

DESIGN MANUAL

Prepared by

North Dakota Department of Health

NORTH DAKOTA LIVESTOCK PROGRAM

Environmental Health Section

Division of Water Quality

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language - single underline language our comments

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All conditions and requirements within the Design Manual that are stipulated as a ("Shall" or "Must") requirement, must be incorporated into the corresponding NPDES regulations. Chapter 33-16-01 or the Control of Pollution from AFO's regulation, chapter 33-16-03.1 where appropriate. The Department has a duty and obligation to incorporate the corresponding sections into the appropriate regulations to insure the enforceability of those requirements under the regulatory authority granted them and to insure that NONE of those requirements are abandoned or challenged in court as being only defined under a GUIDANCE document and not within the actual language of the regulations.

We believe this would be a grave disservice to the citizens of the State of North Dakota, if the Department were not to incorporate the appropriate sections into the corresponding regulations, thus eliminating the possibility of the enforceable requirements within the Design Manual being arbitrarily changed without going through a proper Rulemaking Hearing and possibly rendering the guidance document useless.

There are a number of areas within the Design Manual where we believe the guidelines should be more stringent for Housed Commercial Swine Feeding Operations. These facilities pose a significantly greater risk to the environment from their very nature and should have more descriptive and prescriptive requirements to ensure the proper handling of the large volume of waste they generate.

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SECTION 1. INTRODUCTION

The North Dakota Livestock Program Design Manual (design manual) is used by the Water Quality Division of the North Dakota Department of Health (department) in the review and permitting process for concentrated animal feeding operations (CAFOs) and animal feeding operations (AFOs), as defined by North Dakota Administrative Code (NDAC) Section 33-16-03.1-03. CAFOs and AFOs must be located, designed, built, maintained and operated to prevent pollution of or the discharge of wastes into waters of the state as required by North Dakota Century Code (NDCC) Chapter 61-28, NDAC Chapter 33-16-01, and NDAC Chapter 33-16 -03.1, and, to the extent practicable, consistently with the policies and guidelines of this manual,

[\(This is exactly why the enforceable requirements of this document must be incorporated into the corresponding regulatory language of NPDES regulations. Chapter 33-16-01 or the Control of Pollution from AFO's regulation. chapter 33-16-03.1 where appropriate.\)](#)

with best professional judgment, and with best management practices. The Department may vary application of this design manual based on site-specific geological, hydrological, or environmental conditions, but only in a way that is consistent with the requirements of law, with the policies set forth in this design manual, and with best professional judgment.

All CAFOs are required to obtain a North Dakota Pollutant Discharge Elimination System (NDPDES) Permit pursuant to NDAC Chapter 33-16-01. Certain AFOs that are identified in NDAC Chapter 33-16-03.1 must obtain coverage under a State Animal Feeding Operation Permit or receive a "No Potential to Pollute" determination.

The Department reviews livestock facilities based on the specific site conditions and will follow the standards in this design manual for all applicable facilities. We understand, however, that there may be cases where some of the standards may not apply. If it is appropriate to deviate from these standards, the reasoning shall be explained and documented with the facility information.

The design manual contains both enforceable requirements and recommendations or guidance for CAFOs and AFOs to assist owners/operators in developing manure handling systems that will prevent impacts to waters of the state and not cause air quality violations, ("Shall" or "must") means the standard is an enforceable requirements and "should" means the standard is a recommendation of the Department. If violations of the enforceable requirements occur, the Department will evaluate whether the owner/operator implemented the recommendations that may have helped avoid the violation. [\(If they implemented the recommendations within the guidelines, than there should not be a violation. If there is a violation, then enforcement action Shall be taken.\)](#)

Owners/operators are responsible for ensuring their facilities do not pollute waters of the state and do not exceed air quality standards. If a facility is detrimentally impacting waters of the state and air quality, the owner/operator will be required to make corrections to prevent such impacts, regardless of whether the owner/operator followed the design manual when the facility was designed and constructed.

If appropriate, the Department may institute more stringent requirements to protect water quality and air quality.

An owner/Operator is responsible for complying with the air pollution law found in NDCC Chapter 23-25 - Air Pollution Control and the rules promulgated there under in NDAC Article 33-15 Air Pollution Control. Specifically applicable to CAFOs and AFOs are NDCC Section 23-25-11 Regulation of odors - Rules and NDAC Chapter 33-15-16 Restriction of Odorous Air Contaminants.

An owner/operator is responsible for implementing Best Management Practices (BMPs) to ensure compliance with the applicable requirements of NDAC Chapter 33-16-01 and NDAC Chapter 33-16-03.1, the design manual and the conditions of the permit. The owner/operator shall include the BMPs that will be implemented in Operation and Maintenance (O&M) plans and the Nutrient Management Plan.

SECTION 2. GENERAL APPLICATION AND PERMITTING INFORMATION FOR ANIMAL FEEDING OPERATIONS

2.1. Objective

The objective of this section is to provide a description of the review process for livestock facilities which require permits pursuant to NDAC Chapter 33-16-01 and NDAC Chapter 33-16-03.1. In addition, it describes the information needed by the Department to determine (1) whether a medium AFO (Definition 17) has “No Potential to Pollute” and (2) whether a small AFO (Definition 30) requires a permit.

All concentrated animal feeding operations are required to be operated as no-discharge facilities, except as authorized in these regulations and NPDES regulation No. 61. Compliance with the no-discharge provision can only be achieved by installation and operation of adequate manure and process wastewater collection and storage facilities designed to prevent wastes and waste waters from entering waters of the state under maximum operating conditions, two feet of free-board, plus the runoff from a 25-Year, 24-Hour; 10-Year, 24-hour; or 100-Year, 24-Hour Storm for the location of the facility. No discharge of wastewater shall be allowed at any time to waters of the state.

(1) Open animal feeding operations and concentrated animal feeding operations shall control all manure and process wastewater including flows from the production areas and all other flows from an applicable storm event. Control of manure and process wastewater from open concentrated animal feeding operations may be accomplished through use of retention basins, terraces, or other runoff control methods. In addition, diversions of uncontaminated surface drainage prior to contact with the animal feeding operations or concentrated animal feeding operation and manure storage areas may be required by the Department in order to prevent water pollution.

2.2. Operations Requiring Permits

See NDAC Section 33-16-03.1-04 and NDAC Section 33-16-03.1-05.

2.3. Definition of Terms

The following definitions are taken from NDAC Section 33-16-03.1-03:

(--) “ABANDONED FACILITY” An animal feeding operation that has not confined or stabled animals during a consecutive 12-month period. See section 8.8. Treatment of Contamination and Closure of Site for additional requirements. Also pertains to specific sections of a facility that have not confined any animals for forty-five days or more during a period of 90 consecutive days annually.

(--) "AGRONOMIC RATE OF APPLICATION" means the rate of application of nutrients to plants that is necessary to satisfy the plants' nutritional requirements that are not met by nutrients currently in the soil or transported to the site by precipitation, while strictly minimizing the amount of nutrients that run off to surface waters or which pass below the root zone of the plants. Nutrients means:

Ammonium N plus organic N, NH₄, P₂O₅, K₂O and also soluble salts at a minimum, as specified by the most current published fertilizer suggestions of the North Dakota State University Extension Service or other authoritative documents for plants, or the plant most closely related plant type, to which the nutrients are to be applied.

1. “**Animal feeding operation**” means a lot or facility (other than an aquatic animal production facility) where the following conditions are met:

a. Animals (other than aquatic animals) have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period; and

b. Crops, vegetation, forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility.

2. “**Bedding material**”, INCLUDES BUT IS NOT LIMITED TO, ~~means~~ an absorbent substance applied to dirt or concrete flooring systems, including wood shavings, wood chips, sawdust, shredded paper, cardboard, hay, straw, hulls, sand, and other similar, locally available materials.

3. “**Best management practices**” means schedules of activities, prohibitions of practices, conservation practices, maintenance procedures, and other management strategies to prevent or reduce the pollution of waters of the state or the degradation of water quality standards. Best management practices also include treatment requirements, operating procedures, and practices to control production area and land application area runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

(-- “CATASTROPHIC EVENT” is equivalent to a 25-Year, 24-Hour, 10-Year, 24-Hour or 100-Year, 24-Hour Storm event. Catastrophic Events could also include tornadoes, hurricanes, or other catastrophic conditions that would cause an overflow from the required manure and runoff control structure.

(-- “CHRONIC RAINFALL” is a series of wet weather conditions that preclude dewatering of properly maintained manure and runoff control structures.

4. “**Concentrated animal feeding operation**” means an animal feeding operation that is defined as a large concentrated animal feeding operation (Definition 11 ~~10~~) or as a medium concentrated animal feeding operation (Definition 18), or is a small or other type of animal feeding operation designated as a concentrated animal feeding operation in accordance with section 33-16-03.1-04 (Designation of concentrated animal feeding operations). For purposes of determining animal numbers, two or more feeding operations under common ownership are considered to be a single animal feeding operation if they adjoin each other or if they use a common area or system for the disposal of wastes. All concentrated animal feeding operations are required to obtain a North Dakota pollutant discharge elimination system permit pursuant to chapter 33-16-01.

5. “**Discharge of a pollutant**” and “**discharge of pollutants**” ~~each means any addition of any pollutant to the waters of the state from any source, including the disposal of pollutants into wells.~~ Means the introduction or addition of a pollutant

into waters of the state by the release or leaking, pumping, pouring, emitting, emptying, dumping, escaping, seeping, leaching or other means of release of waste, waste waters or pollutants into any waters of the state or into or on any location where they may in all probability then enter waters of the state.

6. “Department” means the North Dakota Department of Health.

7. “Earthen storage pond or pond” ~~means an earthen pond used to store manure, process wastewater and runoff from the production area of a livestock facility.~~ Means a natural topographic depression either below or above ground level, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials or other seepage control materials), or any other structure which is used for the storage, treatment, recycle, evaporation and/or dispose of wastewater and/or stormwater or discharge of pollutant-containing waters, sludge or associated sediment. Impoundments can be aerobic, anaerobic, or facultative, depending on the impoundments loading and design parameters.

8. “Engineer” means a professional engineer registered to practice in the state of North Dakota.

9. “Facility or livestock facility” has the same meaning as animal feeding operation (Definition 1) or concentrated animal feeding operation (Definition 4).

10. “General permit” means a general North Dakota pollutant discharge elimination system permit or a general state animal feeding operation permit. This is a permit issued to cover multiple facilities of the same or similar type, without requiring each facility to be covered under an individual permit.

(--) “GROUNDWATER” Means subsurface waters, which may be unconfined, confined, or perched, in a zone of saturation which currently or potentially can be brought to the surface of the ground or surface waters through wells, springs, seeps, or other discharge areas.

(--) “HYDROLOGICALLY SENSITIVE AREA” includes: Areas where significant groundwater recharge occurs or where contamination from animal feeding operations could impact existing drinking or potential water sources or withdrawals, classified uses, water quality standards or reasonably likely future public drinking water system withdrawals; areas where animal feeding operations could impair water bodies subject to antidegradation review.

11. “Large concentrated animal feeding operation” means any animal feeding operation that stables or confines as many as or more than the numbers of animals specified in any of the following categories:

- a. 700 mature dairy cows, whether milked or dry;
- b. 1,000 veal calves;

- c. 1,000 cattle other than mature dairy cows or veal calves. Cattle includes, but is not limited to, heifers, steers, bulls, and cow/calf pairs;
- d. 2,500 swine, each weighing 55 pounds or more;
- e. 10,000 swine, each weighing less than 55 pounds;
- f. 500 horses;
- g. 10,000 sheep or lambs;
- h. 55,000 turkeys; 30,000 laying hens or broilers, if the animal feeding operation uses a liquid manure handling system;
- i. 125,000 chickens (other than laying hens), if the animal feeding operation uses other than a liquid manure handling system;
- j. 82,000 laying hens, if the animal feeding operation uses other than a liquid manure handling system; 30,000 ducks, if the animal feeding operation uses other than a liquid manure handling system; or
- k. 5,000 ducks, if the animal feeding operation uses a liquid manure handling system.

12. "Litter" means a mixture of fecal material, urine, animal bedding material, and sometimes waste feed.

(--) **"LAND APPLICATION SITE"** - Means land under the control of a CAFO owner or operator, whether it is owned, rented, or leased to which manure or process wastewater from the production area is or may be applied. A land application site also means land not owned, rented, or leased by a CAFO owner or operator and where the CAFO owner or operator controls the quantity of manure or process wastewater that is applied. This includes, but is not limited to lands retained by an easement.

(--) **"LEAKAGE"** Means loss of liquids from an Earthen storage pond or pond, Manure storage pond, Manure storage structure or an Open manure storage structure into the subsurface or to surface in excess of the expected seepage rate of the liner material, generally from an area of the liner that is damaged or constructed improperly resulting in a higher permeability than other portions of the liner system.

(--) **"NEW SOURCE"** A New Source is defined under 40 CFR 122.2 as a facility that commences construction after April 14, 2003 and:

(a) It is constructed at a site at which no other source is located; or

(b) It totally replaces the process or production equipment that causes the discharge of pollutants at an existing source; or

(c) Its processes are substantially independent of a pre-existing source at the same site.

13. “Manure or livestock manure” means fecal material and urine, animal-housing wash water, bedding material, litter, compost, rainwater, or snow melt that comes in contact with fecal material and urine, and raw or other materials commingled with fecal material and urine or set aside for disposal.

14. “Manure handling system” means all of the water pollution control structures used at the production area of a livestock facility.

15. “Manure storage pond” means an earthen storage pond that stores liquid manure and process wastewater from indoor confined animal feeding operations.

16. “Manure storage structure” means any water pollution control structure used to contain or store manure or process wastewater. It includes, but is not limited to: earthen manure storage ponds; runoff ponds; concrete, metal, plastic, or other tanks; and stacking facilities.

17. “Medium animal feeding operation” means any animal feeding operation that stables or confines the numbers of animals specified within any of the following ranges:

- a. 200 to 699 mature dairy cows, whether milked or dry;
- b. 300 to 999 veal calves;
- c. 300 to 999 cattle other than mature dairy cows or veal calves. Cattle includes, but is not limited to, heifers, steers, bulls, and cow/calf pairs;
- d. 750 to 2,499 swine, each weighing 55 pounds or more;
- e. 3,000 to 9,999 swine, each weighing less than 55 pounds;
- f. 150 to 499 horses;
- g. 3,000 to 9,999 sheep or lambs;
- h. 16,500 to 54,999 turkeys; 9,000 to 29,999 laying hens or broilers, if the animal feeding operation uses a liquid manure handling system;
- i. 37,500 to 124,999 chickens (other than laying hens), if the animal feeding operation uses other than a liquid manure handling system;
- j. 25,000 to 81,999 laying hens, if the animal feeding operation uses other than a liquid manure handling system; 10,000 to 29,999 ducks, if the animal feeding operation uses other than a liquid manure handling system; or
- k. 1,500 to 4,999 ducks, if the animal feeding operation uses a liquid manure handling system.

18. “Medium concentrated animal feeding operation” means a medium animal feeding operation that meets either one of the following conditions:

- a. Pollutants are discharged into waters of the state through a man-made ditch, flushing system, or other similar man-made device; or
- b. Pollutants are discharged directly into waters of the state which originate outside of and pass over, across, or through the facility or otherwise come into direct contact with the animals confined in the operation.

19. “North Dakota pollutant discharge elimination system permit” means the permit issued by the Department pursuant to NDAC chapter 33-1 6-01 to a concentrated animal feeding operation that the Department has determined will not cause, nor likely cause, pollution to waters of the state.

20. “Nutrient management plan” means a written description of the equipment, method(s) and schedule(s) by which (1) manure, litter and process wastewater is beneficially reused in an environmentally safe manner such as being applied to land at appropriate agronomic rates as nutrients or fertilizers, and (2) water pollution and air pollution (including odors) are controlled sufficiently to protect the environment and public health.

21. “Open lot” means livestock pens, feeding or holding areas at the production area of an animal feeding operation which are outside and not under roof, and where rain can fall directly on the lot area.

22. “Open manure storage structure” means an earthen pond or storage tank for holding liquid manure which is not covered so rainfall can fall directly into the pond or tank.

23. “Operation and maintenance plan” means a written description of the equipment, methods, and schedules for:

(1) Inspection, monitoring, operation, and maintenance of the animal feeding operation (manure storage structures, water pollution control structures, and the production area); and

(2) Controlling water pollution and air pollution (including odors) sufficient to protect the environment and public health. It includes emergency response actions for spills, discharges or failure of a collection, storage, treatment, or transfer component.

24. “Operator” means [any legally and financially responsible](#) individual or group of individuals, partnership, corporation, joint venture, or any other entity owning, ~~or~~ controlling, [maintaining or operating](#) in whole or in part, one or more animal feeding operations.

25. “Overflow” means the discharge of manure or process wastewater resulting from the filling of wastewater or manure storage structures beyond the point at which no more manure, process wastewater, or storm water can be contained by the structure.

26 “Pollutant” means “wastes” as defined in subsection 2 of North Dakota Century Code section 61-28-02, including dredged spoil, solid waste, incinerator residue, garbage, sewage, sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water [of the state](#).

27. “Process wastewater” means water directly or indirectly used in the operation of the animal feeding operation for any or all of the following: spillage or overflow from animal or poultry watering systems; washing, cleaning, or flushing pens, barns, manure pits, or other animal feeding operation facilities; direct contact swimming, washing, or spray cooling of animals; or dust control. Process wastewater also includes any water which comes into contact with any raw materials, products, or byproducts, including manure, litter, feed, milk, eggs, or bedding material.

28. “Production area” means those areas of an animal feeding operation used for animal confinement, manure storage, raw materials storage, and waste containment, including but not limited to Earthen storage ponds or ponds, Manure storage ponds, Manure storage structures or Open manure storage structures. The animal confinement area includes, but is not limited to, open lots, housed lots, feedlots, confinement houses, stall barns, free stall barns, milking rooms, milking centers, cattle yards, barnyards, medication pens, walkers, animal walkways, and stables. The manure storage area includes but is not limited to lagoons, runoff ponds, storage sheds, stockpiles, under-house or pit storages, liquid impoundments, static piles, and composting piles. The raw materials storage area includes, but is not limited to, feed silos, silage bunkers, and bedding materials. The waste containment area includes, but is not limited to, settling basins, areas within berms, and diversions which separate uncontaminated storm water. Also included in the definition of production area is any egg washing or egg processing facility and any area used in the storage, handling, treatment, or disposal of mortalities.

29. “Runoff” means rainwater or snow melt that comes in contact with manure at an open lot or open manure storage area and, therefore, is defined as manure.

30. “Runoff pond” means an earthen storage pond that is used to collect and store runoff from an open lot or from a manure storage area.

31. “Sensitive groundwater area” means vulnerable hydrogeologic settings as determined by the Department such as glacial outwash deposits or alluvial or aeolian sand deposits that are critical to protecting current or future underground sources of drinking water. Areas designated as sensitive groundwater areas by the Department include alluvial or aeolian sand deposits shown on Geologic Map of North Dakota (Clayton, 1980, North Dakota geological survey) and glacial drift aquifers listed in North Dakota Geographic Targeting System for Groundwater Monitoring (Radig, 1997, North Dakota department of health), or most recent editions of these publications, with DRASTIC scores greater than or equal to 100 based on methodology described in DRASTIC: A Standardized System For Evaluating Groundwater Pollution Potential (Aller et al, 1987, United States environmental protection agency).

32. “Small animal feeding operation” means any animal feeding operation that stables or confines less than the numbers of animals specified for a medium animal feeding operation (Definition 17).

33. “Small concentrated animal feeding operation” means any animal feeding operation that stables or confines less than the numbers of animals specified for a medium animal feeding operation (Definition 17) and is designated as a concentrated animal feeding operation in accordance with section 33-16-03.1-04.

34. “State animal feeding operation permit” means a permit issued by the Department (pursuant to this chapter) to an animal feeding operation that the Department has determined will not cause, nor likely cause, pollution to waters of the state.

35. “Surface water” means waters of the state that are located on the ground surface, including all streams, coulees, lakes, ponds, impounding reservoirs, marshes, watercourses, waterways, and all other bodies or accumulations of water on the surface of the earth, natural or artificial, public or private and water bodies that are hydrologically connected.

36. “Unconfined glacial drift aquifer” means a glacial drift aquifer that does not have an impervious soil layer which acts to prevent or minimize movement of water into, through, or out of the aquifer.

37. “Water pollution control structure” means a structure built or used for handling, holding, transferring, or treating manure or process wastewater, so as to prevent it from entering the waters of the state. The term also includes berms, ditches, [conveyance structures](#) or other structures used to prevent clean water from coming in contact with manure.

38. “Water quality standards” means the water quality standards contained in chapter 33-16-02.1.

39. “Waters of the state” (NDCC 61-28-02. 11.) means all waters within the jurisdiction of this state including all streams, lakes, ponds, impounding reservoirs, marshes, watercourses, waterways, and all other bodies or accumulations of water on or under the surface of the earth, natural or artificial, public or private, situated wholly or partly within or bordering upon the state, except those private waters that do not combine or effect a junction with natural surface or underground waters just defined.

2.4. Application and Permitting Information

See NDAC Section 33-16-03.1-07.

Medium AFOs that are located within 1/4 mile of a surface water of the state or [where depth to groundwater is less than one-hundred feet \(100'\)](#) must submit an application for a state permit. Blue line waters on 7 % Minute USGS Quadrangle maps may be used to locate surface waters of the state. This is intended to be measured as a horizontal distance from any portion of the production area of a livestock facility to the nearest point of a surface water of the state [or to groundwater.](#)

[\(If you do not consider groundwater, the Department has no idea the impact the mass loading of the waste storage impoundments have on existing or potential sources of Under Ground Drinking Water Sources. This is especially true when you are allowing the leakage of 1/16" per day from these impoundments, which equates to approximately 1,700 gal per acre/day or 3.1 million gallons for 5 acre impoundment.\)](#)

Wintering operations were discussed in the previous North Dakota state livestock rules, by the U.S. Environmental Protection Agency in the preamble to the federal livestock rules and by many local zoning ordinances. There are various definitions as to what constitutes a wintering operation, and some wintering operations may meet the current definition of an AFO (see Section 2.3. Definition of Terms, Definition 1). Pasture and grazing-based operations may have areas (e.g., feeding areas, feedlots, barns, pens) that qualify as an AFO. These areas may be subject to regulation under NDAC Chapter 33-16-03.1 or NDAC Chapter 33-16-01 and the owner/operator may need to submit an application for a state animal feeding operation permit or obtain a ‘No Potential to Pollute’ determination.

Winter feeding operations where the animals are in areas (e.g., pastures, croplands or rangelands) that sustain crops or forage growth during the normal growing season are not considered AFOs. This allows operators of winter feeding operations to use management measures, such as spreading out or moving the feeding areas, to minimize the time livestock are concentrated in one area.

All facilities shall submit an application to the Department. The application shall include details demonstrating the facilities' adequacy to comply with these regulations.

(--) The application shall contain a notarized certification signed by the person submitting the application, which states: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate and complete. I am aware there are significant penalties for knowingly submitting false, inaccurate or incomplete information, including the possibility of fines for each violation."

(--) The Division may require additional information if deemed necessary to insure protection of state waters.

(--) Process wastewater retention structures or manure stockpiles shall not be located within a mapped 100- year floodplain as designated and approved by NDWCB, an alluvial terrace, or within a watershed area of any waters listed on the states 303(d) list, unless proper flood proofing measures (structures) are designed and constructed.

(--) Facility designs as required under this section shall be prepared by a registered professional engineer with the State of North Dakota.

2.5. When to Submit an Application

Applications must be submitted to the Department by owners or operators of livestock facilities that require a permit pursuant to NDAC Chapter 33-16-01 or NDAC Chapter 33-16-03.1. The owner/operator of the following facilities must submit an application and design plans, and must receive department approval prior to construction:

1. New livestock facilities [a facility that commences construction after April 14, 2003](#) or

2. Existing livestock facilities that are:

- a. Increasing the number of livestock above the level allowed in the current permit or above the level where a permit is required,
- b. Expanding the production area, or
- c. Are updating or changing the manure handling system.

A preliminary application may be submitted before a facility is designed so the Department can assist the owner/operator by evaluating information on the water resources in the area, reviewing ~~siting~~ [sighting](#) requirements and identifying potential concerns. The final design plans for the manure handling system, including a Nutrient Management Plan, must then be submitted to the Department for review.

If a facility design meets department standards for construction and operation so it will prevent the discharge of pollution to waters of the state and not cause air quality violations, a permit ~~will~~ [may](#) be issued [upon completion of the review and a public hearing](#). If the Department determines the design is not adequate, changes will be required before the design can be approved and a permit issued.

When an owner or operator is considering a new site for a livestock facility, the Department can provide general comments to assist in evaluating a potential site and understanding the requirements for manure handling systems.

An application for renewal of a permit or of a “No Potential to Pollute” determination shall be submitted 180 days prior to the expiration. The Department will send out a reminder notice prior to the expiration date indicating the expiration date and informing the owner/operator when a renewal must be submitted. [In no case may the CAFO be determined to have “no potential to discharge” if it has had a discharge within the 5 years prior to the date of the request submitted under § 122.21\(f\) and \(i\)\(1\)\(i\) through \(ix\) of the 40 CFR.](#)

2.6. Criteria for Determining That a Livestock Facility that is Not a CAFO Has No Potential to Pollute

Livestock facilities can receive a “No Potential to Pollute” determination from the Department if they:

- (1) are not a CAFO,
- (2) are located where manure and runoff do not cause or are not likely to cause pollution to a surface water or groundwater source, and
- (3) manage the manure so it will be utilized [at an agronomic rate](#) for crop production. To request this determination, the owner/operator must submit a signed and completed application with a written request for a “No Potential to Pollute” determination. The Department will inspect the livestock facility site to determine if it has no potential to pollute. The facility also must keep a current Nutrient Management Plan that meets the Department requirements on site and available for department review upon request.

Once the Department determines that the livestock facility has no potential to pollute, the facility will be subject to review at least once every five years [suggest two year minimum] to maintain this status. The Department may make a determination to extend a “No Potential to Pollute” based ~~solely~~ on provided documentation, ~~or it may decide to~~ and an inspection of the facilities prior to renewing or extending a “No Potential to Pollute” determination. The Department must require a minimum two year site inspection to insure no significant changes have been made at the facility. WE STRONGLY RECOMMEND THAT THE DEPARTMENT MONITOR EACH SITE ON AN ANNUAL BASIS AS WELL; REGARDLESS OF A “NO POTENTIAL TO POLLUTE” DETERMINATION.

2.6.1. The criteria for the Department to make a “No Potential to Pollute” determination for livestock facilities that are not CAFOs are:

1. The livestock facility must not discharge pollutants to water of the State ~~a river, lake, stream, creek, or drainage~~. The Department will evaluate the slope of the land and the flow distance to waters of the State ~~a named surface water or seasonal drainage~~. If there is a water shed above the livestock facility which drains through the facility or comes in contact with manure or litter ~~mixes with manure from the site~~, the volume of water from this drainage along with the manure, process wastewater, litter or any other potential waste streams from the facility and runoff shall be considered when evaluating the maximum potential volume of waste, which poses a threat to waters of the state; if it reaches a water of the state;
2. The livestock facility or area where manure is stored or is contained within must not be located over ~~a~~ shallow groundwater used as an Underground Sources of Drinking Water, unconfined, beneficial use aquifer or potential Underground Sources of Drinking Water where the on site soil is predominately gravel, sand or silt;
3. The livestock facility must have a Nutrient Management Plan approved by the department; and
4. If a liquid manure storage structure is needed at the facility, it is not eligible for a “No Potential to Pollute” determination ation.

2.6.2. The following information will be kept on file by the Department to justify a “No Potential to Pollute” determination for a livestock facility that is not a CAFO. The Department will collect the information from the livestock facility owner or operator and from a site assessment:

1. The name of the livestock facility owner/operator and the legal location and mailing address;
2. The number and type of livestock and the number of days per year livestock are on site;
3. The size of the livestock facility including a sketch of the site showing the number and size of barns and the area of the feedlot or livestock lots;

4. The distance and slope to the nearest water of the state (surface water based on a topographic map);
5. The distance (horizontal and flow) to the nearest named waterway that runoff may potentially reach;
6. If runoff drains across crop or grassland before reaching waters of the state, a map showing the area throughout which runoff spreads before reaching a water of the state;
7. The watershed area located above the livestock facility from which clean water drains into or through the facility and comes in contact with manure, [process wastewater, litter or any other potential waste streams from the facility](#) or the livestock on site;
8. An indication if manure, [process wastewater, litter or any other potential waste streams](#) or runoff from the livestock facility drains or may drain onto neighboring property not owned by the facility;
9. A determination if manure or runoff from the livestock facility reaches water of the state ~~surface water~~ or groundwater; and
10. An indication that the facility has a Nutrient Management Plan that meets the department requirements and general information on the Nutrient Management Plan, including the name of the individual who developed the Nutrient Management Plan and the organization with which he/she is affiliated, amount of land available for land application of manure, type of crops or vegetation grown on this land, typical manure application rate for each of the crops to be grown, [manure or waste analysis](#), method and timing of application, precautions used to prevent manure from reaching waters of the state and precautions used to minimize odors to residences or public areas where people are present during transport and land application of manure [or litter and their incorporation into the soil.](#)

2.7. Criteria for Determining if a Small AFO Requires a Permit

Small AFOs must apply for and obtain a permit from the Department if it is determined that manure, [litter](#) or runoff is causing the discharge of pollutants into [waters of the state](#) ~~surface water~~ or ground water. To make this determination, the Department [will do an on site inspection](#) of the AFO to assess if it is, is likely to, or has discharged pollutants into waters of the state. If there is [an](#) impact, a permit will be required. The criteria that will be evaluated to determine if a small AFO requires a permit are:

1. The number of livestock and the number of days per year the livestock are on the site;
2. Whether the livestock are confined in or adjacent to surface water where there are no natural or manmade controls to keep runoff out of the surface water;
3. Whether the AFO is impacting or has impacted surface water or groundwater or that pollution is discharging to surface water (based on an assessment or testing water samples);
4. Whether the AFO has discharged to surface water from a rainfall event less than or equal to a 25-year, 24-hour rainfall event (based on an inquiry of the owner or operator); and

5. Whether the AFO is land applying manure in a manner that will keep it out of surface water and is utilizing the nutrients for crop production.

(The use of Surface water instead of Waters of the State, might exclude certain circumstances where hydrologically connected waters are not considered.)

SECTION 3. SUBMITTING FINAL DESIGN PLANS

3.1. Objective

The final design plans for livestock facilities that require a permit under NDAC Chapter 33-1 6-01 or NDAC Chapter 33-1 6-03.1 shall show that manure, [litter](#), process wastewater and runoff can be properly contained and managed to prevent detrimental impacts to surface and ground water resources and meet air quality standards. Manure, [litter](#), process wastewater and runoff must be contained and stored as per the design criteria for animal manure systems in Section 5. At a minimum, the following information in Sections 3.2.1 through 3.2.5 shall be included in the design plans for livestock facilities that require a permit.

3.2. Information to be Included in Final Design Plans

3.2.1. Design plans which address:

1. Production areas of a livestock facility

- a. Include provisions to minimize manure, process wastewater and runoff from the livestock area and contain manure, process wastewater and runoff on site until it can be properly utilized off site.
- b. Specify dimensions of outside lots or barns for livestock. For outdoor lots, specify percentage slope of lots, total drainage area of livestock lots and any additional drainage area running through the livestock lots.
- c. Indicate the volume of manure and wash water produced from confined facilities. For outdoor lots, indicate the runoff from a 25-year, 24-hour rainfall [or a 100 yr, 24 hr rainfall event, depending on the type operation](#), including runoff for the period of storage and any additional manure from the livestock lots.
- d. Provide an overview of facility operation which relates to manure handling, including the collection, transfer and storage of manure on site, the type of livestock and the number of days per year livestock are on site.
- e. Location and size of feed storage areas at the production area, the types of feed stored and if it is enclosed storage or stored outside.

2. Earthen Storage Ponds or Runoff Ponds

- a. Specify dimensions of the structure including top and bottom dimensions of pond, relative elevation, side slopes, depth, volume, dimensions of embankments, etc. A typical cross section of the pond and diversions is required along with a profile of any diversions, [conveyance structures](#), dikes and drainages.
- b. Specify provisions that will be used to meet seepage requirements such as the necessity of a liner. If a liner is needed, indicate type, construction specifications and testing used during and after construction to ensure integrity. Also include documentation that will be maintained to verify seepage requirements are met. Include any additional precautions and/or maintenance used to ensure pond and liner integrity around inlet areas, if the pond dries out, during pumping, and if vegetation growth occurs in the pond.
- c. Provide soil boring location, relative elevation of borings and boring logs based on the Unified Soil Classification System. In addition, note evidence of any past

or present water tables or other soil features. A sample of the borrowed or in-situ material that will be used as a liner shall be verified by laboratory testing.

Provide that proper chain of custody was followed and documented.

d. Provide designs for any inlet structures, including splash pads and an emergency spillway. Include information or designs for equipment used in the ponds for solids settling or transporting or agitating manure. In addition, include provisions to pump or lower the liquid level of the pond and designs for a marker to indicate the level at which the pond must be pumped so that it can store runoff and rainfall from the required rainfall event.

e. Provide an operation and maintenance plan for the pond detailing proper operation and maintenance to ensure it continues to operate as designed and

The Department needs to provide a list of specifics that need to be inspected and the frequency of those inspections, in order to insure that all facilities meet a minimum standard.

3. Non-earthen Storage (Concrete, Metal, Wood, Composite, Etc.)

a. Include all dimensions and any other pertinent information such as relative elevation of top and bottom; design of wall, floor and top; footer designs; rebar specifications; joint sealers or other specifications used to prevent seepage; testing during or after construction; etc.

b. Provide soil boring location, relative elevation and boring logs based on the Unified Soil Classification System. Note evidence of any past or present water tables or other soil features.

c. Provide an operation and maintenance plan for the structure detailing proper operation and maintenance to ensure it continues to operate as designed and listing specific items that need to be inspected and the frequency of inspections.

4. Diversions and Embankments

a. Specify dimensions of the structure, including top and bottom width, side slopes, depth, typical major cross sections, slope, channel profile elevation compared to ground level and flow velocity in diversion channels.

b. Provide any site-specific conditions needed to ensure stability.

c. Specify the maintenance required to ensure continued stability.

d. Include the calculations used to estimate the peak flow in diversion channels **and conveyance structures**, including watershed drainage area, average slope, and soil type, vegetation in drainage area, runoff curve number and maximum flow length. **(Reworded this sentence.)**

e. Include the calculations to show the stability of diversion channels **and conveyance structures** at peak flow. If the drainage area is small, indicate that minimum diversion **and conveyance structure** designs **are** ~~is~~ adequate to handle runoff.

f. Provide specifications on any type of erosion control methods used in stabilizing channels, diversions, earthen storage ponds, etc. used during construction.

g. Provide an operation and maintenance plan for the structures detailing proper operation and maintenance to ensure they continue to operate as designed and listing specific items that need to be inspected and the frequency of inspections.

5. Construction Specifications for Water Pollution Control Structures Including Excavation, Earth Fill, Liners, Concrete, and Pipelines

- a. Provide general construction information to ensure a safe work site and a stable structure (e.g., include the type of soil used for construction, compaction, moisture content, etc.).
- b. Specify construction requirements needed to ensure stability and quality construction (e.g., stripping and scarifying, lift thickness and compaction, grass seeding after construction, etc.).
- c. Include any testing done during or after construction to ensure stability of the structure.
- d. Design plans shall be stamped by an engineer registered in North Dakota. After construction is completed, final "As-Built" drawings certified by an engineer, registered in the state of North Dakota shall be submitted ~~at certification of completion~~ to the Department. This certification shall state that all construction was done in accordance with the design plans submitted to and approved by the Department.

The Department needs to provide a clear and explicit laundry list of the minimum requirements that must be fulfilled by all facilities and that there should be those requirements that are based on a site-specific evaluation or on a case-by-case basis.

3.2.2. Nutrient Management Plan information must include:

1. The type of livestock, number of days per year they are on site and an estimate of the volume of manure generated and how the estimate was based;
2. A description of the manure handling at the facility, including how often manure is cleaned from the livestock areas and how and where manure may be temporarily stored;
3. An aerial photograph or map and a soil map of the site where manure is to be applied;
4. Current and/or planned plant production sequence or crop rotation;
5. Results of soil, plant, water, manure or organic by-product sample analyses;
6. Realistic yield goals for the crops in the rotation;
7. Quantification of all nitrogen and phosphorous sources;
8. Recommended nitrogen and phosphorous rates, timing, method of application and incorporation;
9. The form of manure (liquid or solid) and the expected frequency of land application;
10. Location of sensitive areas or resources such as water ways, drainage ways, wellhead or source water protection areas, high water table areas, residences or public areas and the associated manure handling or nutrient management restriction;

11. Guidance for implementation, operation, maintenance and record keeping;
12. Complete nutrient budget for nitrogen and phosphorous for the rotation or crop sequence;
13. A field-specific assessment of the potential for nitrogen and phosphorous transport from the field to surface waters. The assessment shall address the form, source, amount, timing and method of application of nutrients on each field to achieve realistic production goals, while minimizing nitrogen and phosphorous movement to surface waters;
14. Precautions that will be used to prevent manure from impacting surface water, exceeding air quality standards while it is stored on site, and causing excess odors to nearby residences or public areas when manure is land applied; and
15. A description of the records related to land application of the manure that will be maintained to document the minimum Nutrient Management Plan requirements are met.
16. The name of the individual who developed the Nutrient Management Plan and the organization with which he/she is affiliated.
17. The following facilities that require a Nutrient Management Plan pursuant to NDAC Chapter 33-1 6-01 or NDAC Chapter 33-1 6-03.1 must submit a copy of their current Nutrient Management Plan to the Department along with their application and/or design plans which must include the information listed in items 1-16 above:
 - a. CAFOs,
 - b. Livestock facilities that plan to apply manure on frozen ground;
[\(There should be no allowance to apply manure, effluent or process wastewater to frozen ground, doing so does not exemplify the beneficial use of the waste nor is the operator applying the waste at an AGRONOMIC RATE.\)](#)
 - c. Livestock facilities with land that is designated for manure application and which also has soil phosphorous levels that meet or exceed the very high levels for crop production based on NDSU Extension Service information;
 - d. Livestock facilities that daily haul and land apply manure; or
 - e. Livestock facilities from which the Department requests a copy of the Nutrient Management Plan be submitted.
18. Facilities that do not meet the conditions in item 17 must have a current Nutrient Management Plan kept on site. However, they only need to submit the following information to the Department with their application and/or design plans:
 - a. The name of the individual who developed the Nutrient Management Plan and the organization with which he/she is affiliated;
 - b. The amount of land available for land application of manure;
 - c. The type of crops or vegetation grown on this land;
 - d. The typical manure application rate for each crop;
 - e. The method and timing of application;
 - f. The precautions used to prevent manure from reaching waters of the state; and

g. The precautions used to minimize odors to residences or public areas where people are present during transport and land application of manure.

All facilities shall comply with, but is not limited to the Nutrient Management Plan, under Section 7 of this Design Manual.

3.2.3. Time Line for Construction and Implementation for Existing Systems

Operators of existing facilities installing or updating the manure handling systems to comply with department requirements shall include a project time line if construction is not scheduled to be completed within one year after the application is submitted to the Department. This time line shall indicate various phases of the construction to be completed and include an estimated date of completion for each phase. If construction is not completed in one year or a construction schedule cannot be met, the Department shall be notified in writing with a new proposed construction schedule submitted prior to the end of the one year or the scheduled completion date. **In no case shall the construction period exceed 18 consecutive months for the beginning of initial construction. All facilities will provide proper and adequate bonding for their facilities during the construction phase and maintain it to cover any post closure cost incurred for the removal of waste and proper closure of impoundments and open lot surfaces.**

3.2.4. Notice of Intent to be Covered Under Storm Water Permit

1. Construction activities at a livestock facility site disturbing 1 acre or more must be covered under a general permit for storm water discharges from construction activities (NDAC Chapter 33-16-01).
2. The livestock facility design plans must include a storm water pollution prevention plan detailing measures to control erosion and minimize pollution from construction sites.

3.2.5. Best Management Practices for Conservation

Identify appropriate site specific Best Management Practices for conservation to be implemented to control runoff of pollutants to waters of the state, both at the production area and at the land application areas. Practices identified in the Nutrient Management Plan can be referenced and do not have to be repeated.

All facilities shall comply with, but is not limited to the Nutrient Management Plan, under Section 7 of this Design Manual.

SECTION 4. SITE SELECTION AND ASSESSMENT STANDARDS

4.1. Objective

This section describes the information required to evaluate the location of a new or expanding livestock facility. Site location is the single most important factor in protecting water and air quality resources from pollution due to livestock facilities. Adequate surface and subsurface information is necessary to limit the potential of new or expanding facilities to degrade water and air quality resources.

4.2. Site Selection Standards

Geologic and hydrologic conditions that control the movement of manure or waste water to surface water or ground water sources are preferred for new or expanding facilities. Upland sites underlain by low permeability soil and located away from surface water are ideal for minimizing the migration of pollutants to water of the state ~~surface water and ground water~~. Facilities that are located at more sensitive sites typically require engineered improvements (e.g., above-ground storage tanks, synthetic membranes or constructed clay liners) to meet department requirements to protect waters of the state.

(We still contend that the Departments allowance of 1/16"/day (seepage or leakage) or approximately 1,700 gal per acre/day or 3.1 million gallons for every 5 acre impoundment, from any facility does not protect groundwater or surface water quality. The Department has failed to require any type of environmental assessment or modeling, which would provide the data regarding the potential of waste and pollutants to transcend in a vertical and horizontal direction, detrimentally impacting adjacent lands, groundwater or surface water.)

The following site conditions ~~should~~ shall be considered when evaluating the location of a livestock facility: (The Department has a duty and obligation to set a minimum set of standards that all facilities shall adhere to when evaluating a potential or existing site location.)

1. Proximity to surface water;
2. Surface and subsurface soil textures (e.g., the presence of sand lenses versus continuous clay layers); (The existence of clay layers is irrelevant, if the knowledge of faults and fractures are not known. It is pretty well established by USGS that within the area of every acres, there are faults or fractures, which are a direct conduit to subsurface and/or surface water.)
3. Depth to ground water and distance to existing wells;
4. Surface topography; and
5. Distance to nearby residents, particularly in the prevailing downwind direction.
6. Proximity to any watersheds or stormwater diversions, which poses an impact to the proposed site location.
7. distance to any man made water conveyances, channels or dikes.
8. Distance to any other existing AFO's in the area.

The Department needs to look at the cumulative impact of multiple facilities in an area and insure that the AFO's are not competing for land application areas or relying on the same application areas to dispose of their waste. In addition the Department needs to

look at the cumulative impacts of multiple facilities through modeling and an environmental impact assessment to insure that water quality standards in an area are not threatened or impacted by a new or additional facility in a region.

Site conditions shall be evaluated by the Department during the permit application review process and shall be considered when developing permit conditions for a livestock facility.

4.2.1. General Requirements

New and expanding livestock facilities and manure storage areas shall be located a minimum horizontal distance of ~~400~~ 300 feet from a public water supply well, ~~50~~ 150 feet from a private water supply well, and ~~500~~ 1,320 feet from any water supply well not owned by the facility where the topography is in a down-slope or down-gradient direction from the livestock facility.

(The distances here should coincide with the setback distances associated with your domestic sewage system and domestic wells at a minimum, or the distances indicated above. In addition, if modeling or an environmental impact assessment is not required, the Department should insure that there is sufficient distances from potential conduits to protect all waters of the state.)

4.2.2. Additional Considerations

The location of storage structures for an animal manure system should be as close as practicable to the manure source. Open manure storage structures should be located so that the prevailing wind direction will not be toward nearby occupied areas. Consideration should also be given to topography, vegetative screening and building location to minimize visual or air quality impacts from an operation. Water supply wells at existing operations should be protected from animal waste impacts.

(There should be a requirement that wells owned and located within close proximity to a facility are constructed to meet the minimum requirements of monitoring wells to insure proper protection around the surface casing and well bore from contamination.)

4.3. Site Assessment Standards

4.3.1. Scope of Site Assessment

The scope of a site assessment is dependent on the size and location of the proposed livestock facility. Larger facilities or those located in sensitive ground water areas or in close proximity to water of the state, generally require more information to adequately evaluate the site. The assessment work required for these facilities is discussed in Section 4.3.2. Smaller facilities located in less sensitive ground water areas or in close proximity to water of the state, generally require less information. The scope of work required at these facilities is discussed in Section 4.3.3. Contact the Department with any site assessment questions.

The following operations require more detailed subsurface soil information, and site assessments shall be conducted according to the requirements discussed in Section

4.3.2:

1. New large CAFOs, with the exception of open lot beef facilities with fewer than 2,000 animals and ~~less~~ more than 20 acres in size;

(This needs to be modified to set a minimum number of acres associated with 2,000 animals. 2,000 animals located on 5 acres of land poses a significant impact to the environment verses 2,000 animals on 20 acres.)

2. Existing operations expanding to large CAFO status, with the exception of open lot beef facilities with fewer than 2,000 animals and ~~less~~ more than 20 acres in size; or

3. New, existing or expanding AFOs that meet any of the following criteria:

- a. The ~~site~~ production area or land application sites overlies or is located within 1 mile of a defined glacial drift aquifer (see attached Figure 1);
- b. The ~~site~~ production area or land application sites overlies a sensitive ground water area, as defined by the Department (see attached Figure 1);
- c. Soils at the ~~site~~ production area or land application sites have sandy loam, loamy sand, sand or gravel textural classes as defined by Natural Resources Conservation Service (NRCS) soil survey maps;
- d. A water supply well at the facility is screened at a depth within 30 feet of the bottom of any proposed waste impoundment ~~ground surface~~;
- e. The ~~site~~ production area or land application sites are ~~is~~ within ~~1/4~~1/2 mile of a neighboring private water supply well, within 1/2 mile of a non-community public water supply well or within 1 mile of a community public water supply well; or
- f. The ~~site~~ production area or land application sites are ~~is~~ located within a delineated wellhead or source water protection area (see attached Figure 2).

g. The production area or land application sites are located within a 1/2 mile of any surface water.

4.3.2. Site Assessment Requirements for Large Facilities and Those Located in Sensitive Ground Water Areas

Data regarding subsurface soil types shall be obtained by advancing soil borings, using a method that retrieves a relatively undisturbed soil sample. The soil borings shall be advanced to at least ~~25~~ 35 feet below ground surface or at least ~~40~~ 25 feet below the base of the manure storage structure, whichever depth is greater. There shall be a minimum of three borings in the manure storage structure area or one boring per acre of structure area, whichever is greater. In outdoor feedlot areas, there should be one additional soil boring per 10 acres of feedlot area, drilled to at least 25 feet below ground surface. Soil borings should be spaced throughout the proposed facility to enable an accurate assessment of the subsurface geology. The Department can provide assistance in locating appropriate drilling locations.

The borings shall be continuously logged, and the soil shall be classified using the Unified Soil Classification System (as outlined in ASTM D-2488) or the equivalent. Soil types shall be recorded in a soil boring log, along with soil colors, soil moisture conditions and the depth of any ground water encountered during drilling. The ground surface elevation at each boring location shall be obtained to evaluate the boring elevation in relation to the base of the manure storage structure. The elevation data shall either be reported in feet above mean sea level or referenced to an arbitrary site benchmark.

All soil borings shall be completed and abandoned according to the requirements established in NDAC Chapter 33-18-20 (Ground Water Monitoring Well Construction Requirements).

Depending on site geology or facility location, the Department may require additional soil borings to adequately characterize soil and ground water. Additional borings may be required at sites with complex subsurface geology, such as sites with rapid transitions from fine- to coarse-textured soil.

4.3.3. Site Assessment Requirements for Smaller Facilities Not Located in Sensitive Ground Water Areas

Site assessments at facilities that do not meet any of the conditions of Section 4.3.1 typically require a less detailed subsurface assessment. The assessment may be conducted using soil borings or by an alternative soil evaluation method that is approved by the Department prior to site assessment.

Subsurface soils should be evaluated and logged to at least 12 feet below ground surface or at least 8 feet below the base of the manure storage structure, whichever depth is greater. There shall be a minimum of three soil evaluations in the manure storage structure area or one soil evaluation per acre of structure area, whichever is greater. In outdoor feedlot areas, there should be one additional soil evaluation per 10 acres of feedlot, to a depth of at least 12 feet below ground surface.

Subsurface soils shall be continuously logged, and soil shall be classified using the Unified Soil Classification System (as outlined in ASTM 0-2488) or the equivalent. Soil types shall be recorded on a soil boring log, along with soil colors, soil moisture conditions and the depth of any ground water encountered during drilling. The ground surface elevation at each boring location shall be obtained to evaluate the boring elevation in relation to the base of the manure storage structure. The elevation data shall either be reported in feet above mean sea level or referenced to an arbitrary site benchmark.

If soil borings are used for evaluating subsurface soil, they shall be completed and abandoned according to requirements established in NDAC Chapter 33-18-20 (Ground Water Monitoring Well Construction Requirements). Excavated or disturbed areas resulting from the use of alternative soil evaluation methods shall be filled with compacted soil to achieve permeability equal to or less than the surrounding geologic formation.

SECTION 5. DESIGN CRITERIA FOR MANURE SYSTEMS

5.1. Objective

The objective is to provide the requirements that must be met for manure handling systems at livestock facilities subject to department review. The manure handling systems should enhance the operation and management of the livestock facility by effectively moving manure and runoff from the production area of the livestock facility to properly designed storage areas, thus protecting water quality and air quality. The volume of manure stored should be minimized as much as possible, and manure should not be allowed to ~~naturally~~ drain on to neighboring land.

These design requirements are effective for all facilities with water pollution control structures that are constructed or updated after the effective date of NDAC Chapter 33-16-03.1.

All process wastewater and manure retention structures shall be constructed of compacted or in-situ earthen materials or other very low permeability materials, and shall be maintained, so as not to exceed a seepage rate of 1/16"/day (1.8×10^6 cm/sec.). The operator shall provide suitable evidence to the Department that a completed lining meeting the requirements of this Subsection 5 was constructed. Suitable evidence includes, but is not limited to engineering design and as-built drawings signed by a professional engineer, invoices for construction of the lining identifying cubic yards of lining material imported to site, compaction test results, in-situ permeability tests, and geophysical reports identifying appropriate materials used for lining.

(a) Compacted or in-situ earthen materials shall consist of suitable soils which have sufficiently low enough permeability to satisfy the seepage rate of this section taking into account the maximum hydraulic gradient of the structure and shall have a minimum compacted thickness of 18". The operator and the agency shall calculate the annual seepage volume of each structure at the facility and calculate the loading of nutrients, total dissolved salts, and biochemical oxygen demand. The agency shall perform groundwater modeling to insure that the water quality standards are not violated.

(i) The seepage rate is equal to the permeability of the soils used to construct the liner multiplied times the hydraulic gradient, which is the sum of the maximum height of liquid in the structure plus the thickness of the liner all divided by the thickness of the liner.

(ii) The loading is equal to the annual seepage volume (in units of millions of gallons) multiplied by the concentration of each pollutant and multiplied by the conversion factor of 8.34 lbs per million gallons.

(iii) If the Department determines that the loading rate of pollutants contained in the allowable seepage poses significant risk to waters of the state, the operator shall be required to redesign the waste management system to reduce the seepage from the retention structures.

(b) Very low permeability materials include flexible membrane linings, asphalt sealed fabric liners, and bentonite sealants which limit the seepage rate to a maximum of 1/16" /day. Installation of very low permeability materials shall be in accordance with the manufacturer's installation specifications; or approved compaction and design criteria's signed off by an Engineer certified by the State of North Dakota.

(c) If the facility is a Large CAFO, the liner construction proposal shall be a part of the permit application. Construction shall not commence until a construction permit is issued by the Department.

(d) Removal of manure or process wastewater from an impoundment shall be accomplished in a manner that does not damage the integrity of the liner. Where manure has been removed from an impoundment, the operator shall have available documentation prepared by a professional engineer registered in the State of North Dakota certifying that the provisions of sections 5 are still being met for the impoundment. Such documentation shall be available no later than 30 days after manure has been removed from the impoundment.

(g) Any depth marker in an impoundment shall be installed such that the integrity of the liner is maintained to meet the required seepage rate or performance standard.

5.2. Required Manure Storage

Manure storage structures for animal facilities shall be designed to store all of the following:

1. The volume of manure, process waste water and runoff produced in 270 days or during the time between dates when the storage structure can reasonably be emptied, whichever is longer. Storage structures that allow evaporation can subtract the evaporation that can be expected from the structure using regional and local pan evaporation rates.

2. Rainfall on any open manure storage structure and runoff from open lots from a 25-year, 24-hour rainfall event. Swine, chicken, turkey and veal calf facilities shall be designed to contain rainfall on the open manure storage structure and runoff from the ~~lots~~ production area due to a 100-year, 24-hour rainfall event.

(Swine, chicken, and turkey facilities do not have lots, they are in enclosures, but they still need to calculate runoff from the production site that is not diverted away from the impoundments.)

3. The volume of liquid or slurry that cannot be removed during pumping.

(This needs to be more clearly stated that pumping is based on the land application of process waste water at agronomic rates. The majority of solids applied are scrapped from the chicken and turkey houses or from the open lot pens at feedlots and dairies.)

4. The volume of solids accumulated from an open lot system. It is recommended that a solid separator be designed into these systems to extend pond life and minimize the chance of damage to the liner.

For items 1 and 2, see attached Tables 1, 1A and 2. The volume of solids in item 4 shall be determined by a suitable method or by the following:

Slope of Lot	Volume of Solids
0-3.9 percent	17 cubic yards per acre of lot
4 -8 percent	50 cubic yards per acre of lot
over 8 percent	70 cubic yards per acre of lot

A marker shall be used to indicate the level at which the storage structure can contain the required storage volume, minus the rainfall and runoff from a 25-year, 24-hour rainfall event or a 100-year, 24-hour rainfall event for swine, chicken, turkey and veal calf facilities. When the liquid level is above this marker, it shall be lowered to a level below this marker within a reasonable time. Under normal weather conditions, this should occur within two weeks.

Livestock facilities requiring permits under NDAC Chapter 33-1 6-01 and NDAC Chapter 33-16-03.1 shall be designed to prevent direct contact of animals at the production area with waters of the state.

To comply with state and federal dairy regulations, human sewage waste shall not be mixed in any way with livestock manure on dairy facilities.

5.3. Earthen Storage Ponds

An earthen storage pond holds manure, process wastewater and runoff from the production area of a livestock facility. Narrow or L-shaped earthen storage ponds should be avoided. Square, rectangular or round ponds are most desirable.

Coverage under NDAC Chapter 33-16-01 or NDAC Chapter 33-16-03.1 and these standards does not preclude an owner or operator of a livestock facility from needing to comply with any other applicable federal, state and local requirements.

5.3.1. Design Requirements

The finished bottom of the earthen storage pond shall be a minimum of ~~2~~ 150 feet above the seasonal high water table. In sensitive areas, greater separation distances ~~may~~ shall be required.

[Kansas Geological Survey analyzed 112 samples to determine the source of nitrogen in well water and found 42% was derived from animal waste. USGS has found levels of nitrates exceeding the health standards at water table depths greater than 100 feet. In wells of their own construction near Garden City, Kansas, they found 54 ppm of nitrate-N at 121 feet traced to animal waste \(by nitrogen 15 isotope analysis\) and 22 ppm at 161 feet \(USGS, 2000\).](#)¹

¹Volland, C.; Zupancic, J.; Chappelle, J.; "Cost of Remediation of Nitrogen-Contaminated Soils Under CAFO Impoundments"; 2002 Proceedings - Waste Research Technology

Earthen storage pond designs shall include a minimum of ~~4~~ 2 foot of freeboard above the minimum design storage volume level measured to the lowest level of the embankment or overflow structure. A minimum of 2 feet of freeboard is required on ponds where the longest length of surface water is 300 feet or more unless the pond is covered.

Provisions shall be included to minimize solids entering the pond or to remove solids without damaging the liner or pond integrity.

The earthen storage pond shall meet the conditions for soil formation and liners in Section 5.3.3 to minimize seepage and prevent instability.

The facility shall be maintained to prevent erosion.

5.3.2. Embankments for Ponds and Earthen Fill Material

Embankments refer to the side walls of an earthen storage pond that are constructed using earthen fill material. The applicable construction requirements for earthen fill listed below also apply to other components of the manure handling system, including clay liners, dikes, etc.

1. Construction Requirements for Earth Fill

a. Earth fill used in embankments, clay liners, dikes, etc. shall be relatively impervious material and sufficiently compacted to form a stable structure and minimize seepage.

b. Frozen soil shall not be used in the construction of embankments, and such structures shall not be constructed on frozen soil.

c. Final design height of embankments shall be increased by the amount needed to ensure the design top elevation will be maintained after settling. Designs shall use a minimum of 5 percent settlement at the center line of the embankment.

d. Vegetation and organic material shall be removed from areas where the embankment or earth fill will be placed. The embankment shall be tied into the mineral soil to prevent seepage between the interface. This may include, but is not limited to, scarification of the mineral soil prior to construction and/or the use of a core trench.

e. Organic material shall not be used in the embankment core construction; however, suitable topsoil that is free of debris may be used as cover material on the outer slopes of the embankment.

f. The side slopes on the inside embankment of an earthen storage pond shall not be steeper than 2 horizontal:1 vertical. On the outside, the slope shall not be steeper than 3 horizontal:1 vertical.

g. Top width of embankments shall be wide enough to be stable and permit access of maintenance vehicles. The top width of embankments shall be a minimum of 10 feet.

h. Embankments shall be seeded from the outside toe to the high water line. Perennial type, low growing, spreading grasses that are erosion resistant and can be mowed are desirable. Alfalfa and other deep-rooted plants are not acceptable since the roots can impair the water-holding capacity of the structure.

5.3.3. Soil Formation and Liners

The bottom and side slopes of earthen storage ponds shall be properly sealed to prevent excess seepage. This can be done by using a properly constructed clay liner, bentonite, a geosynthetic liner or other equivalent liner material. If a facility can meet the conditions specified in Sections 5.3.7 and 5.3.8, the in-situ soil may be acceptable for pond construction without an additional liner.

Lined earthen storage ponds shall be designed to prevent impacts to waters of the state and designed such that seepage shall not exceed 1/16 inch per day. ~~at maximum operating depth over the life of the pond. In sensitive ground water areas, wellhead or source water protection areas, above glacial drift aquifers or in areas where manure from a pond is determined to be impacting waters, the Department may require additional protective measures.~~

The Department makes generalizations and an implied assumption that the seepage rate of 1/16" per day only affects an area where groundwater, aquifers or other subsurface water formation exist. However, the Department has not required modeling or an environmental impact assessment be preformed, so they have little to no knowledge of the true impacts a proposed facility has on adjacent land owners, subsurface water, nearby waters of the state, wildlife habitats and a number of other aspects not even addressed by the Department.

Provisions shall be used to prevent or minimize drying and cracking of constructed clay liners. Protective measures, such as placing top soil or sand over the clay liner or keeping a minimum liquid level in the pond, can be used. If a soil cover layer is used, precautions must be taken to prevent weed growth that could damage the liner (e.g., spraying for weeds or by maintaining a shallow-rooted grass on the soil cover).

5.3.4 Constructed Clay Liners

Constructed clay liners shall meet the conditions in item 1 and the construction specifications listed in item 2. Laboratory tests of the soils used for the liner must be completed to determine the Atterberg limits and sieve analyses showing the grain sizing and proctor density of the soils. An additional sample shall be analyzed for every 5,000 cubic yards and for every major soil change. These tests shall be provided to the Department along with information on the locations where the soil samples were

collected, including the depths at which the samples were collected. Management provisions must be specified to prevent the liner from drying and cracking.

1. Required conditions for constructed clay liners are liquid limit of 30 percent or greater, a plasticity index greater than 10 (a range from 15 to 30 is preferable) and 30 percent or more (preferably 50 percent or more) of the liner material shall pass through a # 200 mesh screen, as tested by ASTM D-2487.

2. Construction specifications for constructed clay liners:

- a. The liner shall be a minimum of 2 feet thick after compaction;
- b. To achieve the desired thickness, the liner shall be placed in equal layers or lifts that are approximately 6 inches thick after compaction;
- c. Parallel lifts shall be used for side slopes. However, in the event that side slopes are steeper than 3 horizontal:1 vertical, horizontal lifts shall be used;
- d. In some sensitive areas, the Department may require a thicker liner material or additional construction;
- e. In situations that do not meet any of the conditions listed in Section 4.3.1, the minimum thickness of liner after compaction shall be 18 inches;
- f. Rocks greater than $\frac{3}{4}$ 1 inches in diameter shall be removed from the liner material prior to compaction; and
- g. The moisture content shall be in the range of 1 percent dry of optimum to 3 percent wet of optimum.

5.3.5. Testing of Constructed Clay Liners

Constructed clay liners shall be tested to verify seepage. This can be done in one of three ways:

1. Completing a remolded permeability test, indicating the material can meet the seepage limits. The liner construction must meet or exceed the proctor density used in the remolded permeability test, and the liner must undergo moisture and density testing during construction to ensure the construction specifications are met;
2. Laboratory testing thin-walled tube samples of the liner; or
3. Conducting an on-site seepage test of the liner.

When the testing is done for permeability, Darcy's law can be used to determine the seepage rate at the maximum operating depth for a 24 or 18 inch liner, as appropriate.

If a remolded permeability test is used, testing for compaction and moisture must be completed during construction of the liner on the pond bottom and side slopes using ASTM standard testing methods. Testing shall be done by the project engineer or a professional soil testing firm. Holes or punctures created in the liner due to testing, such as those from nuclear density testing, shall be filled with clay or bentonite after testing to prevent seepage. A minimum of four tests per acre of pond surface area must be completed on each lift for density and moisture and shall be randomly distributed over the entire liner area. Ponds that are less than 1 .5 acres at the full level shall include testing on at least two sidewalls, while ponds that are more than or equal to 1 .5 acres at the full level shall have testing on all four sidewalls.

The Department will evaluate the proposed liner testing specified in the design plan and, based on site conditions, may require additional testing as deemed appropriate.

If permeability testing is performed on the constructed liner, it shall be conducted using either of the following methods:

1. An on-site permeability test using standard ASTM methods; or
2. Laboratory testing of thin-walled tube samples, provided proper ASTM methods of collection and testing are used.

If thin-walled tube samples are collected, they must be taken at a rate of one tube per acre of pond surface area or a minimum of two tubes per pond, whichever is greater. Each sample shall be laboratory tested for permeability using an ASTM D5084 or equivalent ASTM testing method. Holes left in the liner from the thin-walled tube samples shall be filled with clay or bentonite and compacted to prevent seepage. If on-site testing of the liner is proposed, the testing method and number of tests must be included in the design plans for departmental review.

Depending on site-specific conditions, the Department may require additional testing of a pond liner to ensure seepage limits are being met.

All impoundment shall be required to have a liner that meets the 1/16"/day seepage rate regardless of the site location and soil composition at the site. The Department has a duty and obligation to insure the protection of all waters of the state, existing water quality standards and all current and potential Under Ground Sources of Drinking water.

The Department can NOT protect the health, welfare and wellbeing of the North Dakota citizens if there is not a performance standard that all facilities must meet as well as design and construction criteria for all impoundments regardless of their location.

The Department does not distinguish between the vast array of impoundments they have tried to define, which ones pertain to large, medium, and small CAFO's. If they were to allow the criteria of an in-situ soil impoundment for a small CAFO, there might not be a problem with that. However, to allow a 120,000 head feedlot to use the same design criteria as a small feedlot of 300 head is totally unacceptable. The Department must require all impoundments to meet a minimum performance standard of 1/16"/day and we strongly recommend that North Dakota adopt a 1/32"/day seepage standard as Colorado has.

Numerous studies have highlighted the actual leakage rates for animal waste lagoons. A Minnesota Pollution Control Agency study found some lagoons leaking 500 gallons per acre per day. A study commissioned by the Iowa Legislature in 1997, discovered that over 70% of earthen lagoons examined were leaking faster than Iowa standards allow, some more than twice as fast. This report, released in January of 1999, warns that surface waters are at risk to potential contamination and that pollution of groundwater is now unavoidable. The report also discovered poor maintenance and management practices at 76% of the facilities studied, which researchers consider a threat to water quality.

~~5.3.6. In-situ Soils~~

~~If the conditions at the site meet criteria listed in Sections 5.3.7 and 5.3.8, a liner may not be required. Laboratory tests of the in-situ soils must be completed to determine the Atterberg limits and sieve analyses showing the grain sizing. These tests must be provided to the Department and include the location and depth of the soil samples. Depending on soil and site characteristics, the Department may also require a permeability test.~~

~~When required by the Department, permeability testing shall be completed on the in-situ soils by:~~

- ~~1. An on-site permeability test using standard ASTM methods; or~~
- ~~2. Laboratory testing of thin-walled tube samples, provided proper ASTM methods of collection and testing are used.~~

~~If thin-walled tube samples are collected, they must be taken at a rate of two tubes per acre of pond surface area or a minimum of three tubes per pond, whichever is greater.~~

~~Each sample shall be laboratory tested for permeability using ASTM D-5084 or the equivalent. If on-site permeability tests are used, they shall be evenly distributed over the area of the liner. The type and number of tests must be specified in the design plans for review by the Department. Holes left in the liner~~

~~from the thin-walled tube samples shall be filled with compacted clay or bentonite.~~

~~5.3.7. Manure Storage Ponds~~

~~Manure storage pond refers to an earthen storage pond that stores liquid manure and process wastewater from indoor or roofed confined livestock facilities, not to a pond that stores only runoff from open lot livestock areas.~~

~~A liner is required for manure storage ponds unless the in-situ soil material is adequate to prevent excess seepage. If a livestock facility with a manure storage pond can meet all of the following conditions, a liner may not be required:~~

- ~~1. There is an existing livestock facility at the site that has been in existence for a minimum of five years;~~
- ~~2. There is a continuous layer of soil classified as CL or OH (based on the Unified Soil Classification System), verified by laboratory testing using ASTM D-2487, below the manure storage pond bottom and side slopes. The soil layer must be at least 4 feet thick for ponds that hold up to 8 feet of manure, 6 feet thick for ponds that hold up to 10 feet of manure or 8 feet thick for ponds that hold up to 12 feet of manure;~~
- ~~3. The site is not located in a sensitive groundwater area as defined by the Department or in a delineated wellhead or source water protection area (see attached Figures 1 and 2);~~
- ~~4. The volume of the manure storage pond, not including freeboard, is less than 2 million gallons (6 acre feet);~~
- ~~5. The pond is inspected for coarse textured soil after excavation and before earth fill is put in place; and~~
- ~~6. The manure storage pond was designed under the supervision of a registered professional engineer.~~

~~Any vegetation and organic material shall be removed from manure storage pond floors and side slopes up to the high water line, and the soil in the floor and side slopes must be scarified to a minimum depth of 6 inches and re-compacted to break up any fractures in the soil.~~

~~If coarse textured soils are discovered during construction, they shall be removed and a 2-foot clay liner installed in the area where coarse textured soil was encountered.~~

~~5.3.8. Runoff Ponds~~

~~Runoff ponds are earthen storage ponds that collect rain and runoff from open lot livestock facilities such as cattle feedlots.~~

~~The bottom and side slopes of runoff ponds shall be properly sealed to prevent seepage. In general, facilities that meet all of the following criteria may be allowed to use in situ soil material to prevent excess seepage without an additional liner:~~

~~1. The site is not located in a sensitive groundwater area as defined by the Department or in a delineated wellhead or source water protection area (see attached Figures 1 and 2);~~

~~2. There is a continuous layer of soil classified as CL or OH based on the Unified Soil Classification System, verified by laboratory testing using ASTM D-2487, below the pond bottom and side slopes. The soil layer must be at least 4 feet thick for ponds that hold up to 8 feet of water, 6 feet thick for ponds that hold up to 10 feet of water and 8 feet thick for ponds that hold up to 12 feet of water.~~

~~3. The runoff pond is designed under the supervision of a registered professional engineer.~~

~~If coarse textured soils are discovered during construction, they shall be removed and a 2-foot clay liner installed in the area where the coarse textured soil was encountered.~~

5.3.9. Synthetic, Geosynthetic or Other Liners

Synthetic, geosynthetic or other liners shall be installed according to manufacturer specifications. Synthetic liners shall not be used alone, but must be used in conjunction with a self-sealing liner material or a leak detection system to protect against seepage in the event of a tear or puncture.

Minimum thickness for synthetic liner material:

Type	Minimum requirements
HDPE	40 mill thickness
LLDPE	40 mill thickness
PVC	30 mill thickness
GCL	0.75 pounds per square foot
EPDM	45 mill thickness

The Department seems to have a problem with Synthetic and geosynthetic liners that by nature should have minimal to no seepage unless a tear or puncture exist, yet any other type of liner made from soils, clays or a combination thereof. its integrity is inherently jeopardized by root holes, rodent boring holes, cracks in the liner and scouring action caused by pumps as well as trench-hoes and other

equipment dredging too deep and breaching the integrity of the impoundment liner.

5.4. Non-earthen Manure Storage Structures

Non-earthen structures used to store liquid or slurry manure are usually constructed of reinforced concrete or fabricated steel with fused glass or plastic lining.

The storage structures shall be designed to contain manure and accommodate equipment for loading, agitating and emptying.

All seams or joints shall be properly sealed to prevent leaking.

The storage structures shall be properly designed and constructed to:

1. Withstand all anticipated structural loads applied;
2. Prevent damage from livestock or maintenance equipment; and
3. Safely prevent humans and livestock from entering.

4. Non-earthen storage structures shall be located within a containment area, which is capable of containing at least 50% of the capacity of all structures located within the containment area.

Steel and other corrodible material shall be covered with an adequate protective coating to prevent rust or corrosion.

A minimum of 6 inches shall be provided for freeboard at the top of the tank structure. For larger structures, more freeboard may be required.

Aboveground storage tanks shall have adequate footings extending below the anticipated frost depth.

Aboveground storage tanks shall have a leak detection system installed below the structure.

Tanks temporarily storing manure until it is transferred to a larger storage structure should be designed for a minimum holding time of three days.

5.4.1. Concrete Storage Tanks and Under House Manure Pits

Concrete structures shall be properly designed and constructed to ensure adequate strength and stability, minimize cracking and prevent any leaks. Designs shall conform to accepted standards such as:

1. Midwest Plan Service (MWPS-36) Concrete Manure Storage Handbook (1994 edition);
2. American Concrete Institute Standards 318-89 (Rev. 1992) Building Code Requirements for Reinforced Concrete; or
3. American Concrete Institute Standards 350R-89 and 3501R-93/AWWA (1994) Environmental Engineered Concrete Structures.

Storage tanks and pits shall be designed to withstand all anticipated structural loads, including internal and external loads, hydrostatic uplift pressure, concentrated surface and impact loads, seasonal high water table pressure and frost or ice pressure.

Covers, top slabs and slats shall be designed to support the maximum load, which can be applied, by the size and type of equipment to be used at the site. In no case shall the live loading be less than 150 pounds per square foot.

Designs for concrete manure storage tanks and pits shall document the loadings the tanks or pits were designed to withstand (e.g., lateral loads, surcharge loads and, if applicable, tank cover loads). If a public ally available design standard was used, such as a MWPS standard, indicate the specific standard used in the design, and the site conditions that were considered in the design.

5.4.2. Manure Stacking Facilities

Manure stacking facilities refer to surfaces that are relatively impervious where solid or semisolid manure is stacked or stored.

Handling manure in different phases may require a variety of designs to ensure all manure is stored. All runoff from the stacking facility shall be contained, and the structure shall be designed to prevent excess seepage.

Manure stacking facilities shall be constructed of durable material and designed to withstand internal or external pressures including hydrostatic uplift loads and imposed surface loads. The structure shall be designed to accommodate equipment for loading and emptying. Floors shall be moderately sloped away from the entrance.

5.5. Inlet, Outlet and Transfer Facilities

Inlet, outlet and transfer facilities refer to piping, valving, pumps, mobile tanks or any other equipment used to move manure from one location to another.

Equipment used for the transfer of manure shall be corrosion resistant and designed to protect against freezing and puncture from ice during winter conditions.

Splash pads or aprons made of concrete or riprap shall be used to prevent erosion of pond liners at inlet structures. Splash pads shall have a surface area of no less than 6 square feet.

Transfer pipes shall be sloped to allow for good drainage without plugging and have clean out ports every 200 feet and at all junctions, or other provisions to clear blockages.

Provisions shall be made for backflow prevention, such as top loading into storage structures or installing an air valve to prevent a siphon. Check valves used solely to prevent backflow shall not be used; however, they can be used in conjunction with other backflow prevention methods.

Manure storage structures shall have provisions which allow for emptying the manure from the structure. This may include access ramps or ports and may also require platforms for equipment such as pumps or agitation equipment. Only piping that allows for transfer to manure storage, hauling or spreading equipment shall be allowed. Earthen storage ponds shall have provisions for emptying that will prevent damage to the liner. Driving of pumps and equipment directly on the liner is not acceptable.

There shall be no outlet that can automatically release manure from the storage structure. Valves that are under pressure from manure storage structures shall be locked to prevent accidental discharge.

5.6. Diversions

Clean water diversions are used to route clean water away from concentrated livestock areas and manure storage areas. Dirty water diversions are used to route manure laden water and runoff to containment structures.

Diversions shall be used to ensure that clean water is diverted, as appropriate, from the production area.

Diversions shall be constructed of relatively impervious material and be adequately designed to form a stable structure. The diversion shall be designed to carry runoff from a 25-year, 24-hour rainfall event for the watershed that it drains and have, at a minimum, an additional 0.3 feet of freeboard. The ridge height of the diversion shall have a minimum settlement factor of 10 percent. The ridge shall have a minimum top width of 4 feet.

Side slopes should not be steeper than 3 horizontal:1 vertical, and slopes of 6 horizontal:1 vertical are recommended where diversions must be crossed with equipment.

The channel grade shall be designed such that the velocity will not cause excess erosion for the type of soil and planned vegetation or lining. The maximum acceptable channel velocity shall range from 2 feet per second for sandy soils with no vegetation to 3.5 feet per second for channels with high clay soils and vegetation.

Proper maintenance shall be used to maintain the diversion's ridge height, capacity, designed cross section, stabilizing vegetation and, if applicable, storage capacity.

(--) Manure and Process Wastewater Conveyance Structures:

(a) Manure and process wastewater conveyance structures shall be designed and constructed to prevent exceedance of applicable water quality standards or impairment of existing or classified beneficial uses, existing or potential drinking water sources or withdrawals or reasonably likely future public drinking water system withdrawals, or waters on the States 303(d) list. Conveyances shall not be constructed across waters of the state. Conveyances shall be constructed of materials that can withstand environmental conditions, including but not limited to burial (overburden), exposure to sunlight (ultraviolet radiation), erosion, burrowing animals, vehicular traffic, and excavation. Conveyances shall be constructed of materials that can withstand operational conditions, including but not limited to flow blockage, hydraulic gradient, corrosion, and clean-out equipment.

(b) Leakage of process wastewater shall be limited to the maximum extent practicable through the use of very low permeability earthen materials and proper compaction or through the use of synthetic conveyance materials.

(c) The Department shall be satisfied that wastewater conveyance structures have been designed and constructed to prevent exceedance of applicable ground water standards or impairment of existing or classified beneficial uses. Such a demonstration shall be prepared by a qualified professional geologist, groundwater hydrologist, or professional engineer

registered in the State of North Dakota, and shall include a completed analysis of one-dimensional transport or water within the Vadose zone of the conveyance structures, and an analysis of the fate of nitrate-nitrogen that seeps below the conveyance structures to ground water.

5.7. Water Spreading

Water spreading systems are a method of containing and utilizing runoff from open lot livestock facilities.

The water spreading system shall, at a minimum, be able to contain the anticipated runoff volume from a 25-year, 24-hour rainfall event. Nutrients in the runoff shall be utilized by the crops grown within the water spreading area.

The nutrients in the runoff shall be evaluated based on sampling of the livestock lot runoff or on published values of nutrient concentration in runoff. These values can be found in sources such as the USDA NRCS Agricultural Waste Management Field Handbook, Table 4 -IOa "Nitrogen Content of Cattle Feedlot Runoff."

The soils within the water spreading area shall be sampled for nitrogen and phosphorous prior to installation of the system. Soils shall be sampled at a minimum of once every three years of operation to determine if there is an excess buildup of nutrients in the soil, and the records shall be maintained on file.

If soils show a trend of high nutrient concentrations, or if ground water within the vicinity shows impacts attributable to the system, alternative measures to control the manure and runoff shall be implemented.

Sites located in a sensitive groundwater area (see attached Figure 1) are not acceptable for water spreading systems.

The system shall be designed to ensure: (1) the runoff is distributed over the water spreading area, and (2) nutrients are properly utilized. If the soils are inadequate to ensure proper distribution of runoff, the site is not acceptable. For example, coarse-textured soils with high percolation rates are not acceptable for water spreading systems.

5.8. Other Methods of Manure Treatment or Manure Handling Systems

Other methods of manure treatment or manure handling systems such as anaerobic lagoons, aerobic lagoons, anaerobic digesters, etc. will be reviewed on a case-by-case basis and based on industry standard specifications. The Department shall be consulted on these systems prior to final design completion.

(--)
When irrigation disposal of process wastewater is employed, the irrigation application rate should not exceed the estimated soil infiltration rate, provided that the nutrient requirements of the crop are not exceeded. For flood irrigation, tailwater facilities shall be provided. Irrigation application rates shall be adjusted to avoid significant ponding of concentrated runoff in surface depressions or seasonal drainage ways.

(--)
There shall be no discharge to waters of the state resulting from land application activities when the ground is frozen or saturated. Land application(s) shall not occur during rainfall events, except in the event to prevent a catastrophic impoundment or retention structure failure.

(--) Sprinkler type land application systems shall be equipped with a backflow prevention device or an air gap between the irrigation well pump at the water source and the point of injection of the process wastewater. This equipment shall prevent process wastewater from being pumped, drained or siphoned into the irrigation water source if fresh water is being applied along with the wastewater. Any system, which is in compliance with the requirements of the North Dakota Pesticide Act, shall be deemed in compliance with this requirement.

(--) Groundwater quality shall be tested annually at the facility water well(s), including irrigation wells at the land application site(s) to determine whether contamination has occurred. Water quality testing shall include at a minimum, total nitrogen, ammonia nitrogen, nitrate nitrogen, phosphorous, total dissolved solids and fecal coliform. The data shall be submitted to the Department annually with the appropriate chain of custody forms.

(--) Any new retention structures or impoundments shall not be constructed in areas where the shallow groundwater is less than 150 feet below the bottom of the structure.

(--) Retention structures or impoundments shall be equipped with irrigation systems capable of dewatering the retention structures or impoundments. Land application rates must take into account the nutrient contribution of any land-applied manure, synthetic fertilizers, and irrigated water. If land application is utilized, the following requirements shall apply.

(--) Post-application evaluation. The Director may require larger facilities to perform soil testing after land application to determine the transport and fate of applied nutrients and wastes to determine if the loading rates used are appropriate for the assimilative capacity of the soil for BOD, salts, metals, and other pollutants of concern and the crop nutrient needs for nitrogen and phosphorus. Analytical results shall be submitted to the Director and used to amend the waste disposal plan as needed.

(--) It shall be considered an emergency operation and maintenance procedure for a facility that is in danger of imminent overflow due to Catastrophic Events or Chronic Rainfall, to discharge wastewaters to land application sites for filtering prior to discharging to waters of the state. Provided such discharges are through irrigation systems or properly designed and constructed spillways designed to prevent erosion of the structural integrity of the storage facility.

(--) Facilities including ponds, pipes, ditches, pumps, diversion and irrigation equipment shall be maintained to insure ability to fully comply with the terms of these regulations and the nutrient management plan.

(--) Adequate equipment or land application area shall be available for removal of such manure and wastewater as required to maintain the retention capacity of the facility for compliance with these regulations.

(--) a rain gauge shall be kept on site and properly maintained. A log of all measurable rainfall events shall be kept and recorded with other required documentation.

SECTION 6. OPERATION AND MAINTENANCE

6.1. Objective

Livestock facilities requiring a permit pursuant to NDAC Chapter 33-16-01 and NDAC Chapter 33-16-03.1 shall be operated and maintained so they continue to operate as designed. Particular attention shall be paid to: (1) the handling and storage of manure and process wastewater, (2) measures to prevent the unplanned release of manure, and (3) dead animal disposal. Chemicals and other contaminants handled on site shall not be disposed of in any manure storage or treatment system, unless it is designed for that purpose. In addition, specific records shall be maintained to document the implementation and management of the minimum elements needed for operation.

6.2. Required Operation, Maintenance and Inspections

1. CAFOs shall conduct the following routine visual inspections of the production area:

- a. Weekly inspections of all storm water diversion devices, runoff diversion structures and devices channeling runoff to the manure storage structure;
- b. Daily inspection of water lines, including drinking water or cooling water lines; and
- c. Weekly inspections of the manure storage structures noting the level of liquid in the structure as indicated by the depth marker.

2. All open manure storage structures shall maintain a depth marker which clearly indicates the minimum capacity necessary to contain the runoff and direct precipitation from a 25-year, 24-hour rainfall event, or for swine, chicken, turkey and veal calf operations constructed after April 14, 2003 ~~2004~~, a depth marker which clearly indicates the minimum capacity necessary to contain the runoff and direct precipitation from a 100-year, 24-hour rainfall event;

[\(The Federal Requirement is very specific to the effective date of the regulations or New sources, which is April 14, 2003, NOT 2004.\)](#)

3. Any deficiencies discovered during the inspections listed in item 1 above shall be corrected as soon as possible; and

4. Chemicals or other contaminants handled on site shall not be disposed of in a manure storage or treatment structure unless it is specifically designed for that purpose.

6.3. Utilization of Manure Other Than Land Application

1. If manure, litter or process wastewater is not land applied, it shall be either beneficially reused (e.g., as fuel for energy production, compost, etc.) or properly disposed of in a landfill.

2. CAFOs shall keep records of how the manure, litter or process wastewater was reused or disposed. The records shall include the date, location, volume of manure and the method of reuse or disposal.

3. Manure is generally prohibited from being disposed of in a landfill; however, in certain circumstances, the Department can allow for such disposal if the landfill owner agrees.

6.4. Dead Animal Disposal

Dead animals shall be disposed of in a manner acceptable to the Board of Animal Health and in accordance with NDCC Section 36-14-19 (attached). Dead animals shall be disposed of in a manner that will not cause a detrimental impact to waters of the state and air quality. Dead animals shall not be disposed of in any liquid manure or process wastewater system, unless the Department-approved system is designed for such a purpose.

(--) Mortality, animal waste, and carcass disposal

(1) Animal waste and carcass disposal requirements.

(a) Dead animals and animal wastes, including nursery pigs and placentas, shall be disposed of properly and in a manner that is protective of human health and the environment.

(b) Facilities that generate small animal waste items, such as dead nursery pigs and placentas, shall prevent such animal wastes from entering the wastewater treatment system.

(c) No dead animals shall be left out on the ground for any extended period of time, especially if visible from municipal roads or habitable structures, and shall be promptly placed in approved temporary storage as a part of proper carcass disposal methods, except during extreme climatic events that prevent prompt movement of carcasses.

(2) Carcass disposal plan. All new and existing CAFOs with an animal unit capacity greater than 1,000 animal shall be required to develop and submit a Carcass Disposal Plan as part of these regulation subject to review and approval by the Department. At a minimum, the Carcass Disposal Plan shall contain the following:

(a) Normal mortality rate and average number of expected dead animals per year.

(b) Step-by-step description of how the operator will store, transport, and dispose of dead animals during normal mortality events.

(c) Step-by-step description of how the operator will store, transport, and dispose of dead animals during extreme mortality events, including provisions for emergency response, public notification of human-animal transferable disease, prevention of epidemic events, employee training, name and telephone number of veterinarian dedicated to facility, and other information as determined by the Director.

(d) Provide step-by-step description of how the sow and nursery facilities will be maintained and operated to prevent the occurrence of small animal waste from entering the wastewater treatment system, including the use of inspection, animal removal, placenta removal, traps, and screens.

(e) Obtain agreement with rendering company to take small animal waste, including but not limited to, dead nursery pigs and placentas.

(3) Carcass disposal options. Accepted methods of carcass disposal shall be limited to the following:

(a) Temporary storage. Dead animals may be temporarily stored on-site until an appropriate disposal activity can occur, but shall not be stored on-site longer than 48 hours. If refrigerated, the carcasses may be stored longer than 48 hours under extreme conditions, if approved by the Division.

(i) Facilities with an animal unit capacity between 300 and 999 animals shall provide temporary storage that, at a minimum, is sealed with lids and maintained to prevent pests and odors.

(A) If normal mortality rate is less than five percent (5%), and

(B) If average carcass weight of less than 300 pounds.

(C) If normal mortality rate is greater than 5%, then the facility may be required to use refrigerated storage.

(D) If average carcass weight is greater than 300 pounds, the facility may be allowed to store in a covered area adequately fenced to restrict access by carnivores.

(ii) Facilities with an animal capacity greater than 1000 animals shall provide on-site refrigerated storage containers that are sealed and maintained to prevent pests, odors, and vandalism.

(iii) Storage containers shall be periodically cleaned and disinfected.

(iv) Storage containers shall have a storage capacity capable of holding at least three (3) days of carcasses resulting from normal mortality and shall be constructed of materials that will withstand the weight associated with that capacity, including the stresses expected from the daily placement and removal of carcasses.

(v) Beef and dairy facilities may not be required to use a storage container, but shall be required to have, at a minimum, a carcass storage area that is:

(A) fenced to restrict access by carnivores, and

(B) built to minimize stormwater run-on and runoff, and

(C) is covered to prevent stormwater from falling on and collecting in the carcass storage area.

(b) Rendering. The operator shall be responsible for contracting with a rendering service that will properly transport and dispose of dead animals expected during normal and extreme mortality events.

(i) The name, address, and telephone number of the contracted rendering service shall be included in the permit application.

(ii) The operator shall be responsible for choosing a rendering service that provides appropriate transportation vehicles.

(A) Rendering transportation vehicles shall be capable of containing carcass liquids.

(B) Rendering transportation vehicles shall not leak rotting, putrid flesh and carcass liquids along the transportation route, especially on county maintained roads and bridges, and that route shall not cause undue nuisance or harm to county residents and businesses, such as leakage of putrid flesh or carcass fluids.

(c) Burial. Burial shall only be allowed as an emergency method of carcass disposal at confined animal feeding operations when no reasonable alternative exists and the carcass disposal plan contains specific measures and practices which will be utilized to protect the ground and surface waters of the state, as well as provide step-by-step description of disease vector controls and odor and pest controls, as follows:

(i) A facility map shall be developed that shows the exact location of all existing and proposed burial sites and shall be submitted to the Department with the permit application form.

(A) Updated facility maps showing existing, new, and proposed burial sites shall be provided to the Division on an annual basis with the annual permit fee.

(B) The facility map shall show depth of burial at each site.

(ii) The operator shall not rely solely on burial as the method of carcass disposal during normal operation of the facility, nor as the only disposal method during catastrophic death events.

(iii) Carcasses shall be immediately covered with at least three (3) feet of soil.

(iv) In no event shall burial be used by a CAFO with greater than 1,000 animal without a carcass disposal plan that satisfactorily addresses disease control, pests, surface and groundwater pollution prevention, and odors.

(d) Composting. Composting of dead animals or carcasses shall not be allowed, except for poultry, which may be permitted on a case-by-case basis by using minimum design standards listed in NRCS-Agricultural Waste Management Field Handbook and those requirements under the North Dakota Bio-Solids Regulations.

6.5. Records Required to be Maintained

Each CAFO shall maintain on site complete copies of the information listed below and shall maintain on site a copy of its most current nutrient management plan and make it available to the Department or its designee, upon request. This information shall be maintained for a period of five years from the date created. The CAFO must make the following records available to the Department for review upon request:

1. Records documenting the visual inspections (Section 6.2.1);
2. Weekly records of the depth of the manure and process wastewater in the liquid manure storage structure as indicated by the depth gauge in the storage structure;
3. Records documenting any actions taken to correct deficiencies (Section 6.2.3). Deficiencies not corrected within 30 days must be accompanied by an explanation of the factors preventing immediate correction;
4. Records of mortalities management and practices used (Section 6.4);
5. Records documenting the current design of any manure storage structures, including solids accumulation volume, design treatment volume, total design volume and the approximate number of days of storage capacity;
6. Records of the date, time and estimated volume of any overflow; and
7. Records documenting the land application of manure (Section 7.7).

(A) For permitted Large Dairy, Beef, Cattle, Swine, Poultry, and Veal Calf CAFOs, the following complete records for land application sites:

(i) Expected crop yields:

(ii) The date(s) manure or process wastewater is applied to each land application site;

(iii) Weather conditions at the time of land application and for 24 hours prior to and following application;

(iv) Test methods used to sample and analyze manure, process wastewater, and soil;

(v) Results from manure, process wastewater, and soil sampling and analysis;

(vi) Explanations of the basis for determining manure and process wastewater application rates, in accordance with the nutrient management plan;

(vii) Calculations showing the total nitrogen and phosphorus that will be applied to each land application site, including sources other than manure or process wastewater;

(viii) The total amount of nitrogen and phosphorus actually applied to each land application site, including documentation of calculations for the total amount applied;

(ix) The method used to apply the manure and process wastewater;

(x) Date(s) of manure application equipment inspection.

(--)
Records documenting any actions taken to correct deficiencies. Deficiencies not corrected within 30 days shall be accompanied by an explanation of the factors preventing immediate correction;

(--)
Records of mortalities management and practices used by the large CAFO to meet the requirements of subsection 6.4;

(--)
Transfer of Manure or Process wastewater to Third Parties – Prior to transferring manure or process wastewater to other persons, Large CAFOs must provide the recipient of the manure or process wastewater with the most current nutrient analysis. The analysis provided must be consistent with the requirements of the nutrient management plan. Large CAFOs must retain for five years records of the date, recipient name and address, and approximate amount of manure or process wastewater transferred to another person.

6.6. Annual Reporting Requirements

The owner/operator of a CAFO shall submit an annual report to the Department which includes:

1. The number and type of animals whether in open lots or confined under roof (beef cattle, broilers, layers, swine weighing 55 pounds or more, swine weighing less than 55 pounds, mature dairy cows, dairy heifers, veal calves, sheep and lambs, horses, ducks, turkeys, other);
2. Estimated amount of total manure generated in the previous 12 months (tons/gallons);
3. Estimated amount of total manure transferred to another party in the previous 12 months (tons/gallons);
4. Total number of acres for land application covered by the Nutrient Management Plan;
5. Total number of acres under control of the facility that were used for land application of manure in the previous 12 months;
6. Summary of all manure discharges from the production area that have occurred in the previous 12 months including date, time and approximate volume; and
7. A statement indicating whether the current version of the Nutrient Management Plan was developed or approved by a certified nutrient management planner.

6.7. Operation and Maintenance (O&M) Plans and Standard Operating Procedures (SOPs)

Operation and maintenance plans mean a written description of the equipment, methods and schedules for: (1) inspection, monitoring, operation and maintenance of the animal feeding operation (manure storage structures, water pollution control structures and the production area); and (2) controlling water pollution and air pollution including odors sufficient to protect the environment and public health. Standard operating procedures are instructions indicating the proper manner to complete a specific task.

1. CAFOs shall have written O&M plans for routine maintenance and inspections of the livestock manure handling system. These shall include, but are not limited to, manure storage structures, diversions, water pollution control structures, and transfer and land application equipment.

General site inspections should note any areas where seepage, erosion, rodent infestation or degradation may be occurring at all livestock manure handling system structures, diversions, and transfer and land application equipment. The plans shall describe how manure will be sampled and tested.

2. The Department may specify that a facility have written SOPs for other situations related to the proper operation of the manure handling system. If required by the Department, these may include, but are not limited to:

- a. The sampling and testing of any water wells or monitoring wells;
- b. Any testing necessary to determine if manure may be impacting surface water or groundwater; and

c. Any emergency procedures for an unplanned release of manure including an overflow or breach of a manure storage structure.

3. When required to be completed, SOPs shall include the following information:

- a. A description of the planned action;
- b. The equipment needed for each action and its availability;
- c. The frequency each action will be performed;
- d. Scheduled downtime for the facility, if any; and
- e. Any necessary prior arrangements with contractors.

SECTION 7. NUTRIENT MANAGEMENT PLANS

7.1. Objective

The objective of the Nutrient Management Plan is to ensure livestock manure, including bedding, litter, waste feed and process wastewater, and runoff from livestock areas is land applied to crop or grass land at an Agronomic rate and at a rate the nutrients will be utilized by the vegetation grown. The manure shall be handled in a manner so as not to impact ground or surface waters of the state, violate water quality standards, violate air quality standards while it is stored on site, and minimize odors to residences or public areas during land application.

The Department understands the Nutrient Management Plan is based on estimated realistic yield goals which can vary depending on weather conditions. Manure and soil sampling as well as record keeping is necessary to verify proper land application of manure.

(The federal requirements state that yield goals will be bases on realistic yields.)

7.2. General Conditions

1. Manure, process wastewater and runoff shall be collected and stored in such a manner that it will not:

- a. Drain into surface waters, including lakes, streams, coulees, ditches, channels or other waterways that convey concentrated water flow;
- b. Detrimentially impact groundwater; or
- c. Cause air quality violations.

Manure collection and storage shall comply with the design requirements of Section 5.

2. Manure shall be transported in a manner where it will not leak or spill on to public roads or into areas where it could enter surface or ground water.

3. Manure shall be land applied at rates where the nutrients will be used by the crop grown. Land application shall not impact waters of the state and precautions shall be used to minimize odors to residences or public areas where people may be present.

7.3. Planning

1. Nutrient Management Plans shall specify the form, source, amount, timing and method of application of nutrients on each field to achieve realistic production goals, while minimizing nitrogen and/or phosphorous movement to surface or ground water. The timing and method of nutrient application should correspond as closely as possible with plant nutrient uptake characteristics, while considering cropping system limitations, weather and climatic conditions and field accessibility.

2. Fields where manure will be applied during frozen conditions shall be identified. Additional precautions that will be used to ensure manure or nutrients will not run off with spring rain or snow melt shall be documented.

3. A nutrient budget for nitrogen and phosphorous that considers all potential sources of these nutrients shall be developed.

4. Realistic yield goals shall be established based on soil productivity information and historic yield data from the farm land or county wide average. If the yield goal exceeds NDSU Extension Service or NRCS recommendations or is 20 percent higher than county record or historical crop yield data, the reasons for the increased yield goal shall be documented. For new crops or varieties, industry yield recommendations may be used until documented yield information is available in the area of the facility.

5. Nutrient planning shall be based on current soil and manure test results and developed in accordance with NDSU Extension Service guidance. Soil and manure tests are considered current if they are no older than ~~three~~ one years for livestock facilities identified as needing to develop a Nutrient Management Plan by the Department or ~~one-year~~ 45 days for CAFOs.

(The Department has not set realistic time frames for manure test, or soils. Normal sampling of soils should be done in the spring and fall of each year, with a manure analysis being performed as close to the application date as possible, but not to exceed 45 days. The characteristics of the manure and effluent can change dramatically in a short period of time, thus limiting the volume to be applied.)

6. BMPs shall be implemented to manage nutrients as efficiently and effectively as possible.

7.4. Sampling and Testing of Manure and Soil

1. Soil samples shall be collected and prepared according to NDSU Extension Service guidance. Laboratories shall use testing procedures accepted by NDSU to perform soil sample analyses.

2. Soil testing shall include analyses for soil organic matter, nitrogen, and phosphorous. ~~If there is concern of, heavy metals and salts. building up in the soil, the Department may require testing of the soil for these materials.~~

(--) Compliance monitoring:

(a) No application of manure, wastewater, or synthetic fertilizers will be made if residual NO₃-N levels in the root zone and appropriate N credits (as defined by North Dakota State University Extension) exceed the agronomic rate of N application for the crop to be grown.

(b) No application of manure or wastewater will be made if the NaHCO₃ extractable P in the top foot of soil exceeds 100 ppm unless a site-specific analysis shows that soil erosion, movement off-site or migration to the subsurface will not occur.

(c) If the NO₃-N levels below the root zone increases by 5 to 10 ppm in any one foot soil increment above the baseline level established at the initiation of the nutrient management plan, investigation of compliance with the approved nutrient management plan for manure and wastewater application will occur.

(d) Soil samples shall be submitted to a soil-testing laboratory.

(e) Chemical/nutrient parameters and analytical procedures for laboratory analysis of soil samples from process wastewater and manure application sites shall include the following, but is not limited to:

(i) Nitrate reported as nitrogen in parts per million (ppm);

(ii) Phosphorus (water soluble, ppm), deionized water extractant;

(iii) Potassium (extractable, ppm);

(iv) Sodium (extractable, ppm);

(v) Magnesium (extractable, ppm);

(vi) Calcium (extractable, ppm);

(vii) Soluble salts/electrical conductivity (dS/m)--determined from extract of 2:1 (v/v) water/soil mixture;

(viii) Soil water pH.

(f) The operator shall annually analyze at least one composite sample comprised of no less than 10 representative samples of wastewater and one composite sample comprised of no less than 10 representative sample of solid manure for total nitrogen, total phosphorus, and total potassium, and salinity within 30 days of application time.

(g) Results of initial and annual soils, waste water and solid manure analyses shall be maintained on-site as part of the nutrient management plan.

3. Manure samples shall be collected and prepared according to NDSU Extension Service guidance or industry standard methods, as approved by the Department. Manure testing shall include analyses for nitrogen, ammonia, and phosphorous.

4. If the operator uses feed or feed additives with high concentrations of salts or heavy metals, the Department may require the manure be tested for these materials. The same is true if there is a reasonable expectation that the manure might contain elevated salts, metals or other potentially harmful materials.

(It will be interesting to see if the Department is provided this information or if they are ever aware of the feed rations. Unless the Department is going to require Mass Balancing from CAFO's, the majority of CAFO's considers their feed rations to be "proprietary information" and will not divulge it. This is especially true with Swine facilities.)

5. Manure to be land applied shall be sampled from each manure storage structure that holds manure from separate types of livestock or from similar types of livestock in different phases of growth.

(--) Soil Sampling frequency:

(a) Sampling procedures shall employ accepted techniques of soil science for obtaining representative and analytical results.

(b) Soil sampling should occur twice a year, once for deep sampling to assess NO₃-N in the soil system and once for shallow sampling to assess agronomic N rates, phosphorus, metals, and salt levels. Soil sampling during the winter when the ground is frozen and during the summer when the crop is growing is often infeasible and will not substantially improve agronomic rate determination. The following is required:

(i) Deep soil samples will be taken within 60 days after annual crop harvest, or in the fall for perennial crops, prior to any post-season manure, wastewater, or synthetic fertilizer applications.

(ii) Shallow soil samples will be taken within 60 days before crop planting each year, or in the spring for perennial crops, to determine the agronomic rate of manure, wastewater, or synthetic fertilizer application.

(--) Soil Sampling Depth:

(a) Deep Sampling Depth:

(i) The rooting depth of annual crops (i.e., wheat, corn, sorghum, etc.) will be considered to be six feet unless rooting depth restrictions occur due to a restrictive layer present in the soil as defined below.

(ii) the rooting depth of perennial crops (i.e., alfalfa, grasses, etc.) will be considered to be ten feet unless rooting depth restrictions occur due to a restrictive layer present in the soil as defined below.

(iii) the presence, depth, or absence of a growth restrictive layer in the soil profile will be determined by a site-specific pedological soil analysis performed by a qualified soil scientist (i.e. NRCS Soil Scientist or equivalently trained individual).

(iv) Sampling below the root zone will be taken from a 2 foot soil depth below the root zone in 1 foot increments.

(v) soils that are classified as sandy, sandy loam, or loamy sand in texture throughout the entire soil profile, a sampling depth of 12 feet is required.

(b) Shallow sampling is defined as:

(i) Shallow sampling will be in increments of one foot to a depth of at least 2 feet.

(--) **Soil Sampling Intensity:**

(a) One soil core per 10 acres or a minimum of 10 cores per field of 160 acres or an additional number of cores proportionate to the size of the filed over 160 acres should be collected to form a composite sample for each depth increment.

7.5. Application Rates to Meet Nutrient Requirements

1. The manure application rate shall not exceed the recommendations for nitrogen and phosphorous based on either the North Dakota Phosphorous Index (P1), as developed by the NRCS, or NDSU Extension Service recommendations based on soil testing.
2. The P1 allows manure and other sources of nutrients to be applied at rates to meet the nitrogen needs of a crop if the P1 rating is low or medium. If the P1 is high, it allows manure and other sources of nutrients to be applied at rates to meet the phosphorous removal in the crop biomass. If the P1 is very high, it requires that no manure be applied to that field. Manure shall not be applied to fields where the soil test phosphorous exceeds 125 parts per million (ppm) (250 lbs per acre).
3. Manure and other sources of nitrogen must not be applied at rates that exceed:
 - a. The recommended nitrogen application rate during the year of application; or
 - b. The estimated nitrogen removal in harvested plant biomass for legumes during the year of application.

c. At no time, shall the application of manure exceed the agronomic rate of the crop planted

4. Nutrient Management Plans shall contain a field-specific assessment of the potential for nitrogen and phosphorous transport from the field. The assessment for phosphorous can be done using the phosphorous screening tool and soil tests, or the P1 assessment.
5. If sewage sludge or swine effluent is applied, the accumulation of potential pollutants (including arsenic, cadmium, chromium, copper, lead, nickel, mercury, selenium and zinc) in the soil shall be monitored in accordance with 40 Code of Federal Regulations, Parts 403 and 503, and any applicable state and local laws or regulations.

7.6. Precautions to Prevent Surface Water and Air Quality Impacts

1. When land applying manure, the operator shall use reasonable judgment and take adequate precautions to prevent surface water impacts and minimize odors to nearby residences and public areas. ~~where people are present.~~

CAFOs generate odor, air, and water pollution, all of which have a direct impact on neighboring properties. It is the duty and obligation of the Department/Division to protect surface water impacts and minimize odors to "established residences" whether continuously occupied or not. The Department's usage of "reasonable judgment" leaves

the interpretation unclear and potentially unenforceable. The Department presumes to give an absentee landowner less rights, yet the direct environmental impact as well as diminished property value is the same as those continuously occupied.

With all due respect, does the Department have the resources to monitor and police every residence and public area to know when people are present? There are a number of landowners, who because of health reasons, financial considerations, etc., do not reside year-round on their property. Does this mean that it is justifiable for a CAFO to impact the environment and reduce neighboring land values 30% and more while these landowners are not home, but it is NOT justifiable when the landowners arrive back home? Why does an absentee landowner have less rights than someone who is there all the time; are they not entitled to enjoy their property and way of life when there as anyone else?

Reference note 36: Key Findings Data, Missouri, were collected on 99 rural land, non-family real estate transactions. A 3-mile proximity to a CAFO has a direct impact on property values; average loss approximately \$112 per acre.

2. On land controlled by the operator, manure shall not be applied closer than 100 feet to any down-gradient surface waters, open tile line intake structures, sinkholes, agricultural well heads or other conduits to surface waters, unless:

- a. A 35-foot wide vegetated buffer on which there are no applications of manure is used;
- b. The facility's owner/operator demonstrates that a setback or buffer is not necessary because implementation of alternative conservation practices or field-specific conditions will provide pollutant reductions equal to or greater than the reductions achieved by the 100-foot setback.

3. Manure shall be injected or incorporated within eight hours if applied within 1/2 mile of ~~a occupied~~ residence (other than the owner's residence), building or public area where people may be present. The operator shall be required to inject or incorporate the manure into the soil if manure is applied in a manner such that it causes an odor reading (as measured with a scentometer) of 7 or greater within 100 feet of ~~a occupied~~ residence, building, or public area ~~where people are present, for two or more days within a 10-day period.~~ A plan to minimize excess odors will be required before future application of manure in this area.

4. Manure shall not be applied to frozen, snow covered or saturated soils if there is a likelihood of runoff. However, manure can be land applied during frozen conditions provided it is applied on land where runoff is contained and does not drain off during spring runoff. The Department recommends operators consider land with slopes of less than 6 percent, where there is stubble or vegetative cover and less than 8 inches of snow on the ground surface. Conservation measures such as terraces, contour strips and reduced tillage effective at reducing runoff.

5. When manure is being land applied, the equipment operator shall periodically inspect equipment for leaks. This shall be done daily for trucks or tanks used to handle solid or liquid manure. For an umbilical cord system or irrigation system, a measurement device shall be used to continuously check pressure so leaks can be found and pumps shut down immediately.

7.7. Record Retention

Owners/operators of livestock facilities requiring a permit pursuant to NDAC Chapter 33-16-01 and NDAC Chapter 33-16-03.1 shall maintain on site a copy of the Nutrient Management Plan, the facility design plan for the manure handling system and any other required information listed in items 2, 3 and 4 below. The plan and information shall be available to the Department for review upon request.

2. CAFOs shall maintain complete copies of the following information on site for a minimum of five years from the date they are created:

- a. The crops grown and ~~expected~~ realistic crop yields;
- b. The date(s) manure, litter or process waste water is applied to each field;
- c. Weather conditions at time of application and for 24 hours prior to and following application;
- d. Test methods used to sample and analyze manure, litter, process wastewater and soil;
- e. Results from manure, litter, process wastewater and soil sampling;
- f. An explanation of how the manure application rates were determined in accordance with the standards established by the Department;

(--) The volume of process wastewater or manure land applied

- g. Calculations showing the total nitrogen and phosphorus to be applied to each field, including sources other than manure, litter or process wastewater;
- h. Total amount of nitrogen and phosphorus actually applied to each field, including documentation of calculations for the total amount applied; The method used to apply the manure, litter or process wastewater;
- i. Inspection of manure application equipment including method, frequency, dates and repairs made if leaks were found; and
- j. Setbacks, vegetated buffers or other alternative practices used when land applying manure near surface water or potential conduits to surface water.

3. If manure is transferred from a CAFO to other persons or entities not associated with the facility, the following conditions shall apply, and records shall be maintained:

- a. Owners/operators shall provide the recipient of the manure, litter or process wastewater with the most current nutrient analysis prior to transfer;
- b. The analysis provided shall be consistent with the requirements of Section 7.4; and
- c. The owners/operators of the CAFO shall retain records for five years after the transfer date documenting the recipient's name and address, the approximate amount of manure transferred, and the date the manure was transferred.

4. A livestock facility which is not a CAFO and requires departmental review under NDAC Chapter 33-16-03.1, shall maintain complete copies of the following information on site for a minimum of three years from the date created:

- a. The crops grown and expected yields;
- b. The date(s) and rates manure, litter or process wastewater is applied to each field;

- c. Results from manure, litter, process wastewater and soil sampling;
- d. Setbacks, vegetated buffers or other alternative practices used when land applying manure near surface water or potential conduits to surface water.

7.8. Back-flow Prevention

Irrigation equipment used to apply manure shall have back-flow prevention to stop manure from siphoning back into the irrigation source water.

7.9. Submitting Information for a Nutrient Management Plan See Section 3.2.2.

SECTION 8. GROUND WATER MONITORING

8.1. Objective

The Department ~~may~~ shall require ground water monitoring at livestock facilities to:

1. Define the hydrogeologic characteristics of the site (e.g., ground water elevation, ground water flow direction, ground water quality); and
2. Evaluate potential impacts to ground water quality resulting from the facility's operations.

Questions regarding ground water sampling can be directed to the Department. Additional information regarding well installation and ground water sampling is presented in the Department's Guidelines for Installing Ground Water Monitoring Wells at Confined Livestock Facilities (North Dakota Department of Health, July 2001).

8.2. Ground Water Monitoring Program for Livestock Facilities

The Department ~~may~~ shall require a ground water monitoring program be implemented for livestock facilities that meet any of the conditions listed in Section 4.3.1.

8.3. Ground Water Monitoring Plan

Facilities requiring ground water monitoring shall submit a ~~brief~~ Ground Water Monitoring Plan (GWMP) to the Department for review and approval prior to commencement of animal feeding operations. The GWMP shall describe the proposed well locations, the SOPs that will be followed during well installation and sampling and the proposed analytical program.

8.4. Well Location and Installation

A ground water monitoring network for a livestock facility consists of wells on or near the site from which water samples can be collected to determine ground water elevation, flow direction and quality. The ground water monitoring network shall consist of a minimum of three wells. Generally, one well shall be located up gradient, and two wells shall be located down gradient of the facility's livestock and manure storage structures. Additional monitoring points may be required by the Department to detect any changes in water quality resulting from a facility's operations.

All ground water monitoring wells shall be installed by a state-certified monitoring well or water well contractor and shall be constructed in accordance with NDAC Chapter 33-18-02 (Ground Water Monitoring Well Construction Requirements). All monitoring wells shall be surveyed at:

1. The elevation of the ground surface at the well locations;
2. The elevations of the top of the well casing; and
3. The well locations in relation to each other and any livestock manure storage areas.

The elevation data shall either be reported in feet above mean sea level or referenced to an arbitrary site benchmark.

With prior department approval, ground water monitoring can be conducted by using existing on-site wells that supply water to the facility, provided information is available to evaluate whether or not the wells were constructed in a manner that will accomplish the objectives of this section.

8.5. Ground Water Monitoring Frequency and Sampling Parameters

8.5.1. Sample Frequency

To evaluate the background water quality for new facilities, a minimum of two sampling events shall be conducted prior to commencement of facility operations and on-site storage of livestock manure. A sampling event consists of one sample collected from each ground water monitoring well. The sampling events should be conducted at least two weeks apart, if feasible.

The ground water monitoring wells shall be sampled a minimum of two times per year while the facility is operating. The Department may require more frequent sampling if necessary. For example, additional sampling may be required at sites located within a sensitive ground water area, when the wells are initially installed at a site (to determine background water quality) or when sample results indicate the facility may be impacting ground water. The Department may specify the months during which sampling shall be done.

Following two years of monitoring, the Department may consider reducing the sampling frequency if requested by the owner. The Department will evaluate all ground water monitoring data prior to making such a determination.

8.5.2. Ground Water Sample Collection Procedures

Ground water samples shall be collected following department-approved SOPs, which include implementation of appropriate quality assurance and quality control (QAIQC) practices. The SOPs will be implemented to minimize the potential for cross contamination of monitoring wells, ensure the collection of a representative ground water sample and chain of custody to maintain sample integrity during transportation to a laboratory.

8.5.3. Required Analysis

Ground water samples shall be analyzed by a laboratory certified by the Department's Division of Chemistry. At a minimum, all samples shall be analyzed for:

1. Nitrate plus nitrite as nitrogen;
2. Ammonia;
3. Total kjeldahl nitrogen;
4. Chloride;

(--) E-Coli

(--) Fecal Bacteria

5. Sulfate; and
6. Laboratory specific conductance.

Additional parameters may be required by the Department, based on site characteristics, facility operations and the locations of potential ground water receptors.

8.6. Data Reporting Requirements

Data that is required by the Department shall be submitted to the North Dakota Department of Health, Division of Water Quality, 1200 Missouri Avenue, Bismarck, ND 58506-5520.

8.6.1. Well Completion Report

Well logs and completion data shall be submitted to the Department on monitoring well report forms provided by the State of North Dakota Board of Water Well Contractors. A map indicating the surveyed locations of the wells shall also be included. Well elevation data can be included on the map or submitted in tabular format.

8.6.2. Ground Water Sample Data

All ground water sampling data shall be reported to the Department by the last day of the month following the month the samples were collected. For example, if the samples were collected in March, the results shall be submitted to the Department by April 30. The ground water sampling data submitted to the Department shall include, but is not limited to:

1. A map showing well locations;
2. Depth to ground water data;
3. Well sampling forms;
4. A discussion of any deviation from the approved GWMP; and
5. Laboratory analytical reports (including laboratory QA/QC documentation).

8.7. Action Limits

The Department has established two types of action limits for potential impacts to groundwater. They are “increased monitoring action limit” and “maximum level action limit.”

8.7.1. Definition of Established Action Limits

The “increased monitoring action limit” is 5 milligrams per liter above the average of the background samples for any of the following parameters: ammonia, total kjeldahl nitrogen and nitrate plus nitrite as nitrogen. The “increased monitoring action limit” for chloride or sulfate is 50 percent above the average of the background samples for either parameter.

The “maximum level action limit” is reached when three consecutive sample results are 10 milligrams per liter above the average of the background samples for ammonia and total kjeldahl nitrogen, or when three consecutive sample results are 10 milligrams per liter, or greater, for nitrate plus nitrite as nitrogen.

8.7.2. Exceedance of Established Action Limits

If a sample result from the monitoring wells exceeds any action limit, the Department shall be notified by telephone within 48 hours. A written response shall be sent to the Department within five working days. At a minimum, the information provided to the Department shall include:

1. Completed well data sampling form;

2. Analytical results;
3. Description of monitoring well condition;
4. Date and time of sample collection; and
5. The name of the laboratory completing the analysis.

If one sample result of a groundwater monitoring well exceeds the increased monitoring action limit, an additional sample from that well shall be taken within 30 days. The Department may also require samples from other wells. If three consecutive sample results exceed the increased monitoring action limit, the facility shall, within 30 days of the last sample date, submit for department approval a plan to locate the source and determine the extent of contamination. This plan shall include a proposed time schedule from start to finish. The assessment shall be conducted by a person or consulting firm experienced in comprehensive environmental impact assessments.

If the contamination source is determined to be at the facility site, a plan shall be developed to stop or reduce the contamination from impacting groundwater. The plan shall also include a time schedule for implementation. This plan must be approved by the Department and be submitted within 60 days of determining the source of contamination.

If the maximum level action limit is reached, the Department may require the facility to remove all manure from the area which has been determined to be the source of contamination. The Department may also require that no additional manure be placed in this area until steps have been taken to upgrade the facility and mitigate the source of contamination. This upgrade must be approved by the Department.

8.8. Treatment of Contamination and Closure of Site

If a facility is causing contamination to groundwater, the Department may require remediation.

If a facility will be closed, the owner/operator shall submit to the Department a plan outlining the steps to close the facility in an environmentally safe manner.

Abandoned Facility

(1) A facility that has been abandoned must dispose or utilize the manure and process wastewater generated in a beneficial manner within 6 months of a facility meeting the designation of an abandoned facility. Abandoned facilities have a large potential to cause NO₃ leaching as the surface seal cracks and deteriorates. For this reason, pens, lagoons, and impoundments need to be thoroughly cleaned and scraped down to bare earth prior to abandonment and backfill the pens, lagoons, and impoundments with at least five (5) feet of soil. The lagoons shall be backfilled to grade with the rest of the facility.

If a facility becomes abandoned, the operator must abide by and meet the criteria as set forth in this permit for a new facility prior to commencing operations again. The Director may issue an exemption or variance to an operator upon written request from an operator if the operation is intermittently used annually.

Any area of a facility, which does not confine animals for 45 consecutive days during any 90 consecutive day period, shall remove all manure and thoroughly clean and scrape the area down to bare earth to eliminate the potential of NO₃ leaching into groundwater.

8.9. Record Retention

All records pertaining to groundwater monitoring shall be kept on file for five years.

SECTION 9. CORRECTIVE ACTIONS FOR AN UNPLANNED RELEASE OF MANURE

9.1. Objective

The objective of this section is to identify the corrective action that should be initiated to protect waters of the state in the event of an unplanned release of manure. An unplanned release is manure that is released to the environment in a manner which is not identified in the Nutrient Management Plan for proper handling of manure and which exceeds the rate of nutrient uptake by plants. This shall include manure that is spilled from manure storage areas or transfer equipment on or off the production area or land application area. Also included will be any release of manure impacting ground water and resulting in an exceedance of established action levels.

9.2. Unplanned Release of Manure to Ground Surface

If there is an unplanned release of manure on to the ground surface, the following priorities shall be followed in addressing and cleaning up the release:

1. Protect individuals from the loss of life or health;
2. Prevent manure from reaching surface water or groundwater;
3. Contain manure until it can be properly utilized or disposed of;
4. Properly utilize or dispose of the manure; and
5. Clean and restore the release area as needed.

9.3. Emergency Action Plan

If directed by the Department, a livestock facility shall develop an emergency action plan to address the unplanned release of waste. The plan shall include the SOPs for actions to take in the event of an unplanned release of manure from the storage area or transport equipment. The SOPs shall follow the priorities listed in Section 9.2 and include the following information:

1. The general locations where an unplanned release of manure is most likely to occur;
2. A description of the action to be taken;
3. The equipment needed for each action and its availability;
4. The names and addresses of contractors or individuals who may have equipment needed;
5. Any necessary prior arrangements that have been made or need to be made with contractors or equipment owners; and
6. The names and addresses of people who may need to be notified such as down stream land owners, contacts for down stream communities or public areas, local law enforcement agency, fire department, ambulance, emergency management and the Department.

9.4. Department Notification of Unplanned Release of Manure

If manure is released where it could directly reach surface or ground water and exceed established action levels, or if the release could endanger human health or the environment, the Department shall be notified as soon as possible but within 24 hours. Notification shall be made by calling 701-328-5210 during normal working hours or by calling the Division of Emergency Management at 1-800-472-2121 during non-working hours (including weekends and holidays).

Notification to the Department shall include: date, time, location, volume of manure released and actions taken to contain, utilize or properly dispose of the manure. A written report with the above information shall also be submitted to the Department within five days of the release, along with a description of the actions taken to prevent a similar release in the future.

An unplanned release of manure may require an assessment to determine if the release could endanger human health or the environment. Contact the Department, the local health unit or the county emergency manager for assistance.

If the volume of manure released will not directly impact surface water or groundwater and does not pose an immediate danger to human health or the environment, the Department does not need to be notified; however, records must be kept of the release.

9.5. Record Retention

If there is an unplanned release of manure from a livestock facility which requires a permit under NDAC Chapter 33-16-01 or NDAC Chapter 33-16-03.1, records shall be kept which document the date, time, location, volume of manure released, and the action taken to contain the release, properly utilize or dispose of the manure and clean the site. The rec shall be kept on site for a minimum of 3 years for AFOs and 5 years for CAFOs. CAFOs shall submit this information for each release to the Department as a part of the annual report. [Note – multiple typos should be corrected in the sentence above.](#)

[\(--\) INSPECTION, ENFORCEMENT, AND EMERGENCY RESPONSE](#)

[Neither the approval of construction plans, specifications, or the waste management system, nor the issuance of a permit or certification by the State, shall prohibit the State from taking any enforcement action if the animal waste management system fails to protect the waters of the state, meet any specified manure or wastewater criteria, or comply with state surface and groundwater quality standards. In addition, this approval, issuance, or certification shall not constitute a defense by the operator regarding violation of any statute, regulation, permit condition, or requirement.](#)

[\(1\) On-site inspections. the operator shall allow the Director, or an authorized representative of North Dakota Department of Public Health, Environmental Health Section, or other State-authorized personnel, upon the presentation of credentials and other documents as may be required by law, to perform the following regulatory functions:](#)

(a) Entry - Enter the premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of these or applicable CAFO-related state and federal regulations.

(b) Access to records- have access to and photocopy, at reasonable times, any records that must be kept at the facility under conditions of these or applicable CAFO-related state and federal regulations.

(c) Inspection- Inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required by these or applicable CAFO-related state and federal regulations.

(d) Sample or monitor - at reasonable times, for the purpose of assuring compliance with permit conditions and these regulations or applicable CAFO-related state and federal regulations.

(e) Observe- the use and application of chemicals, water and waste transfer equipment, and all aspects of the waste management system, including land application of wastes and wastewaters and sludges, and the use of land application equipment.

(f) Search warrants - Should the State or their agents be denied access to any land where such access is sought for the purposes authorized, the State may apply to any court of competent jurisdiction for a search warrant authorizing access to such land for such purposes. The court, upon such application, may issue the search warrant for the purposes requested.

(2) Spill response - When a spill of manure, wastewater, chemicals, or other toxic materials occurs or is suspected to have occurred at the facility or at the land application area that may reasonably pose a threat to public health or the environment, the operator shall cooperate with State representative, or other authorized personnel, upon the presentation of credentials and other documents as may be required by law.

(a) Entry - Enter the premises where the spill is alleged to have occurred using emergency response personnel from both the facility and the State at any time of the day or night, when necessary, in order to observe the immediate effects of the spill.

(b) Access to records and emergency response personnel - Have access within 12 hours of the spill to records, including equipment specifications and personnel testimony, that may indicate the type of waste spilled, the amount of the spill, how the spill occurred, and what was done by the facility after the spill occurred.

(i) Minimum information at time of spill. The State shall have access to certain information immediately upon notification of the spill, including the Material Safety Data Sheet for any chemical or toxic material that was spilled, and the approximate volume of the spill. If the spill is significant, additional information may be required by the State.

(ii) Spill report -The spill report shall be submitted to the State within 5 working days of the spill, unless a greater time is granted by the State. The spill report shall contain, at a minimum, the following information:

(A) When and where the spill occurred and when it was discovered, including date and time of day and the person(s) that discovered the spill.

(B) How the spill occurred, the purpose of any associated device(s), and how the spill can be prevented in the future.

(C) Damage assessment, including the volume of chemicals or other toxic materials were released, extent of release into the waste management system, the wastewater treatment system, and/or the environment and immediate and potential damages associated with the spill into surface waters, groundwaters and soils, the volume of spilled chemical or materials that can be reclaimed, and other information as required by the State during the investigation.

(D) Corrective action planned or performed to reduce adverse impacts on surface water, groundwaters, and soils and all sampling and analysis related to spill.

(c) Inspection. Perform an emergency inspection, at a time as close to the spill as possible, of any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required by these or applicable CAFO-related state and federal regulations.

(d) Sample or monitor. Sample or monitor, at a time as close to the spill as possible, for the purpose of determining the extent of damage to public health or the environment. If the operator is also sampling and/or monitoring the spill, the State reserves the right to ask for a split sample whenever possible.

(e) Abatement procedures. Require the operator to implement emergency clean-up procedures in addition to those already employed by the operator upon observation of a significant threat to public health or the environment.

(f) Follow-up inspection. Perform follow-up inspection(s) of the spill area or areas of the facility connected with the spill in order to determine the effectiveness of the abatement procedures carried out by the operator.

(3) Compliance with proper operation and maintenance.

(a) Need to halt or reduce not a defense. It shall not be a defense for a Permittee in an enforcement action to plead that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of these regulations or the permit.

(b) Duty to mitigate. The operator shall take all reasonable steps to minimize or prevent any discharge in violation of these regulations which has a reasonable likelihood of adversely affecting human health or the environment or creating a public nuisance.

(c) Proper operation and maintenance. The operator shall, at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the operator to achieve compliance with the regulations.

(i) Proper operation and maintenance includes the operation of backup or auxiliary facilities or similar systems only when necessary to achieve compliance with these regulations.

(ii) The operator shall provide an adequate operating staff which is duly qualified and certified to carry out operation, maintenance and testing functions required to insure compliance with the regulations.

(d) Unit failure report. The operator shall report to the State immediately when a unit failure has occurred that results in a release of wastes, wastewaters or sludges outside of the normal waste management system and/or into the environment (e.g., berm failure, severe leakage from lagoon, pipe burst, irrigation equipment failure, etc.). The unit failure report shall be submitted to the State within twenty (20) working days of the failure and contain at a minimum, the following:

(i) When and where the unit failure occurred and when it was discovered, including date and time of day and the person(s) that discovered the failure.

(ii) How the unit failed, the purpose of the device(s), and how the failure can be prevented in the future (e.g., pipe burst).

(iii) Why the unit failed (e.g., backpressure on the pipe due to traps not cleaned properly).

(iv) Damage assessment, including the volume of wastewater released, extent of release into the environment and immediate and potential damages associated with release into surface waters, groundwaters and soils, volume that can be reclaimed, and other information as required by the State during the investigation.

(v) Corrective action planned or performed to reduce adverse impacts on surface water, groundwaters, and soils and all sampling and analysis related to failure.

(e) Anticipated non-compliance. The operator shall give advance warning to the State of any planned changes in the facility or activity which may result in noncompliance with permit conditions or standard conditions of these regulations.

(f) Fines and other legal actions. Penalties for violations of any duty to obtain a permit, violation of orders, rules and permits, and other violations of duties imposed pursuant to law, may include:

(i) Criminal penalties. Conviction in criminal prosecution shall constitute a misdemeanor and may result in a fine of not less than \$200.00 and not more than \$10,000.00 for each violation or by imprisonment in State jail for not more than six months or by both fine and imprisonment.

(ii) Civil penalties. Violations in civil proceedings shall be subject to penalties of not more than \$10,000 dollars per day for each day that a violation occurs or exist and shall be a separate violation for each day. If a violation is committed knowingly or intentionally, the maximum fine shall be twenty-five thousands dollars.

(iii) Administrative penalties. Violations in administrative proceedings shall be subject to assessment of an administrative penalty per day for noncompliance.

(4) Criminal pollution of state waters - penalties.

(a) Any person who recklessly, knowingly, intentionally, or with criminal negligence discharges any pollutant into any state waters or into any domestic wastewater treatment works commits criminal pollution if such discharge is made:

(i) In violation of any permit issued under this article; or

(ii) In violation of any cease and desist order or clean-up order issued by the division which is final and not stayed by court order; or

(iii) Without a permit, if a permit is required by the provisions of this article for such discharge.

(iv) In violation of any pretreatment regulations promulgated by the commission.

(b) Prosecution under paragraphs (a) and (d) of subsection (1) of this section shall be commenced only upon complaint filed by the division.

(c) Any person who commits criminal pollution of state waters shall be fined, for each day the violation occurs, as follows:

(i) If the violation is committed with criminal negligence or recklessly, as defined in

(ii) section 18-1-501, C.R.S. 1973, the maximum fine shall be twelve thousand five hundred dollars. (These are based on Colorado statutes. was not able to obtain the associated North Dakota fines)

(iii) If the violation is committed knowingly or intentionally, as defined in section 18-1-501, C.R.S. 1973, the maximum fine shall be twenty-five thousand dollars. (These are based on Colorado statutes. was not able to obtain the associated North Dakota fines)

(iv) If two separate offenses under this article occur in two separate occurrences during a period of two years, the maximum fine for the second offense shall be double the amounts specified in paragraph (a) or (b) of this subsection (3), whichever is applicable.

(v) Any criminal penalty collected under this section shall be credited to the general fund.

(d) Falsification and tampering. (1) Any person who knowingly makes any false statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under this article or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this article is guilty of a misdemeanor and, upon conviction thereof, shall be punished by a fine of not more than ten thousand dollars, or by imprisonment in the county jail for not more than six months, or by both such fine and imprisonment.

NDCC CHAPTER 36-14

CONTAGIOUS AND INFECTIOUS DISEASES GENERALLY

36-14-19. Disposition of carcass of animal dying from contagious or infectious disease.

Any animal which is found dead must be presumed to have died from a contagious or infectious disease until the contrary is shown unless another cause of death is apparent. The owner or person in charge of any domestic animal or nontraditional livestock which dies within this state from or on account of any contagious or infectious disease shall dispose of the carcass of such animal as follows:

1. If the animal died of anthrax, as determined by a licensed veterinarian, the carcass must be completely burned at the place where it died if possible. If the carcass must be moved, it may not be dragged over the ground but must be moved only on a suitable conveyor and all body openings in the carcass must be plugged with cotton saturated with a strong antiseptic solution.
2. If the carcass is of a hog which died from hog cholera or swine erysipelas, the same, with hide intact, must be burned within thirty-six hours or given to a licensed rendering plant within such time.
3. If the carcass is of an animal which has died of a disease other than is specified in subsections 1 and 2, or from any other cause, it must be burned, buried, composted, or given to a licensed rendering plant within thirty-six hours, or must be disposed of by a method approved by the state veterinarian. If the carcass is buried, it must be buried not less than four feet [meters] below the surface of the ground and covered with dirt to that depth. No carcass may be disposed of along any public highway or along any stream, lake, or river nor buried near or adjoining any such place.

The State Veterinarian and the Board of Animal Health can be contacted at 701-328- 2655