North Dakota Department of Health Public Notice
Issue of an AFO Permit

Public Notice Date: 8/13/2018

Purpose of Public Notice

The Department intends to issue the following Animal Feeding Operation AFO Permit under the authority of Section 61-28-04 of the North Dakota Century Code.

Permit Information

Public Notice Number: ND-2018-021
Application Date: 4/6/2018 Application Number: NDAFO0869
Applicant Name: Grand Prairie Agriculture, LLP
Mailing Address: 7163 50th St. NE, Devils Lake, ND 58301
Telephone Number: 701.351.0380
Proposed Permit Expiration Date: 12/31/2023

Facility Description

The Department will hold a public hearing to discuss the proposed permit for a livestock operation under the authority of section 61-28-04 of the North Dakota Century Code and section 33-16-03.1 of the North Dakota Administrative Code.

APPLICANT INFORMATION

The application indicates the facility will have a maximum of 420 farrowing sows with litter, at an average weight of 420 lbs. and 2,079 gestation sows with an average weight of 380 lbs. The proposed facility is located 10 miles west of Devils Lake, ND, in the SW 1/4 of the SE 1/4 of Section 24, Township 154 N, Range 66 W, in Ramsey County.

MEETING PURPOSE AND LOCATION

Pursuant to requests, the Department will be holding a public hearing in two locations on the proposed facility, in which the Department invites oral comments on the application and review of the proposed livestock facility.

The public hearing will be held September 12, 2018 in two locations starting at 1:00 p.m. at the Spirit Lake Casino & Resort and then the second location will be at the Robert Fawcett Auditorium at the Lake Region State College at 5:30 p.m., with locations listed below:

Spirit Lake Casino & Resort	Lake Region State College
7889 Hwy 57 South	1801 College Drive North
St. Michael, ND 58370	Devils Lake, ND 58301

Written comments should be directed to the North Dakota Department of Health, Division of Water Quality, 918 E Divide Avenue, 4th Floor, Bismarck, ND 58501-1947. The public comment period will be closed end of day on September 28, 2018, and written or oral comments submitted to the Department after that time will not be considered by the Department in determining whether to issue a permit for the proposed facility.

FURTHER INFORMATION

Additional information may be obtained upon request by calling (701) 328-5210 or by writing to the Departments address shown above. The complete application, revised fact sheet, draft approval, and related documents are available for review and reproduction at the Department and located on the department web site www.deq.nd.gov/PublicNotice.aspx. Copies of the revised fact sheet and related items are also available for review at the Auditor's Office located at 524 4th Avenue NE, 1st floor, Devils Lake, ND, the post office located at 502 3rd St NE, Devils Lake, ND, and the Tribal Community Center located at Fort Totten, 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 September 28, 2018 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

Grand Prairie Agriculture, LLP

NDAFO-0869

Prepared by: North Dakota Department of Health

Applicant:	Grand Prairie Agriculture, LLP, Owner.
Location:	Quarter: SE; Section: 24; Township: 154N; Range: 66W; County: Ramsey; Latitude: 48.139579; Longitude: -99.074790 7163 50th St NE, Devils Lake, ND – 10 miles west and 1 mile north of Devils Lake, ND.
Planned:	The owner is planning to build two deep pit, confinement barns. Manure and waste water will be captured from slate floor, into deep concrete pits. The application indicates the facility will have a maximum of 420 farrowing sows with litter at an average weight of 420 lbs and 2,079 gestation sows with an average weight of 380 lbs.

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

Site Review

Geology:	Regionally Ramsey County is located in the Glaciated Plains of the Central Lowland Province. The glaciated Plains is noted for having a topography of undulating to rolling and is underlain by glacial deposits ranging from a few feet to hundreds of feet. The county landscape has been slightly modified since glacial times. (Hobbs and Bluemle, 1987) Ramsey County is located on the eastern edge of the Williston Basin, which is underlain by rocks that dip westward toward the center of the basin to the west. Most of the county is underlain by the Cretaceous Pierre Formation shale. (Hobbs and Bluemle, 1987) The Geomorphology of the area includes beach ridges, modern flood plains, sloughs, temporary lakes, glacial lake plains, hummocky glacial topography, ice-thrust topography, eskers, glacial outwash plains, washboard moraines, and partly buried valleys. In the area of the proposed facility is hummocky topography and eskers. The hummocky topography is characterized as low, medium, and high relief. Low relief is less than ten feet, medium relief is between ten and twenty feet, and high relief is twenty to less than forty feet. The proposed facility is located in the low to medium relief area. Eskers are irregular ridges of sand and gravel deposits that originated from streams from the ice that were left after the ice melted. (Hobbs and Bluemle, 1987) The majority of the county eventually drains into Devils Lake. “Much of the drainage in the county lacks integrated drainage” (Hobbs and Bluemle, 1987, p. 4).
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:	Elevation ranges from 1,462 ft to 1,484 ft (NAVD88 datum)
Site drainage:	The site drains south towards a wetland, a class III water body. It appears that the slough area flows south towards Devils Lake, a Class II water body.
Water bodies:	A wetland, a class III water body is located approximately one-eighth of a mile from the facility. Devils Lake, a Class II water body is located approximately a half mile from the facility

Soils:	The primary soils at the site, as indicated by NRCS soil survey, include Barnes-Svea loams and Barnes-Buse-Langhei loams. These soils consist mostly of Clay of low plasticity (CL) and Silt loam (ML). (Natural Resources Conservation Service (NRCS), Web Soil Survey). (See Appendix 2)
Aquifers:	The Spiritwood Aquifer is a buried –valley system located in the preglacial Cannonball River Valley. The aquifer underlies the western and southern parts of Ramsey County. It ranges from two to nine miles wide, with an average thickness of sixty- eight feet. The aquifer comes out of Towner County to the northwest. (Hutchinson, and Klausing, 1980) The aquifer consists of sand and gravel deposited in buried valley, and beds or lenses of sand and gravel in till above the buried valley. The aquifer in the west and central areas of the county is located in two adjacent buried valleys. Recharge to the aquifer is from the surrounding till from precipitation. Discharge from the aquifer system in the southern area is by pumping, evapotranspiration, and movement into lakes and till. (Hutchinson, and Klausing, 1980)
Public wells:	There are no public wells or irrigation wells located within two miles of the site. (See Appendix 1)
Private wells:	Within two miles of the site there are 53 wells. Wells in the general area are from 13 feet to 180 feet deep. (See Appendix 1)

Odors

Potential sources:	The most significant source of potential odors is the barns with the deep pits located underneath. Land application may present a source of short term odor problems. Both Pelican Township and Ramsey County have zoning ordinances, so state setback does not apply. Lodging facility at half a mile and closest residence at 0.82 miles.

Manure Handling and Disposal

Facility operation:	Sows will be confined on-site year around. The gestation/GDU barn will house 2,079 sows with an average weight of 380 pounds and the farrowing barn will house 420 sows with litter at an average weight of 420 lbs. Manure will be stored in deep pits under the gestation/GDU barn and applied yearly to surrounding land as a fertilizer.
Manure handling description:	The farrowing barn utilizes a pull plug recharge pit under the slats with the farrowing barn draining into the gestation/GDU barn deep pits. The gestation/GDU barn has slatted floors over a 12 foot deep concrete pit to contain waste.

Expected manure quantities:	**Confined barns – Gestation/GDU barn** Manure quantities from design plans: Manure generated (270 Days): 87,455 ft^3 or 0.65 Mgal **Confined barns - Farrowing Barn** Manure quantities from design plans: Manure generated (270 Days): 46,199 ft^3 or 0.35 Mgal Wastewater consists of Spillage, Wash water and Pit Recharge. Based on past performance of like facilities operations generated approximately 0.38 ft^3/day per animal unit. Wastewater: 0.38 ft^3/day x 966.4 Animal Units x 270 days = 99,153 ft^3 or 0.74 Mgal **Total volume for 270 days of storage:** Gestation/GDU barn + Farrowing barn: 232,807 ft^3 or 1.74 Mgal
Mortality disposal:	Mortality will be composted in an enclosed concrete composting barn or buried in accordance with all state and local laws. Runoff from composting area will be contained within composting barn. There will be no mortality disposed of within the manure storage structure.

Specifications

<table>
<tr><td colspan="2">Manure Storage Structures</td></tr>
<tr><td>Required manure storage: 270 days of storage is required by the state.</td><td>
<u>Confined barns – Gestation/GDU barn</u>
<u>Capacity for the gestation barn</u>:

<table>
<tr><td>Dimensions of the pit:</td><td>Length: 379.3 ft</td><td>Width: 123.2 ft</td><td>Depth: 11 ft</td></tr>
<tr><td>Columns (408 total):</td><td>Length: 12 in</td><td>Width: 12 in</td><td>Depth: 11 ft</td></tr>
<tr><td>Pump out port (12 total):</td><td>Length: 6 ft</td><td>Width: 5 ft</td><td>Depth: 11 ft</td></tr>
</table>

Storage volume = Pit - Columns + Pump out ports

Storage volume: <u>514,511 ft^3 or 3.85 Mgal</u>

<u>Confined barns – Farrowing Barn</u>
<u>Capacity for the farrowing barn</u>:

<table>
<tr><td>Dimensions of the pit:</td><td>Length: 227.7 ft</td><td>Width: 84.83 ft</td><td>Depth: 1.5 ft</td></tr>
</table>

Storage volume: <u>28,963 ft^3 or 0.22 Mgal</u>

<u>Total Capacity for storage:</u>

Gestation/GDU barn + Farrowing barn: <u>543,474 ft^3 or 4.07 Mgal</u>
</td></tr>
<tr><td>Deep Pits:</td><td><u>Location</u>:

Soil borings were completed by Materials Testing Service. The borings indicate that the unified classification for the subsoil at the site is generally clay of high plasticity (CH), clay of low plasticity (CL) and clayey sand (SC) to a depth of about 15 feet. The soil was moist, and a water table was encountered at relative elevations ranging from 1378.7 ft to 1379.9 ft within the footprints of the gestation/GDU barn and at 1389.1 ft within the footprint of the farrowing barn. The bottom of the deep pits are at a proposed relative elevation of 1382.6 ft for the gestation/GDU barn and 1395.25 ft for the farrowing barn. (See Appendix 3)</td></tr>
<tr><td>Foundation Drain:</td><td>Drain tile will be placed around the perimeter, outside the foundation base of the deep pit of the gestation/GDU barn that collects clean water from outside water sources that apply pressure to the walls which will help extend the life of the facility.</td></tr>
<tr><td>Manure transfer components:
* pg 37</td><td><u>Manure Storage Structure Considerations</u>:
There are 8 pump-out ports located on the east side and eight located on the west side of the gestation/GDU barn. The farrowing barn has slatted crates located over recharge pits. The west side will drain into the gestation/GDU barn deep pit. Transfer pipes will allow the farrowing barn pits to drain into the gestation/GDU barn through a 10-inch diameter pull-plug system.</td></tr>
<tr><td>Inlet lines and outlet structures:</td><td><u>Inlet Lines and Outlet Structures, Design considerations:</u>

-Transfer lines from the farrowing barn to the gestation/GDU barn will be 10 inches in diameter.
-Pump out ports will be located on the east and west sides of the gestation/GDU barn.</td></tr>
</table>

	Pipe Considerations: - All pipes must be corrosion resistant. - Pipes must be sloped to allow good drainage and minimize plugging. - Clean out ports will be installed on the east and west sides of the farrowing facility.
Diversions:	The facility has incorporated three clean-water diversions into the design of the facility. Clean-water Diversion 1 will convey runoff from the 1.2 acres south of the facility to the north of the facility. It also conveys the clean-water runoff from the 0.7 acres between the gestation/GDU barn and the farrowing barn to the north of the facility. The runoff from the south will enter the underground pipes that lead to the north and outlet on the north side of the facility. The runoff will enter a 12" corrugated plastic pipe by means of a 15" Nyloplast riser. The 12" pipe will join a 15" CPP pipe where the second 15" Nyloplast riser will be located. The 15" pipe will join an 18" CPP pipe where an 18" Nyloplast riser will be located. The 2nd and 3rd risers will convey clean-water runoff from between the gestation/GDU and farrowing barns underground to the clean-water diversion pipes. During a 25 year, 24 hour storm event, the 18" culvert will carry approximately 12.1 ft^3/s at a velocity less than 1.07 ft/s. Clean-water Diversion 2 will be located on the north side of the facility in order to keep clean-water from entering the site. The diversion will have a 12 foot wide bottom width with 4:1 side slopes. The diversion will convey the clean water from the 2.2 acres east of the farrowing barn to the north away from the site. During a 25 year, 24 hour storm event the drainage will carry approximately 10.6 ft^3/s at a velocity less than 1.8 ft/s. Clean-water Diversion 3 will be located on the south side of the access road in order to keep clean-water from entering the site. The diversion will have a 12 foot wide bottom width with 4:1 side slopes. The diversion will convey the clean water from the 1.6 acres south of the access road to the east towards a 12" CPP pipe. The 12" pipe conveys the runoff to the north, under the access road and away from the site. During a 25 year, 24 hour storm event the pipe will carry approximately 5.0 ft^3/s at a velocity less than 2.27 ft/s. 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% 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.
Earth fill:	The design plans indicate vegetation and organic material will be stripped and removed from the footprint of the confinement barns. Organic materials or frozen soil will not be used in fill material. Class C compaction shall be used for earth fill unless otherwise noted. Appropriate topsoil as deemed by the Engineer will be used as cover material on the outside slopes of the diversions. The outside slopes of the diversions will be seeded to a shallow rooted perennial grass.
Concrete & Rebar Specs:	The concrete and rebar specifications follow the guidelines of the publication MWPS-36, Rectangular Concrete Manure Storages. -The compressive strength of the concrete for the walls, floors, beams, footings and columns is 4,000 psi. The compressive strength of the concrete for the slats is 4,500 psi. -For the pit floor in the gestation/GDU barn, a 5 inches floor with #4 rebar @ 18" O.C. will be used for the main pit and the pump out pits. Three inches of cover will be maintained on the earth side and 1 inch of cover will be maintained on the top side of the rebar. For the pit floor in the farrowing barn, a 4 inch floor with a 6" by 6" #10 welded wire will be used for the shallow pit. 3 inches of cover will be maintained on the earth side and 0.75 inches of cover will be maintained on the top side of the wire. -For the vertical steel in the exterior pit walls of the gestation/GDU barn, a single mat #5 rebar @ 8.5 inches O.C. with 2 inches of clear cover will be used for the outside wall. A single mat #5 rebar @ 8.5

	inches O.C. with 2 inches of clear cover will be used for the pump out pit wall. For the horizontal steel in the exterior pit walls of the gestation barns and the GDU barns, #5 rebar @ 15 inches O.C. with 2 inches of clear cover will be used for both the outside wall and the pump out pit wall. -For the vertical steel in the exterior pit walls of the farrowing barn, #4 rebar @ 12" O.C. with 2" of clear cover will be used. For the horizontal steel in the exterior pit walls of the farrowing barn, #4 rebar @ 12" O.C. with 2" of clear cover will be used.
Groundwater monitoring plan: * pg 51	The proposed facility overlies the Spiritwood aquifer. This is a sand and gravel aquifer with an approximate depth to water of 17 feet. The groundwater flow direction at the site is likely towards the north-northwest based on the soil borings submitted with the design plan. Ground water monitoring will be required, due to the proposed facility being located over the Spiritwood aquifer. A total of three monitoring sites will be required by the department; one up-gradient of the facility, and two down gradients. Also, a leak detection system will be installed and monitored. A monitoring plan must be submitted and approved prior to the facility being populated.
Operation & maintenance plan:	The operation and maintenance plan calls for the liquid manure pits to be pumped down before the liquid reaches within one foot of the top of the pit. The level of manure in the concrete deep pits must be recorded weekly. Manure from pull plug system will be drained as needed. Earth work and concrete must be inspected annually and repaired as needed. Manure shall be removed annually and applied in accordance with the nutrient management plan.

Nutrient Management Plan & Manure Application

General conditions:	Careful judgment 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.
Application rates:	The nutrient management plan indicates the following: The manure will be applied to cropland that will have a rotation of corn, wheat, soybeans, edible beans, and barley. The manure on these fields will be injected using a knife or sweeps. The rates for the cropland will be from 0.19 acres inches (5,159 gallons/acre) to 0.55 acre inches (14,934 gallons/acre). A set back of at least one hundred feet from water ways will be used when injecting the manure. Land application will be conducted in a manner which will prevent a discharge or drainage of manure. Nutrients will not be applied to frozen, snow covered, or saturated soils. Manure and soil samples will be taken prior to application, to determine land application rate so it can be spread at agronomic rates. Fields 3 and 26 will be limited to spring application.
Record keeping:	The AFO shall maintain complete copies of the following information on site for a minimum of three years from the date created: • The crops grown and realistic crop yields; • The date(s) and rate(s) manure, litter or process wastewater is applied to each field; • Nutrient test results of manure, litter, and/or process wastewater that are not more than three years old; and • Nutrient test results of the soil where manure was applied that are not more than three years old.

Expected manure volumes & nutrients:	Expected Manure Quantities: |	Daily	365 Days | | Volume of animal manure | 3,867 gal/day | 1.411 Mgal | | Nitrogen (N) | 233 lbs./day | 85,049 lbs. | | Phosphorus (P_2O_5) | 174 lbs./day | 63,608 lbs. | | Potassium (K_2O) | 180 lbs./day | 65,985 lbs. | * *Values from USDA Ag Manure Management Field Hand Book, Chapter 4* Nitrogen losses anticipated: Storage: 23% for liquid manure in anaerobic pit. Land apply method: 1% for knifing in liquid manure. Phosphorus available: Land apply method: 80% available for crops.
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 exceeding the concentrated threshold, the facility is required to apply the manure at agronomic phosphorus rates. | Nutrient | Rate | | Phosphorus (w/no losses) | *40 lb P_2O_5 /acre | | Nitrogen (w/ 47.5% loses) | *100 lb N/acre | Anticipated crop grown: Wheat, Corn, Soybeans, Edible beans, Barley, Risk assessment for phosphorus: Low Amount of land estimated for spreading at agronomical rates: 648 acres Amount of land identified by applicant for land application: 1,844.6 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 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. *Average rates, actual rates depend upon crops grown and projected yield
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.

Approval Conditions:

1. The application indicated the facility will house **2,079 Gestation Pigs and 420 Sow and Litter**. 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 permit.
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 documented. These documents must be made available to the department upon request or during inspection. 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 manure storage structures must be sent to the department within thirty days of completion of construction.
4. Mortality 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.
5. 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.
6. The following records pertaining to nutrient management must be maintained for a minimum of three years: The crops grown and an expected realistic crop yields; the dates(s) manure, litter or process waste water is applied to each field; test results from testing of manure, litter, and process wastewater, that are not more than three years old, and test results of the soil where manure was applied that are not more than three years old; 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 4, page 50)
7. 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 other odor control measures.
8. This permit shall in no way authorize the maintenance of a public nuisance or danger to public health or safety.
9. Groundwater monitoring wells shall be installed at the facility site and monitored as specified by the department. Monitoring wells shall be installed before manure, runoff, or process wastewater is placed into the storage pond. Prior to installation, the department must approve the number, location, construction and sampling procedure for these wells. If groundwater monitoring indicates that the facility is detrimentally impacting groundwater, the facility will need to take corrective action to prevent groundwater impacts.
10. The department must be notified if there is a change in address or other contact information for the facility.
11. 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 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. (Design manual, 6.2, page 40)
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.

Appendix 1: North Dakota State Water Commission Well Data

Location	Use	Depth (ft)	Diameter (in)	Aquifer
154-065-07CDD	Observation	133	1.25	Spiritwood
154-065-07DAA	Domestic, Stock	67	4	Till Deposits
154-065-17AAA	Observation	136	1.25	Spiritwood
154-065-17DDA	Observation	180	-	-
154-065-17DD	Stock	147	4	-
154-065-17DDD	Unused	150	-	Spiritwood
154-065-18AAA	Domestic, Stock	60	4	Pleistocene
154-065-19DBC	Domestic, Stock	99	4	Spiritwood
154-065-20DDD1	Domestic, Stock	144	4	Spiritwood
154-065-20DDD2	Stock	127	-	Spiritwood
154-065-29CAC	Domestic	101	5	-
154-065-29DAA1	Unused	160	4	Spiritwood
154-065-29DAA2	Domestic, Stock	60	4	Pleistocene
154-065-30ABA	Domestic, Stock	140	4	Spiritwood
154-065-30CBA	Domestic, Stock	26	24	Pleistocene
154-065-30DDD1	Domestic, Stock	36	26	Pleistocene
154-065-30DDD2	Domestic, Stock	76	6	Pleistocene
154-065-32AC	Domestic	96	5	-
154-065-32ACD	Domestic, Stock	147	4	Spiritwood
154-065-32BAB	Domestic, Stock	34	-	Pleistocene
154-065-32DA	Domestic	120	6	-
154-066-10BBD	Domestic	180	-	Pierre Shale
154-066-11ABA	Domestic, Stock	150	6	Spiritwood
154-066-11BBD	Unused	34	-	Pleistocene
154-066-13AAA	Domestic	140	5	-
154-066-13AAD	Domestic, Stock	146	-	Spiritwood
154-066-14ADC	Domestic, Stock	112	-	Spiritwood
154-066-14CCC	Domestic	17	-	Pleistocene
154-066-14CCD	Stock	23	-	Pleistocene
154-066-15BBB	Unused	22	-	Pleistocene
154-066-15CCC	Stock	32	48	Pleistocene

154-066-15DDD	Unused	80	1	Spiritwood
154-066-15DDD	Observation	80	1.25	Spiritwood
154-066-23CCC	Observation	120	-	Spiritwood
154-066-23DAB	Domestic, Stock	35	-	Pleistocene
154-066-23DD	Domestic	57	5	-
154-066-23DDD	Observation	123	1	Spiritwood
154-066-24ABA	Unused	38	48	Pleistocene
154-066-25ADB	Stock	116	4	Spiritwood
154-066-25BAB	Stock	40	36	Pleistocene
154-066-25BAB2	Stock	40	36	Unknown
154-066-25C	Stock	116	4	-
154-066-25DDA	Unused	141	1	Spiritwood
154-066-26BBA	Unused	24	-	Pleistocene
154-066-26BBA	Domestic	118	5	-
154-066-26DDD	Domestic	55	5	-
154-066-26DDD1	Stock	46	-	Pleistocene
154-066-34ADD2	Observation	40	2	Till
154-066-34ADD3	Observation	13	2	Till
154-066-34ADD4	Observation	68	2	Pierre Shale
154-066-35DCD	Stock	52	5	-
154-066-36AAC	Domestic, Stock	35	-	Pleistocene
154-066-36DCD	Observation	100	1.25	Spiritwood

Appendix 2: Natural Resource Conservation Service Soil Survey Data

Map unit	Name	Description	Bedrock depth	Seasonal water table	Unified soil class*	Lagoon Restrictions
F143B	Barnes-Svea loams, 3 to 6% slopes.	The Barnes series consists of very deep, well drained, moderately or moderately slowly permeable 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.	0-79"	59.84”	ML, CL	Somewhat limited: depth to saturated zone, slope, seepage.
F143C	Barnes-Buse-Langhei loams ,6 to 9% slopes.	The Barnes series consists of very deep, well drained, moderately or moderately slowly permeable soils that formed in loamy till. These soils are on till plains and moraines. The Buse series consists of very deep, well drained soils that formed in loamy glacial till on moraines. These soils have moderate and moderately slow permeability. The Langhei series consists of very deep well drained soils formed in calcareous glacial till on glacial moraines. These soils have moderate or moderately slow permeability.	0-79"	> 78.7”	ML, CL	Very limited: depth to saturated zone, slope, seepage, ponding.

Information retrieved from Natural Resources Conservation Service, Web Soil Survey and Official Soil Series Descriptions (see references)

Appendix 3: Soil Boring Information

	SB 1	SB 2	SB 3	SB 4	SB 5	SB 6	SB 7	SB 8
Elevation	1382	1379.2	1381.7	1384.5	1387.9	1400.1	1393	1391.4
0 to 1	TS	TS	TS	TS	TS	TS	TS	TS
1 to 2	CH	CL	CL	CL	CL	SC	CL	TS/SC
2 to 3	CH	CL	CL	CL	CL	SC	CL	SC
3 to 4	CH	CL	CL	CL	SC	SC	CL	SC
4 to 5	CH	CL	CL	CL	CL	SC	CL	SC
5 to 6	CH	CL	CL	CL	CL	SC	CL	SC
6 to 7	CH	CL	CL	CL	SC	SC	CL	SC
7 to 8	CH	CL	CL	CL	SC	SC/SP		CL
8 to 9	CH		CL	CL	SC	SP		CL
9 to 10	CH			CL	SC	SP		
10 to 11	CH			CL	SC	SP		
11 to 12					SC	SP		
12 to 13					SC	SP		
13 to 14					SC	SP		
14 to 15					SC	SP		

Appendix 3 reference: Top soil (TS), poorly graded sand (SP)

Information retrieved from Engineering Design submitted by applicant.

References

Hobbs, Howard C. Hobbs, and Bluemle, John P. Bluemle, 1987, Geology of Ramsey County, North Dakota; Part I, North Dakota Geological Survey Bulletin 71–Part I and North Dakota State Water Commission County Ground-Water Studies 26-Part, pp. 4-5, 32-46.

Hutchinson, R.D. Hutchinson, 1977, Ground-water Basic Data for Ramsey County, North Dakota; Part II, North Dakota State Water Commission County Ground-Water Studies 26-Part II and North Dakota Geological Survey Bulletin 71–Part II, pp. 27-30.

Hutchinson, R.D. Hutchinson, and Klausing, Robert L. Klausing, 1980. Ground-water Basic Data for Ramsey County, North Dakota; Part III, North Dakota State Water

Commission County Ground-Water Studies 26-Part III and North Dakota Geological Survey Bulletin 71-Part III, pp. 16-22.

North Dakota 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.

STATE ANIMAL FEEDING OPERATION PERMIT

NDAFO-0869

In compliance with Chapter 33-16-03.1 of the North Dakota Department of Health rules as promulgated under Chapters 61-28 and 23-25 of the North Dakota Century Code (NDCC), approval of the **Grand Prairie Agriculture, LLP** livestock facility located in the SE ¼ of Section 24, Township 154 N, Range 66 W, in Ramsey County, North Dakota is granted provided the following conditions are met:

1. The application indicated the facility will house **2,079 Gestation Pigs and 420 Sow and Litter**. 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 permit.
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 documented. These documents must be made available to the department upon request or during inspection. 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 manure storage structures must be sent to the department within thirty days of completion of construction.
4. Mortality 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.
5. 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.
6. The following records pertaining to nutrient management must be maintained for a minimum of three years: The crops grown and an expected realistic crop yields; the dates(s) manure, litter or process waste water is applied to each field; test results from testing of manure, litter, and process wastewater, that are not more than three years old, and test results of the soil where manure was applied that are not more than three years old; 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 4, page 50)
7. 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 other odor control measures.
8. This permit shall in no way authorize the maintenance of a public nuisance or danger to public health or safety.
9. Groundwater monitoring wells shall be installed at the facility site and monitored as specified by the department. Monitoring wells shall be installed before manure, runoff, or process wastewater is placed into the storage pond. Prior to installation, the department must approve the number, location, construction and sampling procedure for these wells. If groundwater monitoring indicates that the facility is detrimentally impacting groundwater, the facility will need to take corrective action to prevent groundwater impacts.
10. The department must be notified if there is a change in address or other contact information for the facility.

11. 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 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. (Design manual, 6.2, page 40)
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.

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 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 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 permit becomes effective when construction is completed and Notice of Completion is 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 _____