

Please arrange to have the following public notice(s) printed in the legal column of the designated newspaper(s) as close to 9/20/2017 as possible

The Affidavit of Publication and billing notice should be sent to: North Dakota Department of Health, Judicial Wing, Division of Accounting, 600 East Boulevard Ave, Bismarck ND 58505.

Name of the Newspaper: LaMoure Chronicle

**North Dakota Department of Health Public Notice
Reissue of an AFO Permit**

Public Notice Date: 9/20/2017

Purpose of Public Notice

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

Permit Information

Public Notice Number: ND-2017-026
Application Date: 8/3/2017 Application Number: NDAFO0442
Applicant Name: Fairview Colony
Mailing Address: 9644 74th St SE, LaMoure, ND 58458-9038
Telephone Number: 701.883.4457
Proposed Permit Expiration Date: 9/30/2022

Facility Description

The facility is located five miles west and one mile south of LaMoure, ND, in the NE 1/4 of Section 13, Township 133 N, Range 62 W, in LaMoure County. A Public Notice was issued, inviting comments on the draft approval developed for this facility.

Comments should be directed to the North Dakota Department of Health, Division of Water Quality, 918 East Divide Avenue, 4th Floor, Bismarck, ND 58501. All Comments received by October 20, 2017, will be considered prior to finalizing the approval.

Additional information may be obtained upon request by calling (701) 328-5210 or by writing the above address. The complete application, draft approval, and related documents are available for review and reproduction at the Department. Copies of the draft approval and related items are also available for review at the Auditor's Office in LaMoure, ND.

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 Health, Div of Water Quality, 918 East Divide Ave, Bismarck ND 58501-1947 or by calling 701.328.5210.

All comments received by October 20, 2017 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.

**LIVESTOCK FACILITY FACT SHEET FOR
Fairview Colony Expansion
NDAFO-0442**

Applicant:	Fairview Hutterian Brethren Association, Owner. David Wipf, Main Contact.																					
Location:	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Quarter</th> <th style="text-align: left;">Section</th> <th style="text-align: left;">Township</th> <th style="text-align: left;">Range</th> <th style="text-align: left;">County</th> <th style="text-align: left;">Latitude</th> <th style="text-align: left;">Longitude</th> </tr> </thead> <tbody> <tr> <td>NE NE</td> <td>13</td> <td>133N</td> <td>62W</td> <td>LaMoure</td> <td>46.338783°N</td> <td>-98.414266°W</td> </tr> <tr> <td>NW</td> <td>18</td> <td>133N</td> <td>61W</td> <td>LaMoure</td> <td>46.337431°N</td> <td>-98.402831°W</td> </tr> </tbody> </table> <p>9644 74th St SE, LaMoure, ND – 5 miles west, 1 mile south of LaMoure, ND.</p>	Quarter	Section	Township	Range	County	Latitude	Longitude	NE NE	13	133N	62W	LaMoure	46.338783°N	-98.414266°W	NW	18	133N	61W	LaMoure	46.337431°N	-98.402831°W
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Existing:	The current facility has 2,400 head of grower pigs at an average weight of 95 lbs, 2,100 head of nursery pigs at an average weight of 35 lbs, 120 head of replacement gilts at an average weight of 280 lbs, 180 head of farrowing sows at an average weight of 450 lbs, 660 head of gestation sows at an average weight of 450 lbs, 5 head of boars at an average weight of 400 lbs, 38,000 head of turkeys at an average weight of 18 lbs, and 400 head of laying hens at an average weight of 3 lbs. The facility also has 2,000 head of broilers at an average weight of 2 lbs for an estimated 3 months of the year. The current facility has everything under roof in confinement barns. The facility's existing swine barns empty into manure storage ponds. A turkey litter stacking pad is utilized to store the turkey litter and prevent it from impacting waters of the state. A deep pit barn is used to store the litter from the broilers.																					
Planned:	The facility is planning to add two finishing pig confinement barns and collect dirty water from the barns to use it for fertilization of their crop land. The confinement barns will have concrete pits under the barns to collect and store the waste. The application indicates the expansion will have a maximum of 4,800 finishing pigs with an average weight of 175 lbs.																					

Site Review

Geology:	<p>This part of LaMoure County is located within the Glaciated Plains section of the Central Lowland physiographic province. (Bluemle, 1979)</p> <p>The landscape is nearly level to undulating, with some steep areas in the western part of the county and along the James River. Relief is twenty feet or less, the area drain east and is drained by the James River. (Bluemle, 1979) The area is located on the southeast edge of the Williston Basin The entire area was glaciated and the landforms there are largely the result of glacial and post-glacial processes. They consist of glacial sediment, glacial meltwater sediment, and post-glacial alluvium. (Bluemle, 1979,p.5) The glacial deposits in the facility area are from the Coleharbor Group. (Bluemle, 1979) The till found at and near the surface in Dickey and LaMoure Counties is most commonly a mixture of varying proportions of sand, silt, clay, pebbles, cobbles, and boulder-sized particles. (Bluemle, 1979,p.12)</p>
Runoff:	The proposed facility is an indoor confinement operation. Any clean water runoff from the land around the barns and from other buildings will be directed away from the site.
Elevation:	1,438 feet
Site drainage:	The proposed site drains east toward a road ditch that eventually flows into the Cottonwood Creek, a class II water. The existing site also drains east towards the Cottonwood Creek, a class II water.
Water bodies:	Both sites drain into Cottonwood Creek, a class II water. The proposed site is approximately 0.77 miles and the existing site is 0.07 miles from the Creek. The Cottonwood Creek flows into Lamoure Lake, a class III water, approximately 5.37 miles from the facility sites. Lamoure Lake drains into James River, a class IV water, approximately 1.60 miles.
Soils:	The primary soil at the site, as indicated by NRCS soil survey, include Barnes-Svea loams. These soils consist mostly of Clay Loam (CL) materials. (See Table 2 on page 13)

Aquifers:	<p>The aquifer boundaries drawn by the State Water Commission (SWC) represent inferred estimated ground water yields to pumping wells from named or unnamed aquifers defined during completion of the county ground water studies, or subsequent studies. The boundaries are based on interpretation of test hole or well lithologic logs, and are subject to change as new information becomes available. The aquifer boundaries are not site-specific, unless supported by a lithologic log of a nearby well or test hole, and should therefore not be interpreted as a distinct line demarcating the presence or absence of a glacial drift aquifer at any specific location, particularly in the case of confined aquifers. Test drilling is the only way to confirm the presence of a confined glacial drift aquifer at a specific location. Geomorphic boundaries of unconfined glacial drift aquifers, however, can usually be closely approximated through interpretation of surface geology and soil maps in support of test hole or well lithologic logs.</p> <p>The main site overlies Ellendale aquifer according to the county ground water study. This is a buried valley (confined) aquifer that was deposited in the ancestral course of the James River. Wells are also completed in the aquifers of the Dakota Group. (Armstrong, 1980)</p> <p>The Dakota Group aquifers consist of the Lakota-Fall River aquifer and the Newcastle aquifer system.</p> <p>The Lakota-Fall River Aquifer formed on irregular erosional surfaces causing thickness differences and areas that locally may have nondeposition. "The Lakota-Fall River aquifer in Dickey and LaMoure Counties ranges in depth from about 1,100 feet in southeast part of Dickey County to 2,200 feet in the western part of Lamoure County." (Armstrong, 1980, p. 15) The aquifer, in areas where is found, ranges in thickness from 35 feet in east to 276 feet in the west. (Armstrong, 1980) "Recharge to the aquifer is from the Black Hills of South Dakota (Darton, 1909) and upward migration of water from underlying aquifers (Swenson, 1968). " (Armstrong, 1980, p. 16) Discharge from the aquifer is from wells, and lateral discharge and upward migration into the Newcastle aquifer system may occur. (Armstrong, 1980)</p> <p>"The Newcastle formation underlies all of Dickey and Lamoure Counties." (Armstrong, 1980, p. 19) This formation can be found at depths of 790 feet in southeastern Dickey County and 2,000 feet in western Lamoure County, with another log showing the depth at 1,788 feet in southwestern Lamoure county. (Armstrong, 1980, p. 19) The aquifer ranges in thickness from 135 feet in east to 300 feet in the west. (Armstrong, 1980) "The Newcastle formation consists of deposits of deltaic, beach, and other marine sediments as well as brackish and fresh-water fluvial and deltaic deposits. The major source of recharge to the Newcastle aquifer system probably is west of the study area because the head in the aquifer system decreases in an easterly direction." (Armstrong, 1980, p. 19) Discharge from the aquifer is from wells. (Armstrong, 1980)</p> <p>The Ellendale aquifer consists of lenticular deposits of sand and gravel inter-bedded with silt and silty clay within the inferred boundaries of the pre-glacial bedrock valley. (Armstrong, 1980) "The aggregate thickness of the sand and gravel deposits ranges from 5 to 81 feet, but has a mean thickness of 33 feet." (Armstrong, 1980, p.35) The top of the aquifer generally lies from about 50 to 95 feet below land surface. Recharge to the aquifer is from precipitation and snow melt that infiltrates through the overlying glacial drift. Definition of the aquifer is based on one SWC test miles north of the site, and two test holes two miles south of the site. Lithologic logs from these three test holes identified the aquifer underlying till at depths between 60 and 78 feet deep with aquifer thickness ranging from 32 to 43 feet. (Armstrong, 1980)</p> <p>The private water well contractor lithologic logs from nearby wells provide hydrogeologic information on the existing facility site. The county ground water studies identified three wells that have been used or are being used by the facility.9 (Armstrong and Luttrell, 1978) Two wells are located in the Dakota Group Sandstone, they are screened from 1,375 to 1,430 feet deep (Armstrong and Luttrell, 1978) and from 1,000 to 1,080 feet deep. Another well is in the glacial drift that was completed in fine silty clay with fines and screened from 102 to 114 feet deep.</p> <p>There are also other wells completed in glacial drift within a mile of the colony. The logs for all these wells indicate that they are screened in discontinuous sand and gravel lenses in till or sandy glacio-fluvial deposits that are confined by at least 55 feet of till. The shallowest screen interval for these wells is 80 feet deep. Based on the interpretation of the lithologic logs for these wells and the glacial drift well at the facility site, it appears that the aquifer is not present at the site. As discussed earlier, the SWC aquifer boundaries are inferences based on well or test hole lithologic logs and local or regional geologic features. Within the buried bedrock valley hydrogeologic setting of the Ellendale aquifer there are local variations that occurred in the glacial drift depositional environment. In some places within the buried valley, such as the facility site, the aquifer is not present because the buried glacio-fluvial desopits occur as silty sand rather than sand or gravel, or till has filled the bedrock valley. (Armstrong and Luttrell, 1978)</p>
Public wells:	<p>There are no public wells or irrigation wells located within two miles of the site. The facility uses wells to obtained water for the feedlot.</p>

Private wells:	Within two miles of the site there are numerous wells are shown. Wells in the general area are from 22 feet to 283 feet deep. The owner's wells are approximately 114 to 1,430 feet deep.
Groundwater monitoring plan: * pg 51	Ground water monitoring is not recommend for the existing site because of the thick underlying loam or clay loam till, or silty glacio-fluvial deposits. Also, ground water monitoring is not recommend for the new site. The site consist of heavy clays.

DRAFT

Specifications

* Page reference for North Dakota Department of Health Guidelines for Approval of Livestock Manure Systems

Manure Storage Structures	
Expected manure quantities:	<p>Existing:</p> <p><u>Swine</u> Confinement system-swine manure storage ponds <u>Calculations of manure volume from submitted design plan</u> Animal manure: <u>705 ft³/day (5,287 gal/day)</u> Wasted water: <u>437 ft³/day (3,277 gal/day)</u></p> <p>Total storage needed for 365 days manure storage: <u>416,772 ft³/year or 3.1 Mgal</u></p> <p><u>Turkeys</u> Confinement system-Turkey litter stacking pad <u>Calculations of manure volume from submitted design plan</u> Animal manure: <u>7854 yd³/yr</u> Bedding material: <u>944 yd³/yr</u> Animal mortalities: <u>133 yd³/yr</u></p> <p>Total storage needed for 365 day storage: <u>8,931 yd³</u></p> <p><u>Chickens-Layers and Broilers</u> Confinement system-concrete manure pit <u>Calculations of manure volume from submitted design plan</u> Animal manure: <u>1,533 ft³/yr or 11,472 gal</u></p> <p>Expansion:</p> <p>Confined barns – North Finishing Barn <u>Manure and wastewater quantities from design plans:</u></p> <p>365 days of manure generated: <u>140,759 ft³ or 1.05 Mgal</u></p> <p>Confined barns – South Finishing Barn <u>Manure and wastewater quantities from design plans:</u></p> <p>365 days of manure generated: <u>140,759 ft³ or 1.05 Mgal</u></p>

Required
manure
storage:

*page 28, 39

Existing:

Swine

Type: Manure storage pond
Pond Dimensions- Each Pond
Design Volume: 211,288 ft³ or about 1.6 Mgal
Dimensions: Length 85 ft Width 65 ft Depth 11 ft
Planned Freeboard: 1 ft
Surface area: Approx 0.66 ac or 29,041 ft²

Total Storage: 211,288 ft³ x 2 ponds = 422,576 ft³ or about 3.2 Mgal
The facility has the capacity to store the 365 days of swine manure.

Turkeys

Type: Stacking Pad
Pad Dimensions
Design Volume: 341,000 ft³ or about 12,630 yd³
Dimensions: Length 220 ft Width 155 ft Stack Depth 10 ft

The facility has the capacity to store the turkey manure, bedding and mortalities.

Broilers and Laying Hens

Type: Manure storage pit
Pit Dimensions
Design Volume: 3,200 ft³ or about 23,938 gal
Dimensions: Length: 20 ft Width: 20 ft Depth: 8 ft

The facility has the capacity to store the chicken manure.

Expansion:

Confined barns – North Finishing Barn

Capacity for the finishing barn:

Dimensions of the pit:	Length: 239.67 ft	Width: 99.33 ft	Depth: 7 ft
Columns (160 total):	Diameter: 12 in		Depth: 7 ft
Pump out port (8 total):	Length: 6 ft	Width: 4.66 ft	Depth: 7 ft

Storage volume = Pit - Columns + Pump out ports + Sump

365 days of storage: 167,672 ft³ or 1.25 Mgal

Confined barns – South Finishing Barn

Capacity for the finishing barn:

	<table border="1"> <tr> <td>Dimensions of the pit:</td> <td>Length: 239.67 ft</td> <td>Width: 99.33 ft</td> <td>Depth: 7 ft</td> </tr> <tr> <td>Columns (160 total):</td> <td>Diameter: 12 in</td> <td></td> <td>Depth: 7 ft</td> </tr> <tr> <td>Pump out port (8 total):</td> <td>Length: 6 ft</td> <td>Width: 4.66 ft</td> <td>Depth: 7 ft</td> </tr> </table> <p>Storage volume = Pit - Columns + Pump out ports + Sump</p> <p>365 days of storage: <u>167,672 ft³ or 1.25 Mgal</u></p>	Dimensions of the pit:	Length: 239.67 ft	Width: 99.33 ft	Depth: 7 ft	Columns (160 total):	Diameter: 12 in		Depth: 7 ft	Pump out port (8 total):	Length: 6 ft	Width: 4.66 ft	Depth: 7 ft
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Pump out port (8 total):	Length: 6 ft	Width: 4.66 ft	Depth: 7 ft										
Deep Pits:	<p><u>Location:</u></p> <p>Soil borings were completed by Dakota Environmental, Inc. The borings indicate that the Unified classification for the subsoil at the site is generally CL and SC to a depth of about 25 feet. The soil was moist and water was observed in borings 1, 3, 5 and 6 at depths ranging from 13 to 16 feet. The bottom of the pits is at a proposed relative elevation of 91 ft for the finishing barns. See Table 3 page 13.</p>												
Manure transfer components: * pg 37	<p><u>Manure Storage Structure Considerations:</u></p> <p>There are four pump-out ports with a sump located on the north sides and four pump-out ports with a sump located on the south sides of each of the finishing barns.</p>												
Inlet lines and outlet structures:	- Pump out ports will be located on the north and south sides of the finishing barns.												
Diversions: *page 16	<p>The area around the finishing barns is sloped properly so runoff is diverted away from the site. A clean water diversion will be installed to prevent clean water from entering the manure stacking pad. The diversion will carry the runoff from approximately 3 acres west of the pad to the north. The diversion will have a 10 feet wide bottom and 4:1 side slopes. During a 25 year, 24 hour storm event the diversion will carry approximately 3 ft³/s at a maximum velocity of less than 0.5 fps.</p> <p><u>Design Criteria:</u></p> <p>Sizing Expected runoff from a 25 year, 24 hour storm event</p> <p>Freeboard 0.3 feet (minimum)</p> <p>Side Slopes 3:1 max</p> <p>..... 6:1 recommended when equipment crossing is expected</p> <p>Ridge Width 4 feet minimum</p> <p>Settlement Factor..... 10%</p> <p>The channel grade must be designed such that the velocity will not cause excessive erosion for the type of soil and vegetation or other lining. The maximum acceptable channel velocity may range from 2.0 ft/sec on sandy soils with no vegetation to 3.5 ft/sec on clayey soils with vegetation.</p>												
Earth fill:	<p>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. Compact all fill and backfill in maximum 12-inch layers to at least 95% of the maximum density as determined by Standard Proctor test, ASTM D698. Appropriate topsoil as deemed by the engineer will be used as cover material. Disturbed and top soiled areas will be seeded to fairway crested wheatgrass or smooth brome grass. The area around the finishing barns will be graded to assure positive drainage away from the structures in all directions.</p>												
Concrete & Rebar:	<p>-The concrete and rebar specifications follow the guidelines of the American Concrete Institute's publication "Building Code Requirements for Structural Concrete", ACI 318.</p> <p>-The compressive strength of the concrete for the walls, floors, beams, footings and columns is 4,000 psi.</p> <p>-The steel reinforcing shall comply with the following: Steel for the walls shall be ASTM A615, Grade 60; steel for the floors shall be ASTM A615, Grade 40 or Grade 60.</p> <p>-Standard concrete cover of rebar shall be as follows, unless noted otherwise: Where earth formed, 3 inches; where exposed to earth or weather, 2 inches.</p>												

<p>Operation & maintenance plan:</p> <p>*pg 40</p>	<p>The operation and maintenance plan calls for repair as needed to maintain original condition. The entire system must be inspected weekly.</p> <p>Manure storage pits must be pumped when it reaches marker to maintain capacity. The wastewater and sludge should be agitated during removal to prevent buildup of solids. Accumulated manure shall be removed annually and applied in accordance with the nutrient management plan.</p> <p>Concrete must be inspected regularly for signs of damage, deterioration or leakage.</p> <p>Earth work must be inspected annually and repaired as needed. The grade around the building must be maintained to assure runoff drains away from the barns. Any areas that have settled should be filled in to prevent water from collecting.</p>
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Nutrient Management Plan, Manure Handling, and Mortality Disposal

<p>Record keeping:</p>	<p>The CAFO 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:</p> <ul style="list-style-type: none"> • Document routine visual inspections of the production area and containment structures. • Maintain a rain gauge at the production area and record measurable rainfall events. • 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. • Inspection of manure application equipment including method, frequency, dates and repairs made if leaks were found. • Setbacks, vegetated buffers or other alternative practices used when land applying manure near surface water or potential conduits to surface water. • 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.
<p>Manure Handling Description:</p>	<p>Existing:</p> <p>The manure and wastewater generated in the existing hog barns is stored in manure storage ponds. The ponds are pumped out onto fields when they reach a certain depth. The turkey litter is composted on the turkey litter stacking pad constructed to the south of the facility. The litter from the laying hens and broilers is stored in an underground storage tank. The tank is pumped out in the spring and fall and hauled out onto cropland.</p> <p>Expansion:</p> <p>The finishing barns will have slatted floors over an 8 foot deep concrete pit to contain waste. There are pump outs located on the north and south sides of each of the barns.</p>
<p>Application rates:</p> <p>*page 23</p>	<p>Manure will be land applied primarily in the spring or fall by injected into the field. Manure will be land applied at a rate not to exceed high phosphorus levels so it will be utilized for crop production and so manure will not get into waters of the state.</p>
<p>General Conditions:</p> <p>*page 22</p>	<p>Best Management Practices (BMPs) must be exercised when managing and applying manure to ensure surface waters are not impacted and minimize nuisance concerns for nearby residents. 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.</p>

Expected manure volumes & nutrients:	<p>Expected Manure Quantities:</p> <table border="1" data-bbox="345 174 1036 317"> <thead> <tr> <th></th> <th>Daily</th> <th>365 Days</th> </tr> </thead> <tbody> <tr> <td>Volume of animal manure</td> <td>14,091 gal/day</td> <td>5.1 Mgal</td> </tr> <tr> <td>Nitrogen (N)</td> <td>1,102 lb/day</td> <td>400,550 lb</td> </tr> <tr> <td>Phosphorus (P₂O₅)</td> <td>948 lb/day</td> <td>344,924 lb</td> </tr> <tr> <td>Potassium (K₂O)</td> <td>623 lb/day</td> <td>226,300 lb</td> </tr> </tbody> </table> <p>* Values from USDA Ag Manure Management Field Hand Book, Chapter 4</p> <p>Nitrogen losses anticipated: Storage: 23% for manure pack and open pond Land apply method: 1% for surface applying and incorporating</p>		Daily	365 Days	Volume of animal manure	14,091 gal/day	5.1 Mgal	Nitrogen (N)	1,102 lb/day	400,550 lb	Phosphorus (P ₂ O ₅)	948 lb/day	344,924 lb	Potassium (K ₂ O)	623 lb/day	226,300 lb
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Land application of manure:	<p><u>Estimate of land needed for manure application:</u></p> <p>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.</p> <p>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.</p> <table border="1" data-bbox="345 636 889 720"> <thead> <tr> <th>Nutrient</th> <th>Rate</th> </tr> </thead> <tbody> <tr> <td>Phosphorus (w/no losses)</td> <td>*40 lb P₂O₅/acre</td> </tr> <tr> <td>Nitrogen (w/ 47.5% losses)</td> <td>*100 lb N/acre</td> </tr> </tbody> </table> <p>Anticipated crop grown: <u>Corn, Soybeans</u></p> <p>Risk assessment for phosphorus : <u>Low-Medium</u></p> <p>Amount of land estimated for spreading at agronomical rates: <u>3,053 acres</u></p> <p>Amount of land identified by applicant for land application: <u>3,628.10 acres</u></p> <p>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 years 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.</p> <p>*Average rates, actual rates depend upon crops grown and projected yield</p>	Nutrient	Rate	Phosphorus (w/no losses)	*40 lb P ₂ O ₅ /acre	Nitrogen (w/ 47.5% losses)	*100 lb N/acre									
Nutrient	Rate															
Phosphorus (w/no losses)	*40 lb P ₂ O ₅ /acre															
Nitrogen (w/ 47.5% losses)	*100 lb N/acre															
Mortality disposal:	Mortality will be composted in an open air concrete bunker system and later spread on fields.															
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.															

Odor Setback

Potential sources: *page 11	The most significant source of potential odors appears to be the storage pond or open lots. Odors from the lots may be minimized with good house-keeping practices. Land application may present a source of short term odor problems. Since this is an existing facility and the Department has not had odor concerns in the past, odors are not anticipated to be a concern in the future. However, if odors are shown to be a concern, steps must be taken to control them. Badger and Dean townships do regulate zoning for feedlot operations, the state setbacks do not apply. The facility obtained a conditional use permit on August 26, 2017, from Badger Township. The nearest residence is 0.87 mile from the feedlot.
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Approval Conditions:

1. The application indicated the facility will house **4,800 finishing pigs, 2,400 head of grower pigs, 2,100 head of nursery pigs, 120 head of replacement gilts, 180 head of farrowing sows, 5 head of boars, 38,000 head of turkeys, 400 head of laying hens, and 2,000 head of broilers.** 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 approved 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 waste water does not discharge into waters of the state. Operation and maintenance plans mean description of the equipment, methods, and schedules for: inspection, monitoring, operation and maintenance of the animal feeding operation (manure storage structures, water pollution control structures, and the production area); and controlling water pollution and air pollution including odors to protect the environment and public health. (Design manual, 6.7, page 42)
3. Notice of Completion and all results of testing completed on the clay liner or the manure storage structures must be sent to the Department when construction is complete.
4. All embankments must be constructed of relatively impervious materials and compacted sufficiently to form a stable structure. An appropriate liner material must be used to prevent excess seepage from the storage pond. Seepage from the storage pond shall not exceed 1/16 inch per day, and shall not detrimentally impact waters of the state.
5. Mortalities must 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.
6. Land application of manure must be in accordance with the nutrient management plan. Manure must be applied in a manner so it will not be washed into waters of the state. The Department may require immediately incorporating the manure into the soil or leaving a buffer distance to prevent impacts to waters of the state or impacts from odors.
7. The following records pertaining to nutrient management must be maintained for a minimum of 5 years. The crops grown and expected realistic crop yields; the date(s) manure, litter or process wastewater is applied to each field; weather conditions during application, 24 hours prior and following application; test methods used to sample and analyze manure, litter, wastewater and soil; 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; calculations showing nutrients applied to each field, including other nutrient sources; total amount of nutrients actually applied to each field, including documentation of calculations for the total amount applied; 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 setbacks, vegetated buffers or other alternative practices used when land applying manure near surface water or potential conduits to surface water. (Design manual, 7.7, number 2, page 49)
8. 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. (Design manual, 7.7, number 3, page 50)
9. The owner/operator of a large AFO shall conduct the following routine visual inspections of the production area: weekly inspections of all storm water 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.
10. All open storage structures shall: maintain a depth marker which clearly indicates the minimum capacity necessary to contain the Manure generated and direct precipitation from a 25-year, 24-hour rainfall event.

11. The facility must maintain adequate storage capacity to contain a 25-year, 24 hour storm event.
12. Any deficiencies discovered during the inspections 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 storm water 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. (Design manual, 6.2, page 40)
13. The owner/operator of a large AFO must 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. (Design manual, 6.5, page 41)
14. The owner/operator of a large AFO shall submit an annual report which includes: the number and type of animals whether in open lots or confined under roof; estimated amount of total manure generated in the previous 12 months; estimated amount of total manure transferred to another party in the previous 12 months; total number of acres for land application covered by the Nutrient Management Plan; person who prepared the Nutrient Management Plan; total number of acres under the control of the facility that were used for land application of manure in the previous 12 months; summary of all manure discharges from the production area that have occurred including date, time, and approximate volume. (Design manual, 6.6, page 42)
15. This approval shall in no way permit or authorize the discharge of any objectionable odorous air contaminant which is in excess of the limits established in North Dakota Administrative Code Ch. 33-15-16 of the North Dakota Air Pollution Control Rules. If the Department determines odors from the facility exceed limits, appropriate steps will be required, within a reasonable time, to control and reduce odors from the facility site. This may include requiring the installation of odor control measures.
16. This approval shall in no way permit or authorize the maintenance of a public nuisance or danger to public health or safety.
17. 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 waste water does not discharge into waters of the state.

Table 1: North Dakota State Water Commission Well Data

Location	Use	Depth (ft)	Diameter (in)	Aquifer
13306104AAA	Observation	21	3	Lamoure
13306104AAD	Domestic	-	6	-
13306104BBB1	Observation	67	1.25	Ellendale
13306104BBB2	-	75	-	Ellendale
13306104CCC	Domestic, Stock	90	4	-
13306104CCD	Domestic, Stock	1100	-	Dakota
13306104CCD	Stock	95	4	-
13306104CCD	Domestic	204	5	-
13306104DDD	Observation	-	-	-

13406105 AAB	Observation	62	1.25	-
13306106AAA	Domestic, Stock	108	4	-
13306106AAA1	Stock	1000	-	Dakota
13306106AAA2	Observation	320	-	-
13306106AAA3	Observation	90	1.25	Ellendale
13306106AAA3	Observation	100	1.25	-
13306106AAA4	Domestic, Stock	-	4	-
13306106BCB	Domestic	57	5	-
13306107CAC	Domestic	110	5	-
13306108AAD	Stock	1020	-	Dakota
13306108CDC	Domestic	88	4	Ellendale
13306109ADD	Domestic	100	4	-
13306109ADD	Stock	1100	-	Dakota
13306116ADA	Domestic	67	4	-
13306117ADD	Domestic	74	-	Ellendale
13306118AA	Stock	1370	2.5	-
13306118ACB	Stock	1375	2	Dakota
13306118ACB	Stock	0	2	-
13306118BAA	Domestic	102	5	-
13306118BB	Domestic, Stock	1000	2	-
13306118DAA	Domestic, Stock	120	4	-
13306119AA	Stock	80	4	-
13306120AAD	Domestic	93	5	-
13306120CCC1	Observation	260	-	-
13306120CCC2	Observation	98	1.25	Ellendale
13306120 CCC2	Observation	120	1.25	-
13306120DAB1	Domestic	66	4	Ellendale
13306120DAB2	Domestic	74	4	Ellendale
13306128BAB1	Observation	280	-	-
13306128BAB2	Observation	83	1.25	Ellendale
13306129BAA	Domestic	61	4	
13306129BAB	Stock	97	2	
13306129BAB	Stock	68	4	
13306130ACA	-	1050	-	Dakota

13306130BBB1	Observation	218	1.25	Nortonville
13306130BBB1	Observation	260	1.25	-
13306130BBB2	Observation	108	1.25	Ellendale
13306130BDB	-	1000	-	Dakota
13306202AAA1	Observation	260	-	-
13306202AAA2	Observation	71	1.25	Ellendale
13306202CCD	-	90	4	-
13306203B	-	1150	1	Dakota
13306203BCA	Domestic	216	5	-
13306210BBA	Domestic	126	4	-
13306210BBA	Domestic	59	4	-
13306211ABB	Domestic	120	4	-
13306213AAA	Domestic, Stock	122	4	-
13306215BCB	Domestic	144	4	-
13306215BCC	Domestic, Stock	1265	2	Dakota
13306222BA	Domestic	120	4	-
13306222BAA	Domestic	78	5	-
13306222BCC	Stock	1125	-	Dakota
13306222DBD	Stock	1125	1.25	Dakota
13306222DDD1	Observation	260	-	-
13306222DDD2	Observation	123	1.25	Ellendale
13306224CCB1	Observation	218	1.25	Nortonville
13306224 CCB2	Observation	108	1.25	Ellendale
13306225DBD	-	1030	1	Dakota
13306227AAA	Domestic, Stock	150	-	-
13306227BBB	Domestic	133	4	-

Information retrieved from North Dakota State Water Commission web site. (see references)

Table 2: Natural Resource Conservation Soil Survey Data

Map unit	Name	Description	Bedrock depth	Seasonal water table	Unified soil class*	Lagoon Restrictions
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G143A	Barnes-Svea loams, 0-3% slopes.	The Barnes series consists of very deep, well drained soils that formed in loamy till. These soils are on till plains and moraines. The Svea series consists of very deep, well or moderately well drained soils that formed in calcareous till and local alluvium from the till. Permeability is moderate in the solum and moderate or moderately slow in the C horizon. These soils are on concave positions on till plains.	0-60"	> 6'	CL	Somewhat limited: depth to saturated zone, seepage, slope.
G143B	Barnes-Svea loams, 3-6% slopes.	The Barnes series consists of very deep, well drained soils that formed in loamy till. These soils are on till plains and moraines. The Svea series consists of very deep, well or moderately well drained soils that formed in calcareous till and local alluvium from the till. Permeability is moderate in the solum and moderate or moderately slow in the C horizon. These soils are on concave positions on till plains.	0-60"	> 6'	CL	Somewhat limited: depth to saturated zone, seepage, slope.

Table 3: Soil Boring Information

	SB 1	SB 2	SB 3	SB 4	SB 5	SB 6
Elevation	100.2	95.2	96.2	98.5	97.3	100.2
0 to 1	TS/SC	TS	TS	TS	TS	TS
1 to 2	SC	TS/CL	TS	CL	TS/SC	SC
2 to 3	SC	CL	TS/CL	CL	SC	SC
3 to 4	SC	CL	CL	CL	CL	SC
4 to 5	SC	CL	CL	CL	CL	SC/CL
5 to 6	CL/SC	CL	CL	CL	CL	CL
6 to 7	CL/SC	CL	CL	CL	CL	CL
7 to 8	CL/SC	CL	CL	CL	CL	CL
8 to 9	CL/SC	CL	CL	CL	CL	CL
9 to 10	CL/SC	CL	CL	CL	CL	CL
10 to 11	CL/SC	CL	CL	CL	CL	CL
11 to 12	CL/SC	CL	CL	CL	CL	CL
12 to 13	CL/SC	CL	CL	CL	CL	CL
13 to 14	SC	CL	CL	CL	CL	CL
14 to 15	CL/SC	CL	CL	SM	SC	CL
15 to 16	CL/SC	CL	CL	SM/CL	SC	CL
16 to 17	CL/SC	CL	CL/SP	CL	SC	CL
17 to 18	CL/SC	CL	CL	CL	CL	CL
18 to 19	CL/SC	CL	CL	CL	CL	CL
19 to 20	CL/SC	CL	CL	CL	CL	SM
20 to 21	CL/SC					SM
21 to 22	CL/SC					SM
22 to 23	CL/SC					SM
23 to 24	CL/SC					SM
24 to 25	CL/SC					SM

Information retrieved from Engineering Design submitted by applicant

References

Bluemle, John P., Blume, 1979, Geology of Dickey and Lamoure Counties, North Dakota; Part I, North Dakota State Water Commission County Ground-Water Studies 28-Part I and North Dakota Geological Survey Bulletin 70 – Part I, p.4-5, 12

Geology of Dickey and Lamoure Counties, North Dakota; Part I, North Dakota State Water Commission County Ground-Water Studies 28-Part I and North Dakota Geological Survey Bulletin 70 – Part I, Plates.

Armstrong, C.A., Armstrong, and Luttrell, S.P. ,Luttrell, 1978, Ground-Water Basic data for Dickey and Lamoure Counties, North Dakota; Part II, North Dakota State Water Commission County Ground-Water Studies 28-Part II and North Dakota Geological Survey Bulletin 70 – Part II, p. 38-40

Armstrong, C.A., Armstrong, 1980, Ground-Water Resources of Dickey and Lamoure Counties, North Dakota; Part III, North Dakota State Water Commission County Ground-Water Studies 28-Part III and North Dakota Geological Survey Bulletin 70 – Part III, Plates, pp. 15-16, 19-20, 35

Ground-Water Resources for Logan County, North Dakota; Part III, North Dakota State Water Commission County Ground-Water Studies 34-Part III and North Dakota Geological Survey Bulletin 77 – Part III, Plates.

State Water Commission & Office of the State Engineer, Map and Data Resources, Ground-Surface Water and Private Contractor logs, database. http://www.swc.state.nd.us/info_edu/map_data_resources/

Natural Resources Conservation Service (NRCS), Web Soil Survey, database. <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

Natural Resources Conservation Service (NRCS), Official Soil Series Descriptions, database. <https://soilseries.sc.egov.usda.gov/osdname.aspx>

North Dakota Livestock Program Design Manual, North Dakota Department of Health, January 7, 2005.

9-15-2017
JL & RS: BE

APPROVAL TO OPERATE

An Animal Feeding Operation

In compliance with Chapter 33-16-03.1 of the North Dakota Department of Health rules as promulgated under Chs. 61-28 and 23-25 of North Dakota Century Code (NDCC), approval of the **Fairview Hutterian Brethren Association** livestock facility located in the NE¼ NE¼ of Section 13, Township 133 N, Range 62 W, and NW¼ of Section 18, Township 133 N, Range 61 W in Lamoure County, North Dakota is granted provided the following conditions are met:

1. The facility will house **4,800 finishing pigs, 2,400 head of grower pigs, 2,100 head of nursery pigs, 120 head of replacement gilts, 180 head of farrowing sows, 5 head of boars, 38,000 head of turkeys, 400 head of laying hens, and 2,000 head of broilers**. 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 approved 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 waste water does not discharge into waters of the state. Operation and maintenance plans mean description of the equipment, methods, and schedules for: inspection, monitoring, operation and maintenance of the animal feeding operation (manure storage structures, water pollution control structures, and the production area); and controlling water pollution and air pollution including odors to protect the environment and public health. (Design manual, 6.7, page 42)
3. Notice of Completion and all results of testing completed on the clay liner or the manure storage structures must be sent to the Department when construction is complete.
4. All embankments must be constructed of relatively impervious materials and compacted sufficiently to form a stable structure. An appropriate liner material must be used to prevent excess seepage from the storage pond. Seepage from the storage pond shall not exceed 1/16 inch per day, and shall not detrimentally impact waters of the state.
5. Mortalities must 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.
6. Land application of manure must be in accordance with the nutrient management plan. Manure must be applied in a manner so it will not be washed into waters of the state. The Department may require immediately incorporating the manure into the soil or leaving a buffer distance to prevent impacts to waters of the state or impacts from odors.

7. The following records pertaining to nutrient management must be maintained for a minimum of 5 years. The crops grown and expected realistic crop yields; the date(s) manure, litter or process wastewater is applied to each field; weather conditions during application, 24 hours prior and following application; test methods used to sample and analyze manure, litter, wastewater and soil; 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; calculations showing nutrients applied to each field, including other nutrient sources; total amount of nutrients actually applied to each field, including documentation of calculations for the total amount applied; 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 setbacks, vegetated buffers or other alternative practices used when land applying manure near surface water or potential conduits to surface water. (Design manual, 7.7, number 2, page 49)
8. 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. (Design manual, 7.7, number 3, page 50)
9. The owner/operator of a large AFO shall conduct the following routine visual inspections of the production area: weekly inspections of all storm water 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.
10. All open storage structures shall: maintain a depth marker which clearly indicates the minimum capacity necessary to contain the Manure generated and direct precipitation from a 25-year, 24-hour rainfall event.
11. The facility must maintain adequate storage capacity to contain a 25-year, 24 hour storm event.
12. Any deficiencies discovered during the inspections 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 storm water 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. (Design manual, 6.2, page 40)
13. The owner/operator of a large AFO must 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. (Design manual, 6.5, page 41)
14. The owner/operator of a large AFO shall submit an annual report which includes: the number and type of animals whether in open lots or confined under roof; estimated amount of total manure generated in the previous 12 months; estimated amount of total manure transferred to another party in the previous

12 months; total number of acres for land application covered by the Nutrient Management Plan; person who prepared the Nutrient Management Plan; total number of acres under the control of the facility that were used for land application of manure in the previous 12 months; summary of all manure discharges from the production area that have occurred including date, time, and approximate volume. (Design manual, 6.6, page 42)

15. This approval shall in no way permit or authorize the discharge of any objectionable odorous air contaminant which is in excess of the limits established in North Dakota Administrative Code Ch. 33-15-16 of the North Dakota Air Pollution Control Rules. If the Department determines odors from the facility exceed limits, appropriate steps will be required, within a reasonable time, to control and reduce odors from the facility site. This may include requiring the installation of odor control measures.
16. This approval shall in no way permit or authorize the maintenance of a public nuisance or danger to public health or safety.
17. 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 waste water does not discharge into waters of the state.

The above conditions are considered part of the proper operation of the facility. If any of the above conditions are not met, the Department must be notified in writing, within five (5) days. Any noncompliance with the approval 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 fines and/or revocation of this approval to operate.

Permission to begin construction becomes effective upon signature of this Approval by the Department. The approval 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 plan, the Department must be notified in writing and approval obtained, prior to 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.

This approval becomes effective when construction is completed and Notice of Completion and results of testing completed on the clay liner or the manure storage structures are received by the Department.

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 HEALTH

By _____
(signature)

By _____

By _____
(print name here)

By Karl Rockeman, Director
Water Quality Division

Date _____

Date _____

DRAFT