity of the permit and adjacent area. The description must include information on the characteristics of all

surface and ground waters within the permit and adjacent areas, and any water which will flow into or receive discharges from these areas. The permit will not be approved until this information is in the application.

2. All water quality sampling and analyses must be conducted according to the most recent edition of Standard Methods for the Examination of Water and Wastewater or those in 40 CFR parts 136 and 434 or other methods approved by the commission and the office of surface mining reclamation and enforcement.
3. Enough detailed geologic information must be included to determine:
  - a. The probable hydrologic consequences (PHC) of the operation on the quality and quantity of surface and ground water in the permit and adjacent areas, including the extent to which surface and ground water monitoring is necessary;
  - b. All potentially toxic-forming strata down through the lowest coal seam to be mined; and
  - c. Whether reclamation can be accomplished and whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area.
4. The applicant shall determine the probable hydrologic consequences of the operation on the quality and quantity of surface and ground water under seasonal flow conditions for the permit and adjacent areas. The probable hydrologic consequences determination must be based on baseline hydrologic, geologic, and other information collected for the application and, if appropriate, data statistically representative of the site. Include findings on:
  - a. Whether adverse impacts occur to the hydrologic balance.
  - b. Whether toxic-forming materials are present that could contaminate surface and ground water supplies.
  - c. Whether the operation may contaminate, diminish, or interrupt an underground or surface water source within the permit or adjacent areas used for domestic, agricultural, industrial, or other legitimate purpose.
  - d. What impact the operation will have on:
    - (1) Sediment yield from the disturbed area.
    - (2) Acidity, total suspended and dissolved solids, and other important water quality parameters of local impact.
    - (3) Flooding or streamflow alteration.
    - (4) Ground water and surface water availability and other characteristics as required by the commission.
5. The applicant shall provide supplemental information to evaluate the hydrologic consequences based on drilling, aquifer tests, geohydrologic analysis of the water-bearing strata, flood flows, or analysis of other water quality or quantity characteristics if:
  - a. Toxic-forming material is present; or
  - b. The probable hydrologic consequences determination indicates adverse impacts on or off the permit area may occur to the hydrologic balance.

6. The applicant shall provide information on the availability and suitability of alternate water sources for existing premining and approved postmining land uses if the probable hydrologic consequences determination shows the mining operation may contaminate, diminish, or interrupt a water source used for domestic or other legitimate purpose in the permit or adjacent areas.
7. Modeling techniques may be used if they furnish the required information.

**History:** Effective August 1, 1980; amended effective May 1, 1990.

**General Authority:** NDCC 38-14.1-03

**Law Implemented:** NDCC 38-14.1-14, 38-14.1-15

**69-05.2-08-05. Permit applications - Permit area - Geology description.**

1. The description must include a general statement of the geology within the permit area down through the deeper of either the stratum immediately below the deepest coal seam to be mined or any lower aquifer which may be adversely affected by mining.
2. Test borings or core samples from the permit area must be collected and analyzed down through the deeper of either the stratum immediately below the lowest coal seam to be mined or any lower aquifer which may be adversely affected by mining. The minimum density is one drill hole per forty acres [16.19 hectares] or a comparable spacing, or as specified by the commission. Overburden samples must be taken at five-foot [1.52-meter] intervals and taken dry whenever possible. Laboratory analyses must be made by the methods in United States department of agriculture handbook 525, Laboratory Methods Recommended for Chemical Analyses of Mined Land Spoils and Overburden in Western United States, by Sandoval and Power, or United States department of agriculture handbook 60, Diagnosis and Improvement of Saline and Alkali Soils, by the United States salinity laboratory staff, both available from the United States government printing office, Washington, D. C. The following information must be provided:
  - a. Location of subsurface water encountered.
  - b. Drill hole logs with gamma ray and density logs included as verification showing the lithologic characteristics and thickness of each stratum and coal seam.
  - c. Physical and chemical analyses of each overburden sample taken at five-foot [1.52-meter] intervals to identify horizons containing potential toxic-forming materials. Physical and chemical analyses of strata below the lowest coal seam to be mined must include one sample from each stratum. The analyses must include:
    - (1) pH.
    - (2) Sodium adsorption ratio (include calcium, magnesium, and sodium cation concentrations).
    - (3) Electrical conductivity of the saturation extract.
    - (4) Texture (by pipette or hydrometer method). Include percentage of sand, silt, and clay along with a general description of the physical properties of each stratum within the overburden.
    - (5) Saturation percentage if the sodium adsorption ratio is greater than twelve and less than twenty.
  - d. Coal seam analyses including sodium, ash, British thermal unit, and sulfur content.

- e. Cross sections sufficient to show the major subsurface variations within the permit area down through the deeper of either the stratum immediately below the lowest coal seam to be mined or any lower aquifer which may be adversely affected by mining. The horizontal scale must be 1:4,800 and the vertical scale one inch [2.54 centimeters] equals twenty feet [6.10 meters]. To assess pit suitability for disposal of refuse, ash, and other residue from coal utilization processes, the information presented in this subsection must extend to a depth determined by the commission or to the base of the next confining clay stratum beneath the lowest coal seam to be mined.
  - f. A thickness (isopach) map of the overburden to the top of the deepest seam to be mined. The contour interval must be ten feet [3.05 meters] and the horizontal scale 1:4,800.
  - g. All coal crop lines and the strike and dip of the coal to be mined.
3. If required by the commission, the applicant shall collect and analyze test borings or core samplings to greater depths within or outside the permit area if needed for evaluating the impact of mining on the hydrologic balance.

**History:** Effective August 1, 1980; amended effective January 1, 1987; May 1, 1990; May 1, 1992.

**General Authority:** NDCC 38-14.1-03

**Law Implemented:** NDCC 38-14.1-14

**69-05.2-08-06. Permit applications - Permit area - Ground water information.**

1. The applicant shall analyze the ground water hydrology and ground water resources of the potentially affected area. The application must contain a description of the ground water hydrology for the permit and adjacent areas including:
  - a. A general account of the ground water hydrology (the water resources of the area).
  - b. Known uses of the water in the aquifers and water table and location of all water wells within the permit and adjacent areas.
  - c. Sufficient information and narratives to adequately describe the recharge, storage, and discharge characteristics of aquifers and the quality and quantity of ground water according to the parameters and in the detail required by the commission. The narrative must discuss the aquifers and hydrologic functions that are addressed in the ground water monitoring plan required by section 69-05.2-09-12 in order to comply with sections 69-05.2-16-13 through 69-05.2-16-15.
  - d. Contour maps or maps showing the water table or piezometric surface in each aquifer (including water-bearing coal seams) down to and including the lowest water-bearing coal seam to be mined and any lower aquifer which may be adversely affected by mining. The applicant shall prepare 1:24,000 scale maps covering the permit and adjacent areas, using at least one data point (a piezometer nest) per four square miles [6.44 square kilometers], unless the commission requires a greater density. Data points must be shown on the map to the nearest ten acres [4.05 hectares]. Accompanying data should include lithologic and geophysical (gamma ray and density) logs of the piezometer holes, piezometer construction details, and water level and land surface elevations to the accuracy necessary for valid analysis of the ground water hydrology of the permit and adjacent areas.
  - e. Results of water samples collected from each data point, if possible, analyzed for:
    - (1) Total dissolved solids in milligrams per liter.
    - (2) Hardness in milligrams per liter.

- (3) Sodium in milligrams per liter.
  - (4) Iron, bicarbonate, nitrate, sulfate, and chloride in milligrams per liter.
  - (5) pH in standard units.
  - (6) Sodium adsorption ratio (include calcium, magnesium, and sodium cation concentrations).
  - (7) Electrical conductivity in micro mhos per centimeter.
  - (8) Additional parameters required by the commission on a site-specific basis.
2. If necessary, the applicant shall provide additional ground water information required by subsections 5 and 6 of section 69-05.2-08-04.
  3. The applicant shall meet the alluvial valley floor ground water information and data requirements if the permit area contains or is adjacent to an identified alluvial valley floor.

**History:** Effective August 1, 1980; amended effective May 1, 1990.

**General Authority:** NDCC 38-14.1-03

**Law Implemented:** NDCC 38-14.1-14

**69-05.2-08-07. Permit applications - Permit area - Surface water information.**

1. The applicant shall provide a map for the permit and adjacent areas showing:
  - a. Names and locations of watersheds receiving mine water discharges.
  - b. Ephemeral, intermittent, and perennial streams.
  - c. Lakes, ponds, wetlands, springs, drains, and water discharges into surface water bodies.
  - d. Water supply intakes for current surface water users.
2. The applicant shall describe surface drainage systems in sufficient detail to identify seasonal water quality and quantity variations in the permit and adjacent areas.
3. Surface water information must include:
  - a. Minimum, maximum, and average discharge conditions which identify critical low flow and peak discharge stream rates sufficient to identify seasonal variations.
  - b. Water quality data to identify the characteristics of surface waters related to the permit and adjacent areas, sufficient to identify seasonal variations. The data must include:
    - (1) Total dissolved solids in milligrams per liter.
    - (2) Total suspended solids in milligrams per liter.
    - (3) pH in standard units.
    - (4) Total iron in milligrams per liter.
    - (5) Additional parameters the commission may require on a site-specific basis.
  - c. A complete description of the monitoring procedures used including:
    - (1) Site locations.

- (2) Monitoring frequency for each site.
- (3) Techniques and equipment.
4. If necessary, the applicant shall provide additional surface water information required by subsections 5 and 6 of section 69-05.2-08-04.

**History:** Effective August 1, 1980; amended effective June 1, 1983; May 1, 1990.

**General Authority:** NDCC 38-14.1-03

**Law Implemented:** NDCC 38-14.1-14

**69-05.2-08-08. Permit applications - Permit area - Vegetation and land use information.**

1. The application must contain the following premining vegetation information:
  - a. A map or aerial photograph at a scale of 1:4,800 that delineates the existing mapping units within each premining land use. The mapping units for different land use categories are:
    - (1) For cropland, each soil mapping unit.
    - (2) For tame pastureland, each soil mapping unit.
    - (3) For native grasslands, each ecological site. The soil mapping unit in each ecological site must also be delineated.
    - (4) For woodland, each woodland type, i.e., trees, tall shrubs, and low shrubs.
    - (5) For fish and wildlife habitat, each vegetation type as further specified in subparagraphs a, b, and c.
      - (a) For woodland, each woodland type, i.e., trees, tall shrubs, and low shrubs;
      - (b) For wetlands, wetland classes based on ecological differentiation as set forth in Classification of Natural Ponds and Lakes in the Glaciated Prairie Region (United States department of the interior (1971)) or other approved classification system.
      - (c) For grasslands (native or introduced), each soil mapping unit.
    - (6) For shelterbelts, the entire planting.
  - b. For each land use, a comprehensive species list of higher plants and identification of any species of rare, endangered, poisonous, or noxious plants, developed by a thorough reconnaissance of all mapping units.
  - c. A description of each mapping unit delineated under subdivision a. This description must include:
    - (1) The acreage [hectarage] of each mapping unit for each surface owner within the permit area.
    - (2) An assessment of the productivity of cropland, tame pastureland, and native grassland based on published data, historic data, or quantitative data.
    - (3) Natural resource conservation service similarity index in percent for native grassland.

- (4) A detailed description of number and arrangement of trees and shrubs, probable age of trees, height of trees, and characteristics of understory vegetation for woodland and fish and wildlife habitat where woodland is the vegetation type.
  - (5) A detailed description of community structure, assemblages of plant species, water conditions, and size for fish and wildlife habitat where wetlands are the vegetation type.
  - (6) A description of number and arrangement of trees and shrubs, length and number of rows, and associated plant species for shelterbelts.
  - (7) When required for the proposed success standard, a quantitative assessment of applicable vegetation parameters using methods approved by the commission.
- d. A detailed narrative describing the nature and variability of the vegetation in each mapping unit and land use category, based on a thorough reconnaissance and qualitative assessment.
2. When the methods selected for subdivision g of subsection 6 of section 69-05.2-09-11 require the use of reference areas:
    - a. The number of reference areas proposed must be sufficient to adequately represent the permit area.
    - b. The location, approximate size, and boundaries of all proposed reference areas must be located on a map of sufficient scale to accurately show the field location of each. The boundaries of the mapping unit in which the reference area is located must also be delineated.
    - c. The permittee shall demonstrate that the proposed reference areas adequately characterize the relevant mapping units which they propose to represent. This demonstration must be done according to methods approved by the commission.
  3. The application must contain, in addition to materials satisfying subdivision a of subsection 2 of North Dakota Century Code section 38-14.1-14:
    - a. A map and supporting narrative of the uses of the land existing at the time the application is filed. If the premining use of the land was changed within five years before the anticipated date of beginning the proposed operations, the historic use must also be described.
    - b. A narrative of land capability and productivity, which analyzes the land use description under subdivision a in conjunction with other environmental resources information required under this chapter.
  4. The application must contain a narrative description which includes information adequate to predict the potential for reestablishing vegetation on all areas to be disturbed.

**History:** Effective August 1, 1980; amended effective June 1, 1983; May 1, 1990; June 1, 1997; January 1, 2009.

**General Authority:** NDCC 38-14.1-03

**Law Implemented:** NDCC 38-14.1-14, 38-14.1-24

**69-05.2-08-09. Permit applications - Permit area - Prime farmland - Reconnaissance investigation.**

1. All applications must include the results of a reconnaissance investigation of the proposed permit area to indicate whether prime farmland exists. The commission in consultation with the natural resource conservation service will determine the nature and extent of the required reconnaissance investigation.
2. If the reconnaissance investigation establishes that no land within the proposed permit area is prime farmland historically used for cropland, the applicant shall submit a statement that no prime farmland is present. The statement must identify how the conclusion was reached.
3. If the reconnaissance investigation indicates that land within the proposed permit area may be prime farmland historically used for cropland, the applicant shall determine if a cooperative soil survey exists for those lands and whether soil mapping units in the permit area have been designated as prime farmland. If no cooperative soil survey exists, the applicant shall have one made of the lands which the reconnaissance investigation indicates could be prime farmland.
  - a. If the cooperative soil survey indicates that no prime farmland soil mapping units are present within the permit area, subsection 2 applies.
  - b. If the cooperative soil survey indicates that prime farmland soil mapping units are present within the permit area, section 69-05.2-09-15 applies, unless the applicant presents other information which demonstrates to the satisfaction of the state conservationist of the natural resource conservation service that no prime farmland mapping units are present.
4. This section does not apply to lands which qualify for the exemption in section 69-05.2-26-06. However, the application must show that all exemption criteria are met.

**History:** Effective August 1, 1980; amended effective June 1, 1983; May 1, 1990; May 1, 1992; June 1, 1997.

**General Authority:** NDCC 38-14.1-03

**Law Implemented:** NDCC 38-14.1-14

**69-05.2-08-10. Permit applications - Permit area - Soil resources information.**

The applicant shall submit a soil survey for the permit area consisting of a map and report prepared by a soil classifier as defined in subsection 28 of North Dakota Century Code section 38-14.1-02.

1. The map must be at a 1:4,800 scale and show:
  - a. The location and the vertical and lateral (areal) extent of the suitable plant growth material (topsoil) within the permit area that is considered best for topdressing the area to be reclaimed. Suitable plant growth material considered best for topdressing is the noncalcareous surface horizon material that is dark-colored due to organic staining, has an electrical conductivity of less than two millimhos per centimeter ( $EC \times 10^3$ ), a sodium adsorption ratio of less than four (exchangeable sodium percentage of less than five) and an organic matter percentage of one or more.
  - b. The location and the vertical and lateral (areal) extent of the remaining suitable plant growth material (subsoil) within the permit area, based on electrical conductivity of the saturation extract of less than four millimhos per centimeter ( $EC \times 10^3$ ), and sodium adsorption ratios of less than ten (exchangeable sodium percentage of less than twelve).
  - c. The location of any prime farmlands identified under section 69-05.2-08-09.

2. The report must contain:
  - a. The results of any chemical and physical analyses made to determine the properties of the suitable plant growth material. Textural analyses must be included for all samples taken.
  - b. The description, classification, and interpretation for use of the soils and suitable plant growth material in the permit area.
3. Laboratory analyses must be made by the methods and procedures in United States department of agriculture handbook 60, Diagnosis and Improvement of Saline and Alkali Soils, by the United States salinity laboratory staff, United States government printing office, Washington, D. C., or by other methods and procedures approved in writing by the commission.
4. Prior to a soil classifier beginning work on the required soil survey, a meeting of the soil classifier, the operator, if the operator so desires, and the commission staff will be held for the purpose of discussing proposed techniques, procedures for sampling and analyses, and the area to be surveyed.

**History:** Effective August 1, 1980; amended effective June 1, 1983; May 1, 1990; January 1, 1993.

**General Authority:** NDCC 38-14.1-03

**Law Implemented:** NDCC 38-14.1-14

**69-05.2-08-11. Permit applications - Permit area - Use of other suitable strata.**

Where the applicant proposes to use other suitable strata as a supplement for suitable plant growth materials or where the commission determines that it is necessary to meet the revegetation requirements, the application must indicate the areal extent of other suitable strata within the proposed permit area and must, on a sampling density determined by the commission in consultation with the applicant, provide results of the analyses, trials, and tests required under subsection 5 of section 69-05.2-15-02.

**History:** Effective August 1, 1980; amended effective June 1, 1983; May 1, 1990.

**General Authority:** NDCC 38-14.1-03

**Law Implemented:** NDCC 38-14.1-14

**69-05.2-08-12. Permit applications - Permit area - Topographic data.**

Repealed effective January 1, 1993.

**69-05.2-08-13. Permit applications - Permit area - Alluvial valley floor determination.**

1. Before applying for a permit to conduct operations within a valley holding a stream or in a location where the adjacent area includes any stream, the applicant shall either affirmatively demonstrate, based on available data, the presence of an alluvial valley floor, or submit the results of a field investigation of the permit and adjacent areas. The investigations must include sufficiently detailed geologic, hydrologic, land use, soils, and vegetation studies on areas required to be investigated by the commission, after consultation with the applicant, to enable the commission to make an evaluation regarding the existence of the probable alluvial valley floor in the permit or adjacent area and to determine which areas, if any, require more detailed study in order to make a final determination regarding the existence of an alluvial valley floor. Studies performed during the investigation by the applicant or subsequent studies required of the applicant must include an appropriate combination, adapted to site-specific conditions, of:

- a. Mapping of the probable alluvial valley floor including geologic maps of unconsolidated deposits, delineating the streamlaid deposits, maps of streams, delineation of surface watersheds and directions of shallow ground water flows through and into the unconsolidated deposits, topography showing local and regional terrace levels, and topography of terraces, floodplains, and channels showing surface drainage patterns.
  - b. Mapping of all lands included in the area used for agricultural activities, showing the different types of agricultural lands and accompanied by measurements of vegetation productivity and type.
  - c. Topographic maps of all lands that are or were historically flood-irrigated, showing the location of each diversion structure, ditch, dam, and related reservoir.
  - d. Documentation that areas identified in this section are, or are not, subirrigated, based on ground water monitoring data, representative water quality, soil moisture measurements, and measurements of rooting depth, soil mottling, and water requirements of vegetation.
  - e. Documentation, based on representative sampling, that areas identified under this subdivision are, or are not, flood irrigable, based on streamflow, water quality, water yield, soils measurements, and topographic characteristics.
  - f. Analysis of a series of aerial photographs, including color infrared imagery capable of showing any late summer and fall differences between upland and valley floor vegetative growth and of a scale adequate for reconnaissance identification of areas that may be alluvial valley floors.
2. Based on the investigations conducted under subsection 1, the commission will determine the extent of any alluvial valley floors within the study area and whether any stream in the study area may be excluded from further consideration. The commission will determine that an alluvial valley floor exists if:
    - a. Unconsolidated streamlaid deposits holding streams are present; and
    - b. There is sufficient water to support agricultural activities as shown by:
      - (1) The existence of flood irrigation in the area or its historical use;
      - (2) The capability to be flood-irrigated, based on streamflow water yield, soils, water quality, and topography; or
      - (3) Subirrigation of the lands from the ground water system of the valley floor.

**History:** Effective August 1, 1980; amended effective May 1, 1990.

**General Authority:** NDCC 38-14.1-03

**Law Implemented:** NDCC 38-14.1-21

**69-05.2-08-14. Permit applications - Permit area - Alluvial valley floor resources.**

1. If land within the permit or adjacent area is identified as an alluvial valley floor and mining may affect it or waters that supply alluvial valley floors, the applicant shall submit a complete description of the alluvial valley floor resources and characteristics that allow the commission to determine:
  - a. The characteristics necessary to preserve essential hydrologic functions during and after mining.
  - b. The significance of the area to agricultural activities.

- c. Whether the operation will cause, or presents an unacceptable risk of causing, material damage to the quantity or quality of surface or ground waters that supply the alluvial valley floor.
  - d. The effectiveness of proposed reclamation under North Dakota Century Code chapter 38-14.1 and this article.
  - e. Specific environmental monitoring required to measure compliance with chapter 69-05.2-25 during and after mining and reclamation operations.
2. The alluvial valley floor baseline data required to make the determinations listed in subsection 1 must include:
  - a. Geologic data, including structure and surficial maps, and cross sections.
  - b. Soils and vegetation data, including a detailed soil survey and chemical and physical analyses, a vegetation map and narrative descriptions of quantitative and qualitative surveys, and land use data, including an evaluation of crop yields.
  - c. Surveys and data for areas designated as alluvial valley floors because of their flood irrigation characteristics must also include streamflow, runoff, sediment yield, and water quality analyses describing seasonal variations, field geomorphic surveys, and other geomorphic studies.
  - d. Surveys and data for areas designated as alluvial valley floors because of their subirrigation characteristics, must also include geohydrologic data including observation well establishment for water level measurements, ground water contour maps, testing to determine aquifer characteristics that affect waters supplying the alluvial valley floors, well and spring inventories, and water quality analyses describing seasonal variations, and of the same overburden parameters specified in section 69-05.2-08-05 to determine the effect of the operations on water quality and quantity.
  - e. Plans showing how the operation will avoid, during mining and reclamation, interruption, discontinuance, or preclusion of farming on the alluvial valley floors unless the premining land use has been undeveloped rangeland which is not significant to farming and will not materially damage the quantity or quality of water in surface and ground water systems that supply these alluvial valley floors.
  - f. Maps showing farms that could be affected by the mining and, if any farm encompasses all or part of an alluvial valley floor, statements of the type and quantity of agricultural activity on the alluvial valley floor and its relationship to the farm's total agricultural activity including an economic analysis.
3. The surveys should identify those geologic, hydrologic, and biologic characteristics of the alluvial valley floor necessary to support essential hydrologic functions. Characteristics which must be evaluated in a complete application include:
  - a. Characteristics supporting the function of collecting water which include:
    - (1) The amount and rate of runoff and a water balance analysis, with respect to rainfall, evapotranspiration, infiltration, and ground water recharge.
    - (2) The relief, slope, and density of the network of drainage channels.
    - (3) The infiltration, permeability, porosity, and transmissivity of unconsolidated deposits of the valley floor that either constitute the aquifer associated with the stream or lie between the aquifer and the stream.

- (4) Other factors that affect the interchange of water between surface streams and ground water systems, including the depth to ground water, the direction of ground water flow, the extent to which the stream and associated alluvial ground water aquifers provide recharge to, or are recharged by bedrock aquifers.
- b. Characteristics supporting the function of storing water which include:
    - (1) Surface roughness, slope, and vegetation of the channel, floodplain, and low terraces that retard flow.
    - (2) Porosity, permeability, water-holding capacity, saturated thickness, and volume of aquifers associated with streams, including alluvial aquifers, perched aquifers, and other water-bearing zones found beneath valley floors.
    - (3) Moisture held in soils within the alluvial valley floor, and the physical and chemical properties of the subsoil that provide for sustained vegetation growth or cover during extended periods of low precipitation.
  - c. Characteristics supporting the function of regulating the flow of water which include:
    - (1) The geometry and physical character of the valley, expressed in terms of the longitudinal profile and slope of the valley and the channel, the sinuosity of the channel, the cross section, slopes, and proportions of the channels, floodplains, and low terraces, the nature and stability of the streambanks, and the vegetation established in the channels and along the streambanks and floodplains.
    - (2) The nature of surface flows as shown by the frequency and duration of flows of representative magnitude including low flows and floods.
    - (3) The nature of interchange of water between streams, their associated alluvial aquifers and any bedrock aquifers as shown by the rate and amount supplied by the stream to associated alluvial and bedrock aquifers (i.e., recharge) and by the rates and amounts supplied by aquifers to the stream (i.e., baseflow).
  - d. Characteristics which make water available and which include the presence of land forms including floodplains and terraces suitable for agricultural activities.

**History:** Effective August 1, 1980; amended effective May 1, 1990.

**General Authority:** NDCC 38-14.1-03

**Law Implemented:** NDCC 38-14.1-21

**69-05.2-08-15. Permit applications - Permit area - Fish and wildlife resources.**

Each application must include fish and wildlife resource information for the permit and adjacent area.

1. The applicant shall submit for commission approval a study plan for acquiring fish and wildlife information which must include the scope of work, level of detail, and timetable for completing fish and wildlife inventories. The commission, in consultation with the state and federal agencies responsible for fish and wildlife, will ensure that the study plan is sufficient to design the protection and enhancement plan required in section 69-05.2-09-17.
2. The study report must be included in the application and fish and wildlife habitats must be delineated on 1:4,800 scale aerial photographs.
3. Site-specific resource information necessary to address the respective species or habitats is required when the permit or adjacent area is likely to include:

- a. Listed or proposed endangered or threatened plant or animal species or their critical habitats listed by the secretary of the United States department of the interior under the Endangered Species Act of 1973, as amended [16 U.S.C. 1531 et seq.];
  - b. Habitats of unusually high value for fish and wildlife such as important streams, wetlands, riparian areas, cliffs supporting raptors, areas offering special shelter or protection, migration routes, or reproduction and wintering areas; or
  - c. Other species or habitats identified through agency consultation as requiring special protection under state or federal law.
4. Within ten days of the request, the commission will provide the resource information required under subsection 1 to the United States department of the interior, fish and wildlife service regional or field office for their review.

**History:** Effective August 1, 1980; amended effective June 1, 1983; May 1, 1990; May 1, 1992.

**General Authority:** NDCC 38-14.1-03

**Law Implemented:** NDCC 38-14.1-14, 38-14.1-24