

**North Dakota Department of Environmental Quality Public Notice
Reissue of an AFO Permit**

Public Notice Date: 11/21/2019

Public Notice Number: ND-2019-026

Purpose of Public Notice

The Department intends to take public comment to ensure the following Animal Feeding Operations AFO Permit follows the authority of Section 61-28-04 of the North Dakota Century Code.

Permit Information

Application Date: 8/27/2019

Application Number: NDAFO0023

Applicant Name: Jack Kallenbach Farm

Mailing Address: 4236 38st NE, Esmond, ND 58332

Telephone Number: 701.249.3413

Proposed Permit Expiration Date: 12/31/2024

Facility Description

The application is for a beef feedlot facility that is two miles south, and three miles east of Esmond, ND in SE ¼ of Section 2; NW ¼ NE ¼ and NE ¼ NW ¼ of Section 11, Township 152 N, Range 71 W, in Benson County. The application indicates the facility will be permitted for a maximum of 1,920 beef feeders and 400 stock cows, the beef feeders will have an average weight of 800 to 1,100 lbs. and the stock cows will be an average weight of 1,400 lbs.

Tentative Determinations

The submitted application and supporting documentation have been reviewed by the Department. They assure that State Water Quality Standards will be protected and the system will be constructed and can be operated in compliance with the North Dakota state requirements for storage and handling of manure and wastewater for an Animal Feeding Operation.

Information Requests and Public Comments

Copies of the application, draft permit, and related documents are available for review. Comments or requests should be directed to the ND Dept of Env Quality, Div of Water Quality, 918 East Divide Ave, Bismarck ND 58501-1947 or by calling 701.328.5210.

All comments received by December 23, 2019 will be considered prior to finalizing the permit. If there is significant interest, a public hearing will be scheduled. Otherwise, the Department will issue the final permit within sixty (60) days of this notice. If you require special facilities or assistance relating to a disability, call TDD at 1.800.366.6868.

**FACT SHEET FOR STATE AFO PERMIT
NDAFO-0023**

**Jack Kallenbach
Esmond, ND**

DATE OF THIS FACT SHEET – October 2, 2019

INTRODUCTION

The North Dakota Department of Environmental Quality has the statutory responsibility to control the pollution of surface waters, groundwaters, and the air of the state. Water Quality Standards have been developed and adopted for the surface waters of North Dakota. An extensive Water Pollution Control Act, addressing among other things the control of livestock waste, was adopted by the 1967 state legislature. The Rules and Regulations for the Control of Pollution from Certain Livestock Enterprises were first issued in 1972 and updated in 1989, 2005, and 2018.

The following rules or regulations apply to feedlot operations permits:

- Operations requiring a permit (NDAC Section 33.1-16-03.1-05),
- Authority for issuing Feedlot Permits (NDAC Section 33.1-16-03.1-01),
The Department of Environmental Quality has been authorized to provide and administer this chapter relating to the control of pollution from animal feeding operations under the provisions of North Dakota Century Code Section 61-28-04.
- Procedures the department follows for issuing Feedlot permits (NDAC Chapter 33.1-16-03.1),
- Standards of Quality for Waters of the State (NDAC Chapter 33.1-16-02.1)
- Control, Prevention, and Abatement of pollution of surface waters (NDCC Section 61-28-01)

According to the North Dakota Administrative Code (NDAC) Chapter 33.1-16-03.1, if the department determines a significant degree of public interest exists regarding new or expanding facilities, it shall issue a public notice requesting comment on applications for both individual permits and general state animal feeding operation permits. The department shall provide a period of not less than thirty days during which time interested persons may submit comments. The period of comment may be extended at the discretion of the department. In making its final decision on the application or draft permit, the department shall consider all comments submitted within a time frame specified in the public notice and all comments received at any public hearing. Within twenty days of the close of the public comment period, the applicant, if

any, may submit a written response to the public comments. The department shall consider the applicant's response in making its final decision. Pursuant to the requirements of this chapter (NDAC Section 33.1-16-03.8.) and within sixty days of the applicant's response to the public comments, the department shall make a final determination as to whether the permit should be approved, approved with conditions, or denied. The department shall notify the applicant in writing of its final determination and provide to the applicant a copy of the final permit, if issued. Upon request, other interested individuals may also obtain copies of the final permit. (NDAC Chapter 33.1-16-03.1)

For more information regarding preparing and submitting comments about the fact sheet and permit, please see **Appendix A – Public Involvement**. Following the public comment period, the department may make changes to the draft feedlot permit. The department will summarize the responses to comments and changes to the permit in **Appendix D – Response to Comments**.

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BACKGROUND INFORMATION**Table 1 – General Facility Information**

Applicant:	Jack Kallenbach
Facility Name and Address:	Jack Kallenbach 4032 41 St NE Esmond, ND 58332
Permit Number:	NDAFO-0023
Permit Type:	CAFO
Hydrologic Code:	09020202 – Upper Sheyenne

FACILITY DESCRIPTION

The Jack Kallenbach farm is located two miles south, and three miles east of Esmond, ND in the SE ¼ of Section 2; NW ¼ NE ¼ and NE ¼ NW ¼ of Section 11, Township 152N, Range 71W or Latitude 48.006432°N and Longitude -99.718408°W, in Benson County.

The application submitted to the department on August 27, 2019, indicates the facility will be permitted for a maximum of 1,920 beef feeders and 400 stock cows, the beef feeders will have an average weight of 800 to 1,100 lbs. and the stock cows will be an average weight of 1,400 lbs. The facility currently has an existing outside unpaved lot system with three runoff ponds. The application indicates the owner is planning to add two building structures. The first structure will be a mono slope barn with outside lot access and a runoff pond to collect runoff from the outside lots and manure stacking area. The second building will be a confinement barn with deep pit manure storage.

GROUNDWATER AND SURFACE WATER**Geology:**

The site lies in the Glaciated Plains section of the Central Lowlands physiographic province. The area is mapped as till deposited as the Heimdal End Moraine. Till in the area is relatively thin and is coarser than average in texture because of the ice flow over Fox Hills Sandstone. The closest test hole is about two miles northeast of the facility has forty-one feet of till overlying the Fox Hills Sandstone.

Topography:

The area has moderate local relief and poorly integrated drainage with numerous closed depressions.

Slope:

The average slope for the existing unpaved lots in section 2 lots is 5%.

Runoff:

There are currently three runoff ponds at the facility. A fourth runoff pond will be added for the outdoor lots connected to the mono slope barn.

Elevation:

1,630 feet (Approximately, based on United States Geological Survey Quadrangle maps)

Site Drainage:

The runoff of the current unpaved lots drains towards wetlands on the west and north sides. The runoff of the proposed unpaved lots connected to the mono-slope barn drains south towards a wetland. The wetlands near the existing unpaved lots and the proposed unpaved lots for the mono-slope barn are at an approximate elevation of 1,610 feet. This is a difference of twenty feet over approximately twenty to three hundred feet.

Water Bodies:

Unnamed wetland

Soils:

The primary soils at the site, as indicated by Natural Resource Conservation Service (NRCS) soil survey, including Emrick-Cathay loams and Heimdal-Esmond loams. These soils consist mostly of CL, ML-CL, ML, SC, SC-SM, and SM materials. The water table is four to five feet deep. (See Appendix C, Table 8)

Aquifers:

The facility is not located over an aquifer as indicated by the North Dakota State Water Commission map. The closest aquifer is the Esmond aquifer, which is approximately three miles to the west.

Public Wells:

There are 9 domestic well(s), 11 stock well(s), 3 irrigation well(s), no public well(s), 2 unused/unknown use well(s), and 9 observation/test well(s) located within two miles of the site. (Appendix C, Table 7)

Private Wells:

Within two miles of the site there are 34 well(s) identified. Wells in the general area range from 20 to 155 feet deep.

MANURE HANDLING AND DISPOSAL

Facility Operation:

The facility currently has open, unpaved lots. The runoff from the current system is collected in three ponds. An irrigation pivot center is used to maintain the pond levels, located in the cropland field northwest of the lots. The facility will incorporate a confinement barn with a deep pit constructed under the barn. All the manure from the livestock will be stored in the deep pit until it is utilized during land application. The facility will also incorporate a mono-slope barn with outside lot access. The runoff from the outside lots will be contained in a separate pond from the current ponds. The manure from the mono-slope barn will be stacked on a manure pad. The manure pad will be within the containment area of the outside lots for the mono-slope barn. Beef feeders are planned to be confined at this site year around and the stock cows will be at the facility for 210 days.

Manure Handling:

Manure from the livestock will be contained in the concrete deep pit located below the confinement barn. Slatted floors will be installed in the barn. The concrete deep pit will be 12 feet deep.

Mortality Disposal:

The owners have chosen burial for the facilities disposal method. Mortality will be buried on the owner's property and be at least four feet below the ground level and covered with dirt to that depth. They shall not be buried in an area where there could be a surface or ground water impact such as along riverbanks or in sandy soils with high water tables. The best locations for burying are on higher areas with heavy clay soil that are away from water and drainage ways.

This site appears to be a clay silt type soil-F230B Heimdal-Esmond loams, which was indicated by Web Soil Survey to be suitable to be used as a large animal carcass burial location.

ODORS

Potential Sources:

A source of potential odors appears to be the barns and runoff containment ponds. Odors from the lots may be minimized with good house-keeping practices. Land application may present a source of short-term odor events. The local zoning regulates the nature, scope, and location of this operation. The nearest residence is one mile from the feedlot.

SPECIFICATIONS

Manure Storage Structures:

Table 2-Required manure storage

Type: Manure stacking pad	
Pad Dimensions	
Design surface area	84.3 ft x 109.3 ft = 9,214 ft ²
Runoff Design volume	3,824 ft ³
Required 25-year, 24-hour volume	3,207 ft ³
The facility has the capacity to store the manure from the confined hoop barns.	

Type: Confinement barn	
Deep Pit Dimensions	
Top liquid area	16,750 ft ²
Bottom surface area	16,750 ft ²
Design volume	189,270 ft ³ or 1.41 Mgal
Manure Storage Depth	11.3 ft
Total Depth	12 ft
The facility has the capacity to store the manure generated.	

Type: Runoff Containment Pond 1 (northeast) - existing	
Pond Dimensions	
Top liquid area	19,500 ft ²
Bottom surface area	6,500 ft ²
Design volume	45,605 ft ³ or 0.34 Mgal
Required 25-year, 24-hour volume	45,077 ft ³ or 0.34 Mgal
Depth	3 ft
Total Depth	4 ft
The facility has the capacity to store the designed runoff from the 2.26-acre feed storage area.	

Type: Runoff Containment Pond 2 (Middle) Existing	
Pond Dimensions	
Top liquid area	52,934 ft ²
Bottom surface area	10,184 ft ²
Design volume	148,205 ft ³ or 1.11 Mgal
Required 25-year, 24-hour volume	142,189 ft ³ or 1.06 Mgal
Depth	2.5 ft
Total Depth	4 ft
The facility has the capacity to store the designed runoff from the 7.23-acre feed storage area.	

Type: Runoff Containment Pond 3 (south) Existing	
Pond Dimensions	
Top liquid area	38,994 ft ²
Bottom surface area	10,184 ft ²
Design volume	89,645 ft ³ or 0.67 Mgal
Required 25-year, 24-hour volume	86,162 ft ³ or 0.64 Mgal
Depth	1.5 ft
Total Depth	4 ft
The facility has the capacity to store the designed runoff from the 4.38-acre feed storage area.	

Type: Runoff Containment Pond 4 – New mono slope barn lots	
Pond Dimensions	
Top liquid area	20,315 ft ²
Bottom surface area	10,184 ft ²
Design volume	60,998 ft ³ or 0.46 Mgal
Required 25-year, 24-hour volume	58,131 ft ³ or 0.43 Mgal
Depth	4 ft
Total Depth	6 ft
The facility has the capacity to store the designed runoff from the 2.48-acre feed storage area.	

Soil Summary:

The proposed location appears suitable based on soil survey and ground water survey information. The borings indicate that the Unified classification for the subsoil at the site is generally CL to a depth of about 18 feet. The bottom of the manure deep pit is proposed to be at a relative elevation of 92 feet. (Appendix C, Table 9)

Clay Liner Construction Testing:

A clay liner is not required in existing ponds 1 and 2 and the expansion pond since in situ soils meet the department's requirements in the North Dakota Livestock Program Design Manual (NDLPDM). However, if unsuitable material is located under a portion of the pond, the engineer has indicated this area will be over excavated and replaced with two feet of compacted clay material. Existing pond 3 does have a clay liner installed.

Table 3-Clay Liner

Liner Materials	CL
Density	97.3 pcf
Moisture Content	21.9%
Permeability	1/16 inch per day

Manure Transfer Components:**Manure Storage Structure Considerations:**

The facility has incorporated 5 pump-out ports into the design of the deep pit confinement barn. There will be 5 ports located on the south side of the barn. There will also be 12 ports located down the center of the barn.

Diversions:

A clean water diversion will be installed on the north side of the new hoop barn. The diversion will convey clean water to the east, away from the facility. The hoop barns, gravel roads and manure stacking pad will serve as protection to prevent any clean water from coming into contact with manure. A 15 inches corrugated metal pipe culvert will be installed under the access road in order for clean water to flow from between the hoop barns away from the site to the east.

Table 4-Design Criteria

Sizing	Expected runoff from a 25-year, 24-hour storm event
Freeboard	0.3 feet (minimum)
Side Slopes	3:1 max
	6:1 recommended when equipment crossing is expected
Ridge Width	4 feet minimum
Settlement Factor	10%

Concrete & Rebar:

The confinement barn concrete and rebar specifications follow the guidelines of the American Concrete Institute's publication "Building Code Requirements for Structural Concrete", ACI 318. The design also references to the NRCS Standard 313, Waste Storage Facility. Concrete will be air entrained ranging from 4%-7%. The compressive strength of the concrete for the precast components will be 5,000 psi. The compressive strength of the concrete for the base slab and footings will be 3,500 psi. The steel reinforcing shall be Grade 60 throughout the building in accordance with ACI 318-83.

Foundation Drain:

Drain tile will be placed around the perimeter, outside the foundation base of the deep pit of the confinement barn. The tile collects clean water from outside water sources that apply pressure to the walls which will help extend the life of the facility. The tile will outlet to the northeast, away from the facility.

Earth Fill:

The design plans indicate vegetation and organic material will be stripped and removed from the footprint of the embankment. Organic materials or frozen soil will not be used in fill material. Appropriate topsoil as deemed by the engineer will be used as cover material on the outside slopes of the embankment. The embankment will be seeded to a shallow rooted perennial grass.

Groundwater Monitoring Plan:

The proposed facility does not overlie a designated sensitive groundwater area, surficial aquifer, or any Wellhead Protection Areas (WHPA). There are multiple active Domestic/Stock wells within a 2-mile radius of the site. Two stock wells are located at the existing unpaved open lots facility location; one is screened at a depth of 36-46 feet and the other is screened at a depth of 80-140 feet. Soils are primarily clay to loamy.

Runoff will be contained in an earth pond and manure slurry will be contained in a deep pit. The water level is shallow, with static water levels recorded at 14.6 and 22 feet.

According to the well logs at the facility, shallow well clay was encountered at a depth of 0 to 18 feet, yellow muddy gravel 18 to 30 feet, gray blue sand gravel 30 to 45 feet, and gray sandy clay with some shale 45 to 60 feet. In the deep well, black sandy soil was encountered 0 to 18 inches, yellow clay 18 inches to 16 feet, blue sandy clay 16 to 39 feet, blue clays sticky 39 to 75 feet, fine sandy clays & shales 75 to 121 feet, and soft shales, clay black sand 121 to 140 feet.

Operation and Maintenance Plan:

The operation and maintenance plan calls for cleaning of settling areas and repair as needed to maintain original condition. Earth work and concrete must be inspected annually and repaired as needed. Drains and diversions shall be mowed and maintained when soil is dry and firm. Sediment buildup or erosion in drainage ways shall be cleaned and re-graded to original condition. Accumulated manure shall be removed annually and applied in accordance with the nutrient management plan.

NUTRIENT MANAGEMENT PLAN AND MANURE APPLICATION

General Conditions:

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. (North Dakota Livestock Program Design Manual, Section 7.2, number 3) Factors to consider when choosing methods of management and application include but are not limited to: the volume of manure, the topography, location of surface and ground water sources, and distance from neighboring residents.

Application Rates:

Manure will be pumped from the deep pit and slurry spread. The solid manure will be scraped from the lots and barn and land applied. Manure will be land applied at a rate not to exceed nutrient levels recommended for the crop of the following production year.

Record Keeping:

The facility must make the following records available to the department for review upon request for a minimum of 5 years from the date they are created:

- Document routine visual inspections of the production area and containment structures.
- How, when, and where the manure, litter, or process wastewater was reused or disposed.
- Weather conditions at the time and 24 hours prior to manure application.
- Mortalities management and practices used.
- The date, time and estimated volume of any overflow outside of the containment area.
- Annual nutrient sampling of: manure, litter and/or process wastewater and soil samples where manure has been applied that year.

- An explanation of how the manure application rates were determined with calculations of the planned and actual total nitrogen and phosphorus to be applied to each field.
- The crops grown and crop yields for all fields where manure was applied.
- If manure, litter, or process wastewater is transferred to other persons or entities; the recipient's name and address, approximate amount transferred, and the date of the transfer should be documented.
- Any actions taken to correct deficiencies.

Table 5-Expected Manure Volumes and Nutrients

	Daily	365 Days
Volume of animal manure	15,376 gal/day 2,056 cu ft	5.612 Mgal 750,323 cu ft
Nitrogen (N)	732 lbs./day	267,180 lbs.
Phosphorus (P2O5)	546 lbs./day	199,267 lbs.
Potassium (K2O)	637 lbs./day	232,476 lbs.
Storage	30%	
Land apply method	22.5%	

Land Application of Manure:Estimate of land needed for manure application:

If the nutrient management plan's phosphorus risk assessment indicates a medium to low risk of movement of phosphorus, facilities are allowed to apply at agronomic nitrogen rates in accordance with the phosphorus index.

If the nutrient management plan's phosphorus risk assessment indicates a high potential for movement or if soil test show phosphorus levels in the high range, the facility is required to apply the manure at agronomic phosphorus rates.

Table 6-Nutrients and Rates

Nutrient	Rate
Phosphorus (with no losses)	42 lbs. P2O5/acre
Nitrogen (with 55.5% losses)	100 lbs. N/acre

Anticipated crop grown corn silage, wheat, corn grain, soybean, edible beans

Risk assessment for phosphorus: low

Amount of land estimated for spreading at agronomical rates: 2,659 acres

Amount of land identified by applicant for land application: 3,690.7 acres

The department realizes that the nitrogen in manure is not all available to the crop the first year and therefore the manure will typically be applied at rates higher than the rates listed above. However, the organic nitrogen becomes available the following year(s) so the manure cannot be applied at the same rate subsequent years. These figures are used to estimate the total acres that would be needed over several years of application using proper rotation of crop-land and/or calculating nitrogen that is carried over to the following years.

Disclaimer:

This design review is intended to assess a livestock facility's ability to contain, divert, store and properly apply manure and/or runoff water to meet department requirements, to prevent detrimental impacts the quality of waters of the state, and to minimize the potential for odor concerns from livestock facilities. It does not include an assessment of the structural integrity of livestock facilities or manure handling structures such as those made of concrete, metal, wood, plastic, or other material.

PERMIT ISSUANCE PROCEDURES

PERMIT ACTIONS

This permit may be modified, revoked and reissued, or terminated for cause. This includes the establishment of limitations or prohibitions based on changes to Water Quality Standards, the development and approval of waste load allocation plans, the development or revision to water quality management plans. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

PROPOSED PERMIT ISSUANCE

This proposed permit application meets all statutory requirements for the department to authorize a State Animal Feeding Operation Permit. The permit includes limits and conditions to protect human health and aquatic life, and the beneficial uses of waters of the State of North Dakota. The department proposes to issue this permit for a term of five (5) years.

APPENDIX A – PUBLIC INVOLVEMENT INFORMATION

The department proposes to issue a permit to **Jack Kallenbach**. This fact sheet describes the facility and the department's rationale for requiring permit conditions.

The department will place a Public Notice of Draft on **11/20/2019** in the **Benson County Farms** to inform the public and to invite comment on the proposed draft North Dakota State AFO Permit and fact sheet.

The Notice-

- Indicates where copies of the draft Permit and Fact Sheet are available for public evaluation.
- Offers to provide assistance to accommodate special needs.
- Urges individuals to submit their comments before the end of the comment period.
- Informs the public that if there is significant interest, a public hearing will be scheduled.

You may obtain further information from the department by telephone, 701.328.5210, or by writing to the address listed below.

North Dakota Department of Environmental Quality
Division of Water Quality
918 East Divide Avenue, 4th Floor
Bismarck, ND 58501

The primary author of this permit and fact sheet is Brady Espe.

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Issue of an AFO Permit**

Public Notice Date: 11/20/2019

Public Notice Number: ND-2019-026

Purpose of Public Notice

The Department intends to take public comment to ensure the following Animal Feeding Operations (AFO) Permit follows the authority of the Section 61-28-04 of the North Dakota Century Code.

Permit Information

Application Date: August 27, 2019 Application Number: NDAFO0023

Applicant Name: Jack Kallenbach

Mailing Address: 4032 41 ST NE, Esmond, ND 58332

Telephone Number: 701.341.1864

Proposed Permit Expiration Date: 12/31/2024

Facility Description

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Tentative Determinations

The submitted application and supporting documentation have been reviewed by the Department. They assure that State Water Quality Standards will be protected, and the system will be constructed and can be operated in compliance with the North Dakota state requirements for storage and handling of manure and wastewater for an Animal Feeding Operation.

Information Requests and Public Comments

Copies of the application, draft permit, and related documents are available for review. Comments or requests should be directed to the ND Department of Environmental Quality, Division of Water Quality, 918 East Divide Ave, Bismarck ND 58501-1947 or by calling 701.328.5210.

All comments received by **December 23, 2019** will be considered prior to finalizing the permit. If there is significant interest, a public hearing will be scheduled. Otherwise, the Department will issue the final permit within sixty (60) days of this notice.

APPENDIX B – DEFINITIONS

DEFINITIONS Standard Permit (BP 2019.09.23)

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 forty-five days or more in any twelve-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” 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. 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.
4. “Concentrated animal feeding operation” means an animal feeding operation that is defined as a large, medium, or small concentrated animal feeding operation or any animal feeding operation designated as a concentrated animal feeding operation under section 33.1-16-03.1-04. 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.
5. “Earthen storage pond” or “pond” means a topographic depression either below or above ground level, manmade excavation, or diked area formed primarily of earthen materials, although it may be lined with man-made materials or other seepage control materials, and used to store manure, process wastewater and runoff from the production area of a facility.
6. “Engineer” means a professional engineer registered to practice in the state of North Dakota.
7. “Facility” is an animal feeding operation.
8. “General permit” means 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.

9. “Large concentrated animal feeding operation” means any animal feeding operation that stables or confines as many as or more than the numbers of animals, not including unweaned young, specified in any of the following categories:
 - a. Seven hundred mature dairy cows, whether milked or dry;
 - b. One thousand veal calves;
 - c. One thousand cattle other than mature dairy cows or veal calves. “Cattle” includes, but is not limited to, heifers, steers, bulls, and cow/calf pairs;
 - d. Two thousand five hundred swine, each weighing 55 pounds or more;
 - e. Ten thousand swine, each weighing less than 55 pounds;
 - f. Five hundred horses;
 - g. Ten thousand sheep or lambs;
 - h. Fifty-five thousand turkeys;
 - i. Thirty thousand laying hens or broilers, if the animal feeding operation uses a liquid manure handling system;
 - j. One hundred twenty-five thousand chickens (other than laying hens), if the animal feeding operation uses other than a liquid manure handling system;
 - k. Eighty-two thousand laying hens, if the animal feeding operation uses other than a liquid manure handling system;
 - l. Thirty thousand ducks, if the animal feeding operation uses other than a liquid manure handling system; or
 - m. Five thousand ducks, if the animal feeding operation uses a liquid manure handling system.
10. “Litter” means a mixture of fecal material, urine, animal bedding material, and sometimes waste feed.
11. “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.
12. “Manure handling system” means all of the water pollution control structures used at the production area of a facility.

13. “Manure storage pond” means an earthen storage pond that stores liquid manure and process wastewater from indoor confined animal feeding operations.
14. “Manure storage structure” means any water pollution control structure used to contain or store manure or process wastewater. It includes earthen manure storage ponds; runoff ponds; concrete, metal, plastic, or other tanks; and stacking facilities.
15. “Medium animal feeding operation” means any animal feeding operation that stables or confines the numbers of animals, not including unweaned young, specified within any of the following ranges:
 - a. Two hundred to six hundred ninety-nine mature dairy cows, whether milked or dry;
 - b. Three hundred to nine hundred ninety-nine veal calves;
 - c. Three hundred to nine hundred ninety-nine cattle other than mature dairy cows or veal calves. “Cattle” includes, but is not limited to, heifers, steers, bulls, and cow/calf pairs;
 - d. Seven hundred fifty to two thousand four hundred ninety-nine swine, each weighing 55 pounds or more;
 - e. Three thousand to nine thousand nine hundred ninety-nine swine, each weighing less than 55 pounds;
 - f. One hundred fifty to four hundred ninety-nine horses;
 - g. Three thousand to nine thousand nine hundred ninety-nine sheep or lambs;
 - h. Sixteen thousand five hundred to fifty-four thousand nine hundred ninety-nine turkeys;
 - i. Nine thousand to twenty-nine thousand nine hundred ninety-nine laying hens or broilers, if the animal feeding operation uses a liquid manure handling system;
 - j. Thirty-seven thousand five hundred to one hundred twenty-four thousand nine hundred ninety-nine chickens (other than laying hens), if the animal feeding operation uses other than a liquid manure handling system;
 - k. Twenty-five thousand to eighty-one thousand nine hundred ninety-nine laying hens, if the animal feeding operation uses other than a liquid manure handling system;
 - l. Ten thousand to twenty-nine thousand nine hundred ninety-nine ducks, if the animal feeding operation uses other than a liquid manure handling system; or
 - m. One thousand five hundred to four thousand nine hundred ninety-nine ducks, if the animal feeding operation uses a liquid manure handling system.

16. "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 manmade ditch, flushing system, or other similar manmade 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.
17. "North Dakota Livestock Program Design Manual" means the guidelines established for use by the department in the review and permitting process for animal feeding operations.
18. "Nutrient management plan" means a written description of the equipment, methods and schedules by which:
 - a. 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
 - b. Water pollution and air pollution, including odors, are controlled sufficiently to protect the environment and public health.
19. "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.
20. "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.
21. "Operation and maintenance plan" means a written description of the equipment, methods, and schedules for:
 - a. Inspection, monitoring, operation, and maintenance of the animal feeding operation, including manure storage structures, water pollution control structures, and the production area; and
 - b. 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.
22. "Operator" means an individual or group of individuals, partnership, corporation, joint venture, or any other entity owning or controlling, in whole or in part, one or more animal feeding operations.
23. "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.
24. "Pollutant" means "wastes" as defined in 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.

25. "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.
26. "Production area" means those areas of an animal feeding operation used for animal confinement, manure storage, raw materials storage, and waste containment. The animal confinement area includes 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 lagoons, runoff ponds, storage sheds, stockpiles, under-house or pit storages, liquid impoundments, static piles, and composting piles. The raw materials storage area includes feed silos, silage bunkers, and bedding materials. The waste containment area includes 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.
27. "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.
28. "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.
29. "Seepage" means the volume of flow through a manure storage structure.
30. "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).
31. "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.

32. “Small concentrated animal feeding operation” means a small animal feeding operation designated as a concentrated animal feeding operation under section 33.1-16-03.1-04.
33. “State animal feeding operation permit” means a permit issued by the department under this chapter to an animal feeding operation.
34. “Surface water” means waters of the state that are located on the ground surface, including all streams, 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.
35. “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.
36. “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, or other structures used to prevent clean water from coming in contact with manure.
37. “Water quality standards” means the water quality standards contained in chapter 33.1-16-02.1.

APPENDIX C – DATA AND TECHNICAL CALCULATIONS**Table 7-Water Commission Well Data:**

Location	Use	Depth(ft)	Diameter(inches)	Aquifer
153071035B	Domestic	132	4	-
15307135BB	Domestic	125	4	-
15307135BB	Domestic	110	4	-
15307135BBB	Domestic	111	4	-
15207101BBA	Domestic/Stock	100	4	-
15207102ACC*	Stock	140	5	-
15207102DB *	Stock	60	5	-
15207103BCB	Domestic, Stock	120	4	-
15207104BBA1	Observation	73	2	Fox Hills
15207104BBA	Observation	55	2	Esmond
15207104CDD	Stock	70	5	-
15207104AA	Stock	58	5	-
15207109DAC2	Irrigation	45	8	Esmond
152071009D2	Irrigation	45	12	Esmond
152071009D3	Irrigation	50	12	Esmond
15207109DCD	Observation	39	2	Esmond
15207109DDD	Unused	124	3	-
15207110CCC	Observation	51	1.2	Esmond
15207112CD		95	5	-
15207113AB	Stock	52	5	-
15207113ABB	Domestic	65	4	-
15207115ABB	Stock	70	4.5	-
15207115AAA	Domestic	125	4	Fox Hills
15207115ABB	Stock	70	4.5	Undefined
15207115AC	Stock	70	5	-
15207115BDB	Test	45	-	Esmond

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*Wells closest to facility.

Map unit	Name	Description	Bedrock depth	Seasonal water table	Unified soil class*	Perm in/hr	Lagoon Restrictions
F221A	Emrick-Cathay loams, 0-3% slopes.	This map unit consists of deep, nearly level, moderately drained soils on glacial till plains. The moderately well drained Emrick soils is found in swales and lower side slopes. The Cathay soils is swales and on some rises.	0-79"	48"	CL-ML, ML, CL, SC	0.6-2.0 0.6-2.0 0.6-6.0	Somewhat limited, Depth to saturated zone. Severe: Seepage, wetness.
F230B	Heimdal-Esmond loams, 3-6% slopes.	This map unit consist of deep, gently rolling, well drained soils on glacial till plains and moraines. The well drained Heimdal soil is on knolls and upper side slopes. The Esmond soils is on the knolls and ridges.	0-79"	59"	CL-ML, ML, SC-SM, SM	0.6-2.0 0.6-2.0 0.6-6.0 0.06-0.6 0.2-0.6	Somewhat limited. Severe: slope, seepage.

CL-Clay of low plasticity, ML-Silt, SM-silty sand, SC-Clayey sand, CL-ML- Clay loam to silt loam, SC-SM- clayey sand to silty sand

Table 9-Soil Boring Information:**Existing location**

	Pond 1 PH 4	Pond 1 TH 1	Pond 1 TH 2	Pond 2 TH 1	Pond 2 TH 2	Pond 2 TH 3	Pond 3 PH 1	Pond 3 PH2	Pond 3 PH 3
Elevation	1502	1500	1505	1497	1497	1499	1495	1496	1497
0 to 0.5	OL	OL	OL	OH	OH	OH	OL	OL	OL
0.5 TO 1	OL	CL	OH	OH	OH	OH	CL	SC/SM	CL
1 to 2	OL	CL*	CL/ML	CL	CL	CL/CH	CL	SC/SM	CL
2 to 3	CL/ML	CL	CL/ML	CL	CL	CL/CH	CL*	SC/SM	CL
3 to 4	CL/ML *	CL	CL/ML	CL*	CL*	CL/CH	CL	SC/SM	CL
4 to 5	CL	CL	CL/ML	CL	CL	CL/CH	CL	CL	CL
5 to 6	CL	CL	CL/ML	CL	CL	CL/CH*	CL/ML	CL	CL
6 to 7	CL	-	CL/ML*	rock	CL/CH	CL/CH	CL	SC	CL
7 to 8	CL	-	CL/ML	-	CL/CH	CL/CH	CL	SC	CL
8 to 9	CL	-	CL/ML	-	CL/CH	-	CL	CL	CL
9 to 10	CL-H2O	-	CL/ML	-	CL/CH	-	CL	CL-H2O	SC/SM - H2O
10 to 11	CL	-	-	-	CL/CH	-	CL	CL	SC/SM
11 to 12	CL	-	-	-	CL/CH	-	CL	CL	SC/SM
12 to 13	CL	-	-	-	-	-	-	-	-
13 to 14	-	-	-	-	-	-	-	-	-
TS-top soil, SP-poorly graded sand, SC-Clayey sands									

*Indicates pond bottom. Bottom is the lowest number.

New barn

	TP 1	TP 2	TP 3	TP 4
Elevation	1506	1504	1496	1496
0 to 1.5	TS	TS	TS	TS
1.5 to 2	CL	CL		
2 to 3	CL	CL		
3 to 4	CL	CL	CL*	CL*
4 to 5	CL	CL	CL	CL
5 to 6	CL	CL	CL	CL
6 to 7	CL	CL	CL	CL
7 to 8	CL*	CL*	CL	CL
8 to 9	CL	CL	CL	CL
9 to 10	CL	CL	CL	CL
10 to 11	CL	CL	CL	CL
11 to 12	CL	CL	CL	CL
12 to 13	CL	CL	CL	CL
13 to 14	CL	CL	CL	CL
14 to 15	CL	CL	CL	CL
15 to 16	CL	CL		
16 to 17	CL	CL		
17 to 18	CL	CL		
TS-top soil, CL -Clay				

*Indicates pond bottom. Bottom is the lowest number

APPENDIX D – RESPONSE TO COMMENTS

Comments received during the public comment period will be addressed and placed here.

DRAFT

STATE ANIMAL FEEDING OPERATION PERMIT

NDAFO-0023

In compliance with North Dakota Administrative Code (NDAC) 33.1-16-03.1 of the North Dakota Department of Environmental Quality rules as promulgated under Chapters 61-28 and 23-25 of North Dakota Century Code (NDCC), authorization of the **Jack Kallenbach** facility located in the SE ¼ of Section 2; NW ¼ NE ¼ and NE ¼ NW ¼ of Section 11, Township 152N, Range 71W, in Benson County, North Dakota is granted provided the following conditions are met:

1. The application indicated the facility is a CAFO that will house **1,920 Feeders, 400 stock cows**. The department must be notified in writing if there is an expansion in the number of livestock, change in ownership of the facility, significant changes in the physical operation of the facility or if the lot area where livestock are concentrated is expanded. Changes may require an update to the approval or issuance of a new approval.
2. Operation and Maintenance plans and standard operating procedures must be followed as submitted to the department. Changes to the Operation and Maintenance plan must be reviewed by the department prior to being implemented. There must be regular and adequate maintenance and upkeep to prevent degradation of the structures, to ensure the system continues to operate as designed, to ensure the storage pond does not overflow, and to ensure manure or wastewater does not discharge into waters of the state. Operation and maintenance plans shall include:
 - 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. (North Dakota Livestock Program Design manual, section 6)
3. The operator shall notify the department within thirty days of construction completion of the manure storage or water pollution control structures. The operator shall provide certification from the engineer or the designer that construction of manure storage and water pollution control structures was completed according to designs provided with the application or the department-approved changes. (NDAC 33.1-16-03.1-07(5))
4. Mortality shall be disposed of in accordance with NDCC section 36-14-19, in a manner acceptable to the North Dakota Board of Animal Health, and so they will not impact waters of the state. Burial is the option for this facility. Mortality will be buried on the property and be at least four feet below the ground level and covered with dirt to that depth. Mortality shall not be buried in an area where there could be a surface or ground water impact such as along riverbanks or in sandy soils with high water tables. The best locations for burying are on higher areas with heavy clay soil that are away from water and drainage ways.
5. Land application of manure shall be in accordance with the nutrient management plan. Manure shall be applied in a manner so it will not be washed into waters of the state. When applying manure within ½ mile of an occupied residence, building, or public area where people may be present; it is recommended that the operator review and follow the guidelines of the North Dakota Livestock Program Design Manual, 7.6, section 4 and incorporate the manure within 8 hours of land application.
 - a. The following records pertaining to nutrient management shall be maintained for a minimum of 5 years.
 - b. The crops grown and expected realistic crop yields;
 - c. The date(s) manure, litter or process wastewater is applied to each field;
 - d. Weather conditions during application, 24 hours prior and following application;
 - e. Test methods used to sample and analyze manure, litter, wastewater and soil;
 - f. Results from annual testing of manure, litter, and process wastewater, and annual soil sample results for land where manure was applied that year; an explanation of how the application rates were determined in accordance with standards established by the department;
 - g. Calculations showing nutrients applied to each field, including other nutrient sources;

- h. Total amount of nutrients actually applied to each field, including documentation of calculations for the total amount applied;
 - i. Method used to apply the manure, litter or process wastewater; 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. (North Dakota Livestock Program Design Manual, 7.7, section 2)
- 6. If manure is transferred to other persons or entities not associated with the facility, the following conditions shall apply: owners/operators shall provide the recipient of the manure, litter or process wastewater with the most current nutrient analysis prior to transfer; the analysis provided shall be consistent with the requirements of section 7.4 in design manual; and 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. (North Dakota Livestock Program Design Manual, 7.7, section 3)
- 7. The owner/operator of a CAFO shall conduct the following routine visual inspections of the production area: weekly inspections of all stormwater diversion devices, runoff diversion structures and devices channeling runoff to the manure storage structure; daily inspection of water lines, including drinking water or cooling water lines; and weekly inspections of the manure storage structures noting the level of liquid in the structure as indicated by the depth marker. Also, weekly inspections of the drain tile sump.
- 8. All open 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.
- 9. Any deficiencies discovered during an inspection shall be corrected as soon as possible; chemicals or other contaminants handled on site shall not be disposed of in a structure used for storage or treatment of manure, process wastewater or stormwater unless it is specifically designed for that purpose; and the operator of a livestock facility requiring a permit should maintain a rain gauge at the production area and record measurable rainfall events. (North Dakota Livestock Program Design Manual, 6.2)
- 10. The owner/operator of a CAFO shall make the following records available to the department for review upon request: records documenting the visual inspections; weekly records of the depth of the manure and process wastewater in the liquid manure storage structure as indicated by the depth gauge in storage structure; records documenting any actions taken to correct deficiencies; deficiencies not corrected within 30 days must be accompanied by an explanation of the factors preventing immediate correction; records of management and practices used; record documenting 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; records of the date, time and estimated volume of any overflow; and records documenting the land application of manure. (North Dakota Livestock Program Design Manual, 6.5)
- 11. This permit shall in no way authorize the discharge of any objectionable odorous air contaminant which is in excess of the limits established in NDAC Chapter 33.1-15-16 of the North Dakota Air Pollution Control Rules. If the department determines odors from the facility exceed limits, steps shall be taken, within a reasonable time, to control and reduce odors from the facility site. This may include requiring the installation of a cover on the ponds or other odor control measures.
- 12. There must be regular and adequate maintenance and upkeep to prevent degradation of the structures, to ensure the system continues to operate as designed, to ensure the containment system does not overflow, and to ensure manure or wastewater does not discharge into waters of the state.
- 13. The department must be notified if there is a change in address or other contact information for the facility.

The above conditions are considered part of the proper operation of the facility. If any of the above conditions are not

Effective Date: January 1, 2020
Expiration Date: December 31, 2024

met, the department must be notified in writing, within five (5) days. Any noncompliance with the permit conditions or with state requirements must be reported to the department as soon as possible after the facility becomes aware of the noncompliance condition. Failure to meet these requirements may result in monetary penalties and/or revocation of this permit.

Construction may begin upon signature of this permit by the department. The permit is based on construction being completed as per the design plans reviewed by the department. If any structural changes are made that are different than these design plans, the department must be notified in writing and prior approval obtained, before making these changes.

Authorized department personnel shall be permitted access to the facility to determine compliance with department rules and regulations. Department inspections will abide by all security measures implemented by the owner or operator to protect the health and safety of the workers and animals at the facility.

The owner/operator of this facility shall comply with all State and Federal environmental laws and rules, and shall also comply with all local building, fire, zoning and other applicable ordinances, codes, and rules.

Notice of Completion and results of testing completed on the clay liner or the manure storage structures shall be received by the department within 30 days of completion of construction.

I certify that I have read and understand the above information and agree to operate the facility in a manner that will meet all the conditions listed herein.

OWNER/OPERATOR CONSENT

FOR THE NORTH DAKOTA
DEPARTMENT OF
ENVIRONMENTAL QUALITY

By _____
(signature)

By _____

By _____
(print name here)

By Karl Rockeman, Director
Water Quality Division

Date _____

Date _____