Redwood County Environmental Office -- PO Box 130, Redwood Falls, MN 56283 Phone: (507) 637-4023

Redwood County
www.co.redwood.mn.us

Animal Confinement Feedlot Conditional Use Permit Application

Permit #: 10-17 **Date:** 4-19-17

Proposed Location of Feedlot Operation:

Address: [ ] (House #) County Highway 8 (Street Name) **City:** Tracy **State:** MN **Zip:** 56175

Parcel #: 53-033-2020 **Township:** Gales **Section:** 33 **Twp #:** 110 **Range:** 39

Information about the Operation:

General description of feedlot operation (including type and number of animal units, barns, and manure storage plan):

1250 head capacity, tunnel ventilated swine research finishing unit. Will house 1,250 head weighing between 50 and 300 lbs. Capacity is 375 animal units. Deep pit manure storage with dimensions of 51' x 200' x 8' to hold 499,250 gallons

Legal Description of Proposed Feedlot Location:

W 1/2 NW 1/4

Information about the Land Owner:

First Name: Knoth et al. LLC **Last Name:** Jeff and Joanne Knoth **Phone:** 507-626-582

Address: 1876 280th Ave **City:** Tracy **State:** MN **Zip:** 56175

If the applicant is not the owner of the land, please specify the type of agreement the applicant has with the owner of the land at the proposed site: Land Sale agreement

Site / Plan Information:

Zoning District: Agriculture

Soil Type 1: LINDER LOAM

Soil Type 2: CANISTRO CLAY LOAM, 0 to 2% slopes

Water source for the site: well **If other, please explain:**

Drainage System: Perimeter Tile **If other, please explain:**

Estimated water use:

Animal 1

Animal Type: Growing-Finishing Swine

1.5 gallons/day/animal x 1250 number of animals on site x 365 number of days present = 684,375 gallons/yr/site

Animal 2

Animal Type:

[ ] gallons/day/animal x [ ] number of animals on site x [ ] number of days present = [ ] gallons/yr/site

Animal 3

Animal Type:

[ ] gallons/day/animal x [ ] number of animals on site x [ ] number of days present = [ ] gallons/yr/site

Total Gallons: 684,375 0

Proposed Building(s) Information: (Please enter dimensions in feet)

Building 1:	Width: 51	Length: 200	Height: 14'	Sidewall Height: 10'	Sidewall Thickness: 6"
Building 2:	Width:	Length:	Height:	Sidewall Height:	Sidewall Thickness:
Building 3:	Width:	Length:	Height:	Sidewall Height:	Sidewall Thickness:
Building 4:	Width:	Length:	Height:	Sidewall Height:	Sidewall Thickness:

Each building will have a minimum setback from every road right-of-way of: 67 feet

Estimated date for beginning construction: July 1, 2017 **Estimated completion date:** September 2017

General Contractor:

Name: Jeff Knoth **City:** Tracy **State:** MN

Feedlot Operator:

Complete this section only if the feedlot operator will be different from the "applicant". If the operator is not a natural person(s), you must also provide documentation of the operator's legal identity.

First Name: Jeff Knoth **Last Name:** Knoth **Phone:** 507-626-582

Address: 1876 280th Ave **City:** Tracy **State:** MN **Zip:** 56175

Applicant Information:

Note: If the applicant is not one natural person, requested information and signature(s) must be provided for each partner/associate/co-applicant and must include documentation of each co-applicant's legal identity and the legal relationship between them. Each partner/associate/co-applicant must sign or affirm the application before it will be accepted for consideration.

First Name: Jeffrey **Last Name:** Knoth

Business: Knoth Et. Al, LLC

Address: 1876 280th Ave **City:** Tracy **State:** MN **Zip:** 56175

Home Phone: — **Cell Phone:** 507-626-5829

List any additional applicants:

I affirm that the forgoing information is true and accurate. I understand that if any portion of this information is false or materially misleading, any conditional use permit issued in reliance upon this information is voidable at the election of Redwood County.

Applicant(s) Signature(s): Jeffrey A Knoth **Date:** 4-19-17

Office Use Only * The section below is to be filled out by the Environmental Office Staff

CUP permit fee: $700 **Reciept #:** 381891

Completed Application Acceptance Date: 4-19-17 **Date Approved:**

Commission Action:

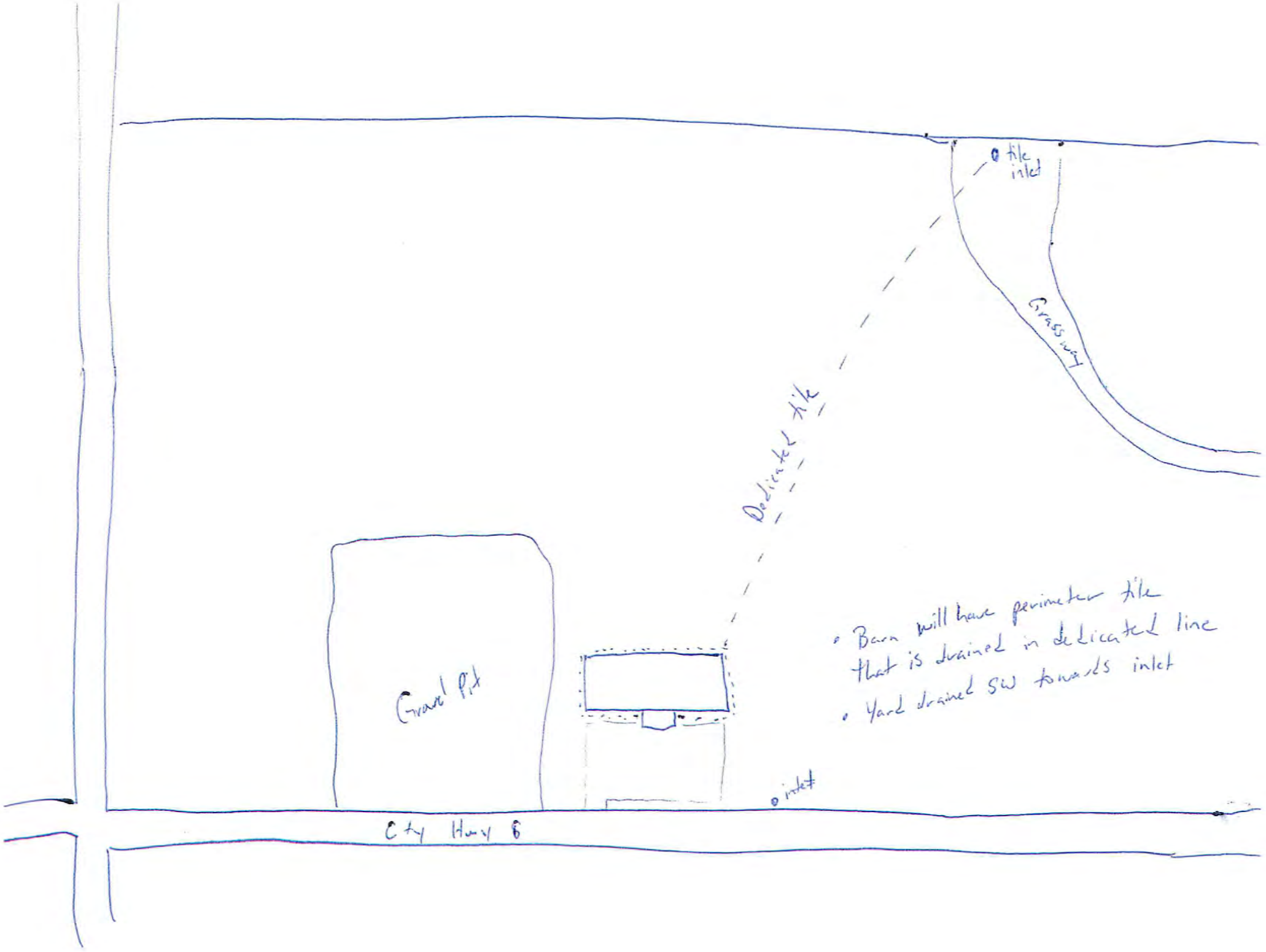
Approved: **Date:**

Disapproved: **Date:**

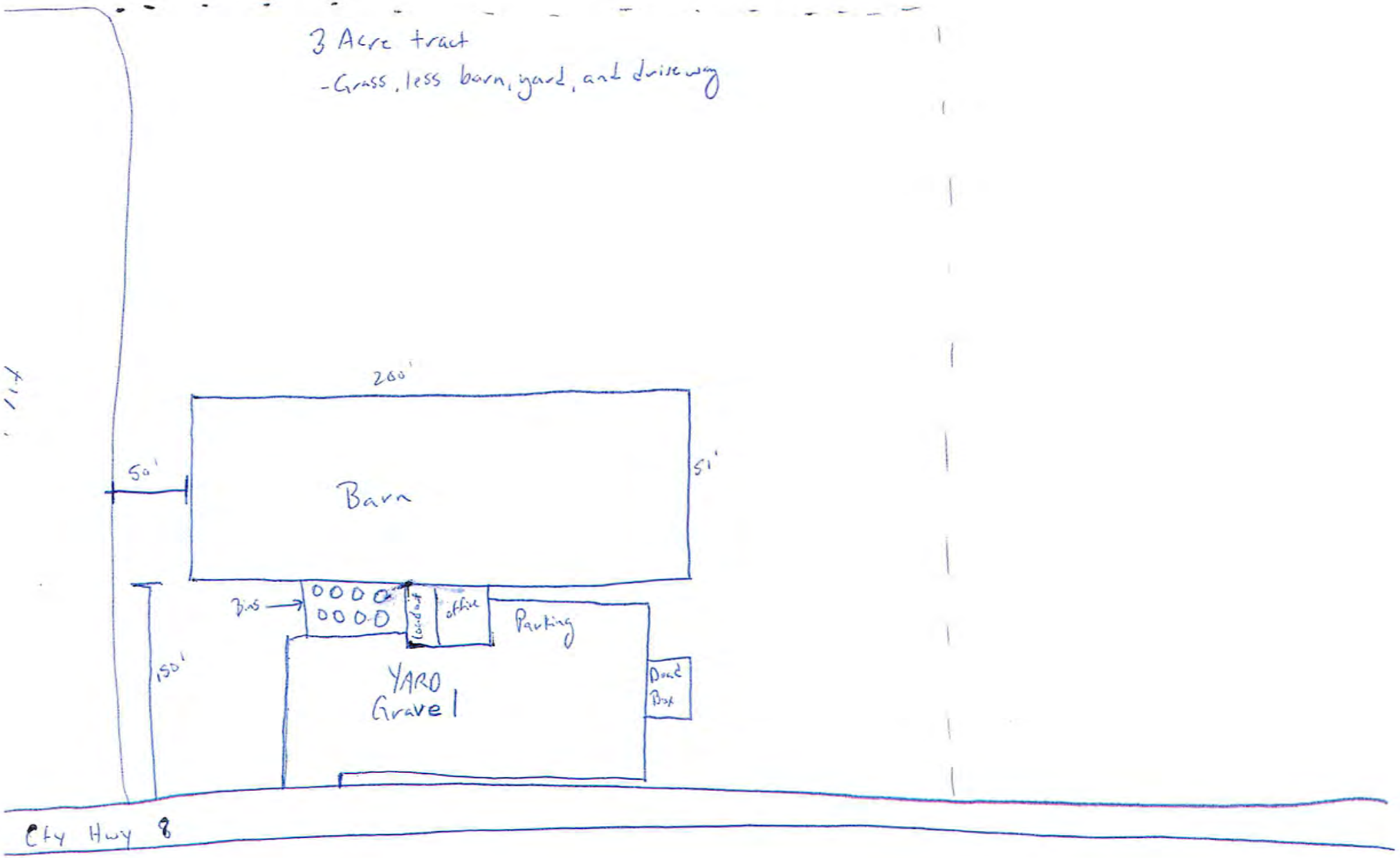
County Board Action:

Approved: **Date:**

Disapproved: **Date:**


tile inlet
Grassway
Dedicated tile
Gravel pit
inlet
City Hwy 6
• Barn will have perimeter tile that is drained in dedicated line
• Yard drained SW towards inlet

3 Acre tract
- Grass, less barn, yard, and driveway



Sanitary Sewer - Mound system Septic by Duscher - Milroy, M

- 1 toilet
- 1 shower
- 1 washing machine for laundry

- location not yet determined

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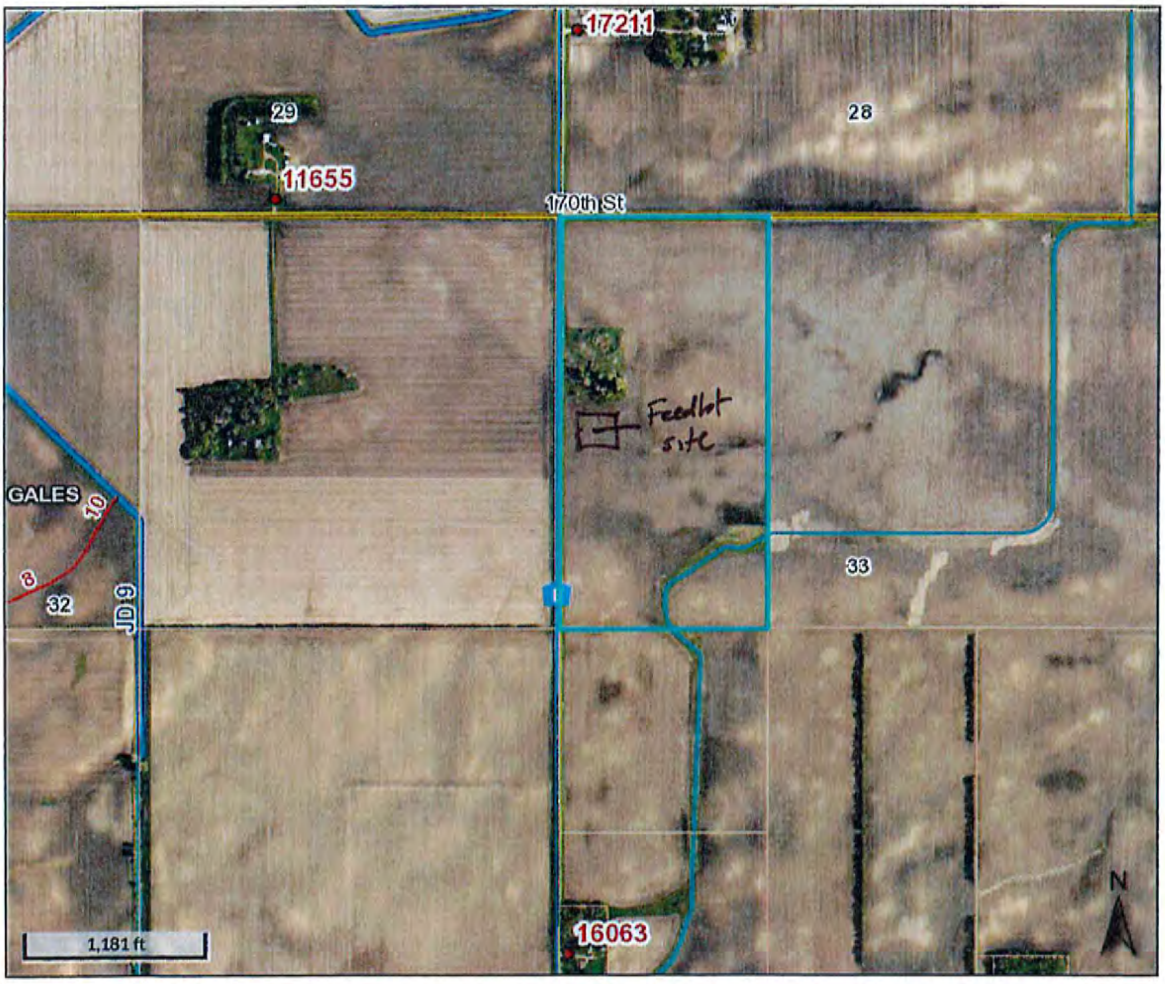


Legend

- Municipal Boundaries
- Sections
- Townships
- Open Ditch
- Drain Tile
- Lakes
- Rivers
- Address points
- Parcels

Shoreland

- <all other values>
- 150 ft
- 300 ft
- 300 ft L W
- 1000 ft
- FloodPlain

Major Roads

- County/Twp/City
- State/Federal
- County
- Minor Roads

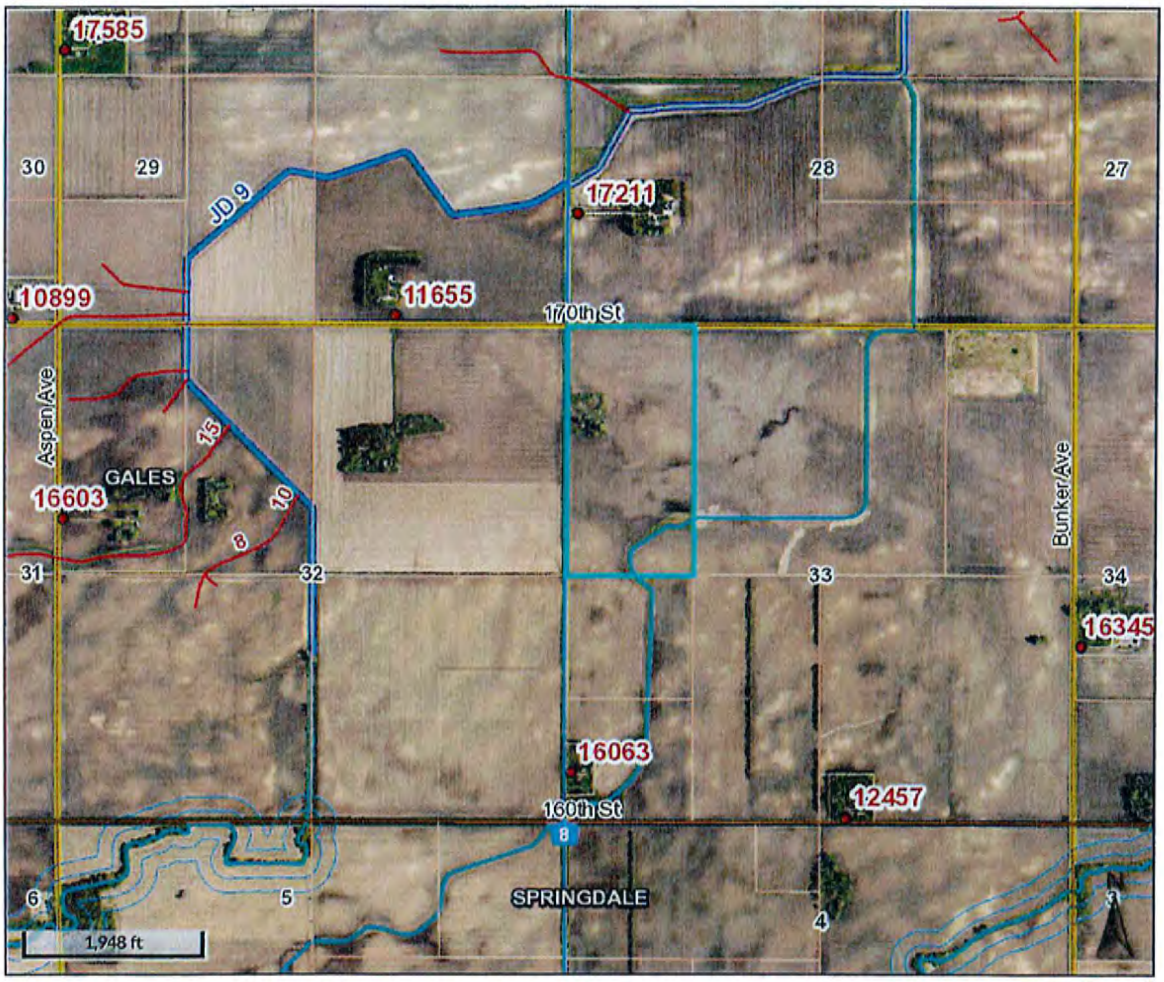
Parcel ID	53-033-2020	**Alternate ID**	n/a	**Owner Address**	KNOTT/ROBERT E & VIOLA M
Sec/Twp/Rng	33-110-39	**Class**	AGRICULTURE		% DAVID KNOTT
Property Address		**Acreage**	80		15443 CO HWY 8
					TRACY MN 56175

District n/a
Brief Tax Description W1/2 NW1/4, 80.A
(Note: Not to be used on legal documents)

Date created: 5/15/2017
Last Data Uploaded: 5/15/2017 10:12:12 AM

Developed by
The Schneider Corporation

Beacon™ Redwood County, MN



Legend

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- Sections
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Overview

Legend

- Municipal Boundaries
- Sections
- Townships
- Open Ditch
- Drain Tile
- Lakes
- Rivers
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- Parcels

Shoreland

- <all other values>
- 150 ft
- 300 ft
- 300 ft L W
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Major Roads

- County/Twp/City
- State/Federal
- County
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Parcel ID	53-033-2020	**Alternate ID**	n/a	**Owner Address**	KNOTT/ROBERT E & VIOLA M
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Property Address		**Acreage**	80		15443 CO HWY 8
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District n/a

Brief Tax Description W1/2 NW1/4, 80.A

(Note: Not to be used on legal documents)

Date created: 5/15/2017
Last Data Uploaded: 5/15/2017 10:12:12 AM

Developed by
The Schneider Corporation

SALES AGREEMENT

THIS SALES AGREEMENT (the "Agreement") dated this 18 day of April, 2017

BETWEEN

David Knott of Tracy, Redwood, Minnesota

(the "Seller")

-AND-

Knott et al., LLC of 1876 280th Avenue, Tracy, Lyon, Minnesota

(the "Purchaser")

IN CONSIDERATION OF THE COVENANTS and agreements contained in the Sales Agreement, the parties to this Agreement agree to the following:

1. Up to 3 acres of bare land located in the NW1/4, Section 33, T110N-R39W, Gales Township, Redwood County, Minnesota to construct swine research and finishing facility. Purchase contingent upon Purchaser receiving approval of State and County Permits.
2. Purchase price will be number of acres x $ TBD /acre for a total amount of $ TBD .
3. The Purchaser will pay $ TBD to the Seller as advance payment, 100% refundable if State and County Permits are not approved or swine facility is not constructed.
4. Seller will leave 3 acres bare and not planted in 2017 crop year in preparation of facility construction.
5. If Purchaser is unable to obtain State and County permits, the Purchaser will pay Seller $300/acre for lost opportunity in 2017 crop year.
6. If State and County permits are granted, Purchaser will pay Seller agreed upon amount within 30 days of receiving approval notice.
7. Any crop damage due to tiling or facility construction will be paid for by Purchaser.
8. The Agreement shall be governed by the laws of Minnesota.
9. Others:

_____

_____

Purchaser Signature:

_____ Dated 4-18, 2017

Seller Signature:

_____ Dated 4-18, 2017

CONSTRUCTION METHODS FOR CONCRETE LINED LIQUID MANURE STORAGE AREA

March 2017 – Project No. 17-20251

KNOTT et al, LLC
1876 280TH Avenue
Tracy, MN 56175
NW¼, Section 33, T110N-R39W
Gales Township, Redwood County

ISG

ARCHITECTURE + ENGINEERING + ENVIRONMENTAL + PLANNING

March 15, 2017

Jeff Knott
1876 280th Avenue
Tracy, MN 56175

RE: Soil Borings for Knott et al, LLC 51'x200' Research Barn
ISG Project No. 17-20251

Dear Mr. Knott:

On March 8, 2017, ISG was present during excavation of 2 observation pits and recorded the soil profiles. A backhoe was used to excavate the 2 test holes. After recording the soil profiles, the holes were backfilled and compacted by placing the soil in the holes to provide the original soil profile.

The seasonal high water table was at 42". The water table will be controlled by using a 4" perforated drain tile installed to gravity-drain to an existing farm tile of sufficient depth. This tile will prevent any ground water intrusion and damage to the concrete pit walls.

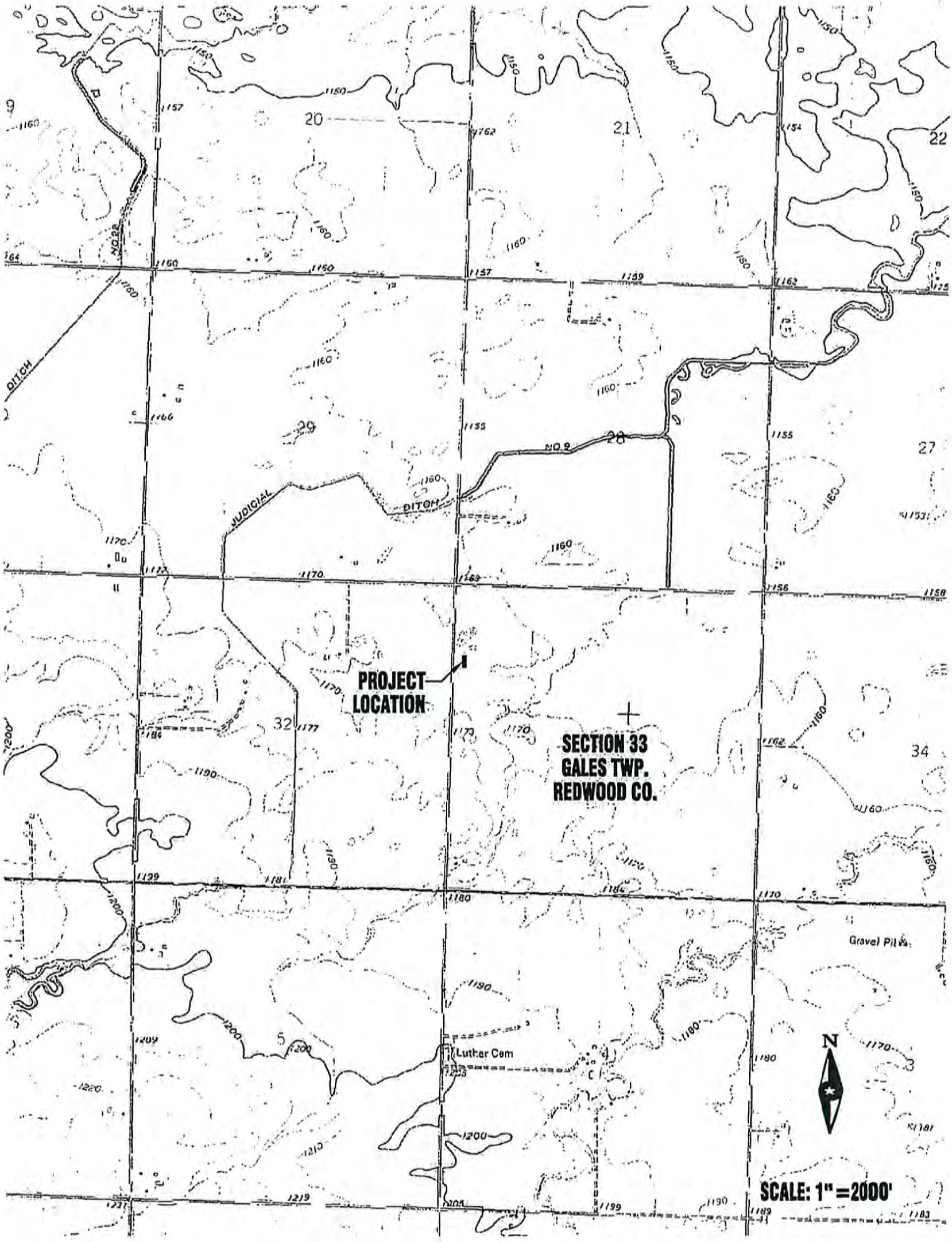
It is our recommendation that the perimeter tile be installed as soon as possible, before pit excavation begins. Placing the tile below the proposed finished floor elevation, prior to construction, will greatly improve the working conditions and provide a suitable base for concrete placement.

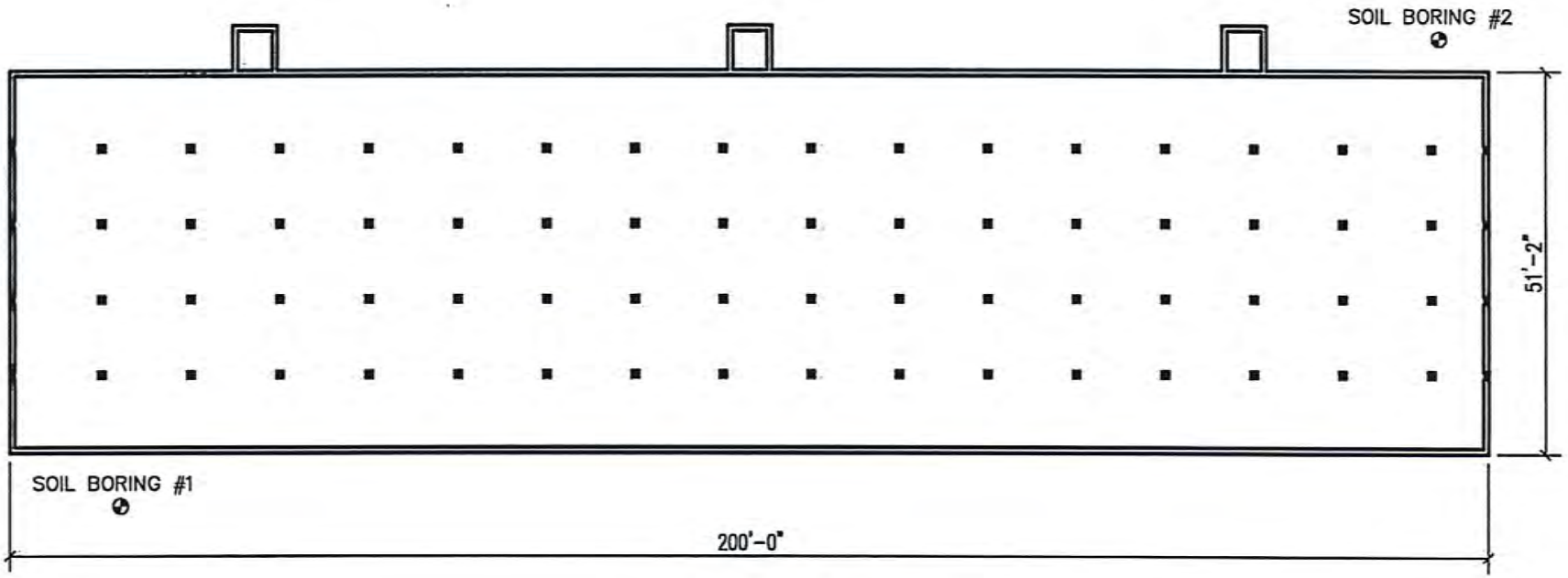
If you have any questions, please call.

Sincerely,

Jason E. Hoehn

Jason E. Hoehn, P.E.
JEH/mdh


PROJECT LOCATION
SECTION 33
GALES TWP.
REDWOOD CO.
Gravel Pit
Luther Cem
N
SCALE: 1" = 2000'



SOIL PROFILE LOCATIONS

KNOTT ET AL, LLC
SECTION 33, GALES TWP., REDWOOD COUNTY
PROJECT NO. 17-20251

SOIL BORING REPORT

Test No: 1

Project Name:	Knott et al, LLC		
ISG Project Number:	17-20251	**Date:**	3/8/2017
Location:	NW 1/4 Section 33	**Temp:**	20 Deg.
Township:	Gales, T110N, R39W	**Conditions:**	Sunny, Windy
County:	Redwood	**Inspector:**	Matt Hudson
Description:	51'x200' Research Barn		

Assum. Elev.	Depth	USCS Symbol	Description of Materials	WL	SH	Notes
1168.00'	+48"					Proposed Slat Elevation
1164.00'	0"					Existing Grade
		10yr 2/1	Top Soil			
1160.50'	-42"					Seasonal High Water Table
1160.00'	-48"					Proposed Pit Floor Elevation
		7.5yr 5/3	Sandy Clay			
		7.5yr 5/8	w/ mottling			
1158.25'	-69"					Ground Water
			Pre-Tiling around the pit is recommended			
1157.33'	-80"					
		7.5yr 5/8	Sandy Gravel			
1156.50'	-90"					
		7.5yr 5/3	Clayey Sand			
1154.83'	-110"					End of Soil Boring

Nearest Body of Water:	Location:	Type:	Distance:	Approx. Elev.:
	East	Judicial Ditch No. 9	2900'	1157.00'

SOIL BORING REPORT

Test No: 2

Project Name:	Knott et al, LLC		
ISG Project Number:	17-20251	**Date:**	3/8/2017
Location:	NW 1/4 Section 33	**Temp:**	20 Deg.
Township:	Gales, T110N, R39W	**Conditions:**	Sunny, Windy
County:	Redwood	**Inspector:**	Matt Hudson
Description:	51'x200' Research Barn		

Assum. Elev.	Depth	USCS Symbol	Description of Materials	WL	SH	Notes
1168.00'	+48"					Proposed Slat Elevation
1164.00'	0"					Existing Grade
		10yr 2/1	Top Soil			
1161.08'	-35"	7.5yr 5/3	Sandy Clay			
1160.42'	-43"					Seasonal High Water Table
1160.00'	-48"					Proposed Pit Floor Elevation
		7.5yr 5/3 7.5yr 5/8	Sandy Clay w/ mottling			
1158.17'	-70"					Ground Water
			Pre-Tiling around the pit is recommended			
1154.67'	-112"					End of Soil Boring

Nearest Body of Water:	Location:	Type:	Distance:	Approx. Elev.:
	East	Judicial Ditch No. 9	2900'	1157.00'

CONCRETE LINED STORAGE STRUCTURE

A Concrete lined manure structure is a fabricated structure for the temporary storage of animal or other organic wastes to conserve nutrients, prevent pollution and protect the environment. The following guidelines are provided for your use in operating and maintaining your structure:

A. Animal manure shall be handled and utilized as specified in the Manure Management plan.

B. Poisonous, noxious or explosive gases produced in the tank must be controlled by ventilation. Evacuate the building if practical during agitation.

C. Regular inspection should be made of the structure and its surroundings for leaks, deterioration of grills, slats, covers, and ladders. Deteriorating items should be replaced to avoid future accidents.

D. Concrete should be checked for large cracks, which could expose the reinforcing steel to corrosive elements. Joints should be inspected for unusual openings.

E. Concrete surfaces should be checked for erosion, scaling and exposed reinforcing steel.

F. If any concrete deterioration is evident, call your local MPCA office. Depending on the damage, an engineer may be needed to evaluate the pit and propose a solution.

G. Regular inspections should be made of the perimeter tile, shut off valves, and inspection risers to ensure proper operations of the system.

PRE-CONSTRUCTION MEETING

A pre-construction meeting is a meeting that involves the owner, the contractor, the design engineer, the inspector and the MPCA or the County feedlot officer. The object of the meeting is to ensure that the structure is built to comply with the rules of the MPCA and the designed plans. Any questions or comments can be discussed at this meeting. Any changes to the plans or specifications must be submitted to the Engineer and the MPCA / County prior to the start of construction.

The project schedule, proper notifications, contact information for contractors, owners, MPCA and County Feedlot Officer, and any sub-contractor information will be discussed at this meeting.

The Pre-construction meeting shall be scheduled at least one week before construction is to begin on the structure. This will be determined mainly by when the contractor can begin work and the owner and engineer's agreement to the timing of the meeting. A time of day and location for the meeting shall be agreed upon by the contractor, owner, design engineer and inspector. The owner shall be responsible for contacting all of the above and scheduling the meeting.

INSPECTION PLAN

An owner constructing a liquid manure storage area, except for concrete lined manure storage areas with a capacity of 20,000 gallons or less, shall have plans designed by a licensed engineer and inspections completed during the construction process which comply with the following:

A. The inspector must be one or more of the following:

1. A professional engineer licensed in the State of Minnesota or a person working under the Professional Engineer's direct supervision;

2. A qualified Natural Resources Conservation Services Staff Person; or

3. If the manure storage area has a concrete liner, an American Concrete Institute or Minnesota Department of Transportation concrete field testing technician grade/level I certified and concrete field inspector level II certified.

B. The General Contractor / Owner is required to call the inspector a minimum of 48 hours prior to beginning excavation and 24 hours prior to placing concrete. Contact will be kept with the inspector throughout the project until the concrete lined storage area is complete.

C. The General Contractor / Owner is required to call the MPCA / County Feedlot Officer 3 days before any construction activity begins.

D. The General Contractor / Owner is required to call the MPCA / County Feedlot Officer 3 days before the perimeter pit walls are backfilled. A final inspection by the MPCA / County Feedlot Officer is required prior to backfill.

E. During construction of each manure storage area the inspector shall record observations related to conformance to the design plans and specifications and construction standards of the following:

1. Subgrade conditions prior to liner placement including soil texture, strength and moisture content, and presence of any frozen soils;

2. Location and proper functioning of the perimeter drainage tile system, if required, and inspection/monitoring access;

3. For all concrete-lined manure storage areas:
   a. Reinforcing steel size, grade, spacing, cover, and that steel is free of loose rust, oil, or other debris;
   b. Handling, placement, consolidation, and finishing of concrete;
   c. Curing and protection of concrete after placement, including hot and cold weather protective measures;
   d. Location, forming, and surface preparation of construction, contraction, and expansion joints;
   e. Placement of flexible waterstop materials in joints; and
   f. Application of surface applied or injected crack and joint sealant materials;

4. Repair of construction defects; and

5. Conformance to the liner penetration prohibitions

F. Concrete Testing:

1. A test of concrete shall include all of the following: Cylinders, Slump, Air Content and Temperature. A test shall be taken once every 100 cubic yards of concrete placed and at least one test every day 10 or more cubic yards of concrete are placed. Additional testing is required to represent new mixes and different concrete suppliers.

2. Three (3) concrete cylinders shall be taken for each 100 cubic yards of concrete placed but not less than three 3 test cylinders each day that 10 or more cubic yards are placed. Keep one of each three cylinders on the job site and allow to field cure. Within two days, deliver two of the three cylinders to a licensed testing laboratory to be cured and tested at seven 7 days and 28 days. Additional testing and cylinders are required to represent new mixes and different concrete suppliers.

3. Concrete Rebound Hammer tests may be taken after the pit is complete and at least 7 days after the concrete to be tested was poured. Concrete shall be tested according to ASTM C 805.

G. The owner shall ensure that the following information is submitted to the Design Engineer for incorporation into the construction report.

1. The name and qualifications of the inspector;

2. The name of the Concrete Contractor.

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Liquid Manure Storage Area Construction Inspection Form

Feedlot Program

Doc Type: Inspection

Applicability: This form must be utilized to document construction of a liquid manure storage area (LMSA). Both the required inspector and the contractor that installed the LMSA liner must contribute information to this form. This form must be provided to the design engineer to incorporate into the final construction report. All instances of construction of a LMSA must utilize this form except for LMSAs that are concrete-lined with a capacity of 20,000 gallons or less or for those that qualify for the exemption of Minn. R. 7020.2100, subp 1. item D or E.

Return this completed form to the design engineer: The owner must submit a construction report to the Minnesota Pollution Control Agency (MPCA) or county feedlot pollution control officer within 60 days of the completion of any new or modified manure storage area. The report must be prepared and signed by the design engineer and must contain an assessment of whether the completed manure storage area conforms to the design plans and specifications submitted to the commissioner or county feedlot pollution control officer.

I. Facility Information

Name of owner(s): _____

Legal name of facility: _____ Permit number_____

Location: _____ _____ ____ ____ ____
County *Township* *Sect.* *¼ Sec.* *¼ of ¼*

II. Inspector's Information *(inspector must complete Parts 3 to 6 of this form)*

Name of inspector: _____ Phone:__

Company/Agency: _____

Inspector qualifications (check all that apply):

☐ Professional engineer licensed in the state of Minnesota. License No.: _____

☐ Person working under the direct supervision of a professional engineer.
Engineer's name: _____ MN license no.: _____

☐ Natural Resources Conservation Services staff.

☐ American Concrete Institute (ACI) or Minnesota Department of Transportation (MNDOT) concrete field testing technician Grade/Level I certified and concrete field inspector Level II certified.
Note: *For concrete-lined structures only.* List certificate no.:_____

III. Notifications

A. Did the owner notify the **design engineer** a minimum of three business days *prior to commencement of construction*? ☐ Yes ☐ No
Date notification given: _____ *(mm/dd/yyyy)*

B. Did the owner notify the **MPCA or county feedlot officer** a minimum of three business days *prior to commencement of construction*? ☐ Yes ☐ No
Date notification given: _____ *(mm/dd/yyyy)*

C. Did the owner notify the MPCA or county feedlot officer within three business days *following completion of the manure storage area liner*? ☐ Yes ☐ No
Date notification given: _____ *(mm/dd/yyyy)*

1. If a concrete-lined structure, did the owner complete the notice before the vertical walls of the concrete structure were backfilled ☐ Yes ☐ No ☐ N/A

IV. Inspection Checklist and Observations

This section (A-H, below) must be completed by the inspector listed in Part II. The liner contractor does not need to complete this section. Attach additional sheets for comments as needed.

	Yes	No	N/A
A. Were subgrade conditions adequate for liner placement, including soil texture, strength, and moisture content, and no frozen soils were present?	☐	☐	
Comments:			
B. Was a perimeter drain tile system specified in the design plans? If yes, answer Questions 1 to 4. If no, go to Question C.	☐	☐	
1. If concrete-lined, is drainage tile located a horizontal distance of at least 1 ft. outside the footing of a concrete-lined structure (unless incorporated into the form material)?	☐	☐	
2. Is a dedicated drain tile system in place for each manure storage area?	☐	☐	
3. Is a dedicated tile riser, manhole, or other access (i.e. daylight) that allows collection of tile-water samples in place and functioning for each dedicated tile system?	☐	☐	
Comments:			
C. **Concrete-lined LMSAs *only*** - Did you verify that the following items (1-7 below) were in conformance with the design engineer's plans and specifications:	☐	☐	☐
1. Reinforcing steel size, grade, spacing, cover, and that steel was free of loose rust, oil, or other debris?	☐	☐	
2. Concrete quality for air entrainment, temperature, and strength? (include test results with photocopy of laboratory results for strength)	☐	☐	
3. Handling, placement, consolidation, and finishing of concrete?	☐	☐	
4. Curing and protection of concrete after placement, including hot and cold weather protective measures?	☐	☐	
5. Location, forming, and preparation of construction and contraction/expansion joints?	☐	☐	
6. Specified product, placement, and installation of flexible waterstop materials in joints?	☐	☐	
7. Specified product and installation of surface applied or injected crack and joint sealant materials?	☐	☐	
Comments:			
D. Were there any construction defects that needed repair?	☐	☐	
If yes, describe:			
E. Were any water supply systems, fuel lines, electrical conduit, or other equipment not solely functioning as part of the manure handling or transfer system installed to penetrate the liner of the liquid storage structure?	☐	☐	
F. Was testing completed according to the methods and frequencies specified in the design engineer's quality assurance and quality control plan? (results should be forwarded to the engineer)	☐	☐	
G. Were any engineering changes or modifications made related to the liner specifications, structure location, depth, or separation distance to bedrock?	☐	☐	
If yes, complete 1 and 2 below:			
1. Describe the changes:			
2. Were these changes approved by the MPCA or county feedlot officer prior to commencement of construction of the change?	☐	☐	
H. Other comments:			

V. Inspector's Certification

I hereby certify that I am the inspector listed in Part II of this form. I hereby certify that the construction of the facilities referenced in this form were completed in accordance with all plans, specifications, reports, permit application submittals, and related communications approved by the MPCA or delegated county feedlot officer. By my signature below, I represent that the information submitted in this form is, to the best of my knowledge and belief, true, accurate, and complete.

Signature of Inspector: _____ Date:__

VI. Contractor's Information and Certification

Contact name: _____ Phone:_____

Liner Contractor Company: ____

Indicate type of liner installed: (Check all that apply) ☐ Earthen ☐ Concrete ☐ Steel Tank ☐ HDPE, LLDPE, or EPDM ☐ GCL (bentonite)
☐Other: _____

I hereby certify that I represent the liner contractor and further certify that the construction of the liner indicated above, was completed in accordance with the design plans and specifications and construction standards.

Signature of Contractor: _____ Date:__

Second Liner Contractor *(if used)*

Contact name: _____ Phone:_____

Liner Contractor Company: ____

Indicate type of liner installed: (Check all that apply) ☐ Earthen ☐ Concrete ☐ Steel Tank ☐ HDPE, LLDPE, or EPDM ☐ GCL (bentonite)
☐Other: _____

I hereby certify that I represent the liner contractor and further certify that the construction of the liner indicated above, was completed in accordance with the design plans and specifications and construction standards.

Signature of Contractor: _____ Date:__

OPERATION AND MAINTENANCE PLAN

A plan for operation, inspections, and maintenance of the manure storage area should be created to ensure the quality of the existing pit.

A. Pit Inspections & Maintenance:

1. Routine inspections should be made of the structure and its surroundings for leaks, deterioration of grills, slats, covers, and ladders.

    a. Monitor the frequency of manure removal from the storage structure and note any significant fluctuations (an increase or decrease) in time between successive manure removal events.

    b. Control the level of the liquid manure inside such that the maximum operating depth is not exceeded.

    c. Records shall be kept explaining the type of defects, location, and repair methods. If any leaking is detected, contact your local MPCA office.

    d. Prior to initial manure loading, consult with the design engineer to determine the need for protecting the foundation and floor slab from freezing temperatures. It may be advisable to add water to the structure to prevent frost damage. It may also be advisable to obtain, and have analyzed, a perimeter tile water sample prior to the addition of manure to the structure.

B. Perimeter Tile Inspections:

1. Routine inspections of the perimeter tile outlets and inspection manholes should be done to ensure proper operations of the tile system. Follow your MPCA / County Livestock Permit requirements for the frequency of tile inspections and testing.

    a. The tile should be inspected for traces of manure, high flows in a dry period, broken tile, and anything else unusual.

    b. Records should be kept on the dates the tile was inspected, methods of inspection, and what was observed. If manure is observed in the tile, contact your local MPCA office immediately.

End of Operation and Maintenance Plan

STRUCTURAL NOTES

A. General:

1. Notes and details on the structural drawings take precedence over these structural notes.

2. The contractor shall verify all dimensions, elevations, and site conditions before starting work. The engineer shall be notified of any changes.

3. In no case shall dimensions be scaled from plans, sections, or details on the structural drawings.

4. All materials and workmanship shall conform to the requirements of the following codes:

   a. International Building Code (IBC)
   b. Minnesota State Building Code
   c. American Concrete Institute (ACI)
   d. Concrete Reinforcing Steel Institute (CRSI) Manual of Standard Practice

B. Drain Tile:

1. The drain tile shall be heavy-duty perforated polyethylene tubing 4" diameter.

2. The tile shall be covered with a washed aggregate, up to the top of the footing elevation, as shown on the plans.

2. Connect the drain tile to an existing farm tile if available, discharge to surface drainage, or drain to a sump and pump to surface.

C. Temporary Bracing and Backfill:

1. Provide temporary lateral support for all walls where grade varies on the two sides until the permanent structural support system is in place.

3. Backfill only after the floor slats or solid floor has been installed.

D. Footings and Foundations:

1. Soil bearing design value: 2500 PSF (Assumed) on virgin soil or compacted fill for footings.

2. Protect foundation excavations from frost. Do not place concrete on frozen ground.

3. Foundation excavation shall be kept free of loose material and standing water.

4. Anchor bolts shall be ½" diameter with 7" embedment and 2 ¾" projection.

E. Reinforced Concrete:

1. Concrete shall have a minimum 28-day compressive strength of F'c = 4000 psi.

2. Water cement ratio shall be 0.45 maximum.

3. Cement shall conform to ASTM C150, Type I.

4. Coarse aggregate shall be ¾" Max.

5. Ready-mix concrete shall be mixed and delivered in accordance with ASTM C94.

6. Slump shall be a maximum of 6".

7. Air Content shall be between 4%-6%.

8. Concrete work shall conform to all the requirements of ACI 301.

9. Admixtures may be used with prior approval of the engineer for the purpose of increasing the workability but not to reduce the specified minimum cement content. Calcium chloride shall not be used.

F. Reinforcing Steel:

1. Bar reinforcement shall be ASTM A615, Grade 40 or 60.

2. Minimum lap splice or reinforcing bar, based on ACI 318, Class B, shall be as follows unless noted otherwise:
   a. #3 Bars – 15"
   b. #4 Bars – 20"
   c. #5 Bars – 24"
   d. #6 Bars – 30"
   e. #7 Bars – 36"
   f. #8 Bars – 42"

3. Reinforcing steel shall be provided with the following minimum cover unless noted otherwise:

   a. Concrete placed against earth – 3"

   b. Formed concrete exposed to earth or weather:

      1) #6 Bars through #8 Bars – 2"
      2) #5 Bars and smaller – 1 ½"
      3) Stirrups & Ties – 1 ½"

4. All reinforcing steel, anchor bolts, dowels, and inserts shall be secured in position with wire positioners, or equal, before placing concrete.

5. Dowels between footings and walls shall be the same grade, size, and spacing as vertical wall reinforcement.

6. All lap splices shall be tied at 3 locations.

G. Tolerances and Quality Control:

1. Column finish elevations shall be + or – ¼" from design elevation.

2. Wall alignment (horizontal) shall deviate no more than ¼" in 10 feet and no more than 3/4" over the full length of the wall.

3. Wall bearing ledge elevations shall be + or –1/4" from design from design elevation in 10 feet and no more than 1/2" over the full length of the wall.

4. Overall foundation length and width dimensions and diagonal dimensions should be within ½" of plan dimensions.

5. Minor honeycombing shall be repaired on the same day that the forms are removed. Major honeycombing (greater than 1 ½" deep) shall be inspected by the engineer and repaired or removed at his direction.

6. Cracks which may extend through the concrete liner must be cleaned and sealed with MasterSeal NP1 Polyurethane Sealant, or approved equal. Larger cracks or defects may need an inspection by the engineer to determine the proper repair.

7. Test Cylinders: Take three (3) test cylinders for each 100 cubic yards of concrete placed but not less than three (3) test cylinders each day that 10 or more cubic yards are placed. Keep one of each three cylinders on the job and allow to field cure. Deliver two of the three cylinders to a licensed testing laboratory to be cured and tested at 7 days and 28 days.

H. Electrical Ground:

1. Install reinforcing bars as shown on the drawing. Verify Electrical Ground requirements with Electrical Contractor. Notify electrical inspector for inspection prior to placing concrete.

I. Cold Weather Concrete:

1. When, for more than 3 successive days, the mean daily temperature drops below 40 degrees Fahrenheit, the contractor shall place and protect the concrete in accordance with ACI 306.

J. Hot Weather Concreting:

1. When it is likely that temperatures between 75 degrees Fahrenheit and 100 degrees Fahrenheit will be approached or exceeded; that low relative humidity is present, or wind velocity will exceed 10 mph, the contractor shall place and protect the concrete in accordance with Chapter 4 & 5 of ACI 305.

K. Waterstops:

1. Waterstop can be 3/8" x ¾" Bentonite/Butyl rubber, Equal to waterstop – RX, Ultrastop, Swellstop or a 4" ribbed with center bulb PVC Waterstop, Equal to Vinylex RCB -4316. Waterstops shall be placed in all construction joints on the floor and in the perimeter walls. Location and number of construction joints are to be determined by the contractor.

L. Fibermesh:

1. Fibermesh fibers shall be added to the concrete mix at a minimum rate of 2.0 pounds per cubic yard of concrete. The fibermesh shall be fibrillated polypropylene Olefin fibers, ¾" in length.

CAST-IN-PLACE CONCRETE

This section includes specifications for formwork, reinforcement, accessories, cast-in-place concrete, finishing and curing.

A. Quality Assurance:

1. Construct and erect concrete formwork in accordance with ACI 301
2. Perform concrete reinforcing work in accordance with ACI Manual of Practice
3. Perform cast-in-place concrete work in accordance with ACI 318

B. Form Materials and Accessories:

1. Plywood: sound undamaged sheets with clean true edges
2. Lumber: grade as required
3. Prefabricated Steel Type: matched, tight fitting, stiffened to support weight of concrete
4. Pan Type: Steel of size and profile required
5. Tubular Column Type: Round, spirally wound laminated materials, inside surface treated with release agent, of size required
6. Form Ties: Snap-off, metal type of adjustable length
7. Form Release Agent: Colorless mineral oil which will not stain concrete or impair natural bonding characteristics of coating intended for use on concrete

C. Reinforcement Materials:

1. Reinforcing Steel: ASTM A615; deformed billet steel bars, plain finish.
2. Cement: ASTM C150, Normal-Type I Portland type.
3. Water: Clean and not detrimental to concrete.

4. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for support of reinforcing.

5. Fabricate concrete reinforcing in accordance with ACI 318 and CRSI.

D. Compounds, Hardeners and Sealer:

1. Curing Compound: ASTM C309, Type 1, Class B type by:
   Master Kure by Master Builders Technologies
   Super Pliocure by Euclid Chemical Company
   Dress and Seal #30 by L & M Construction Chemicals

2. Absorptive Mats: ASTM C171, Burlap-Polyethylene.

E. Concrete Mix:

1. Mix and deliver concrete in accordance with ASTM C94, Alternative 2.

2. Provide concrete of the following specifications:

3. Compressive strength 4000 psi 28 day (floors, walls, piers, and footings).

4. Slump shall be a maximum of 6 inches, 9" with the use of superplasticizers. Testing should follow ASTM C 143.

5. Maximum water/cement ratio: 0.45.

6. Concrete shall be placed according to ASTM C 94 on normal temperature days with an Air Content of 4.0% to 6.0%. Samples shall be obtained and tested in accordance with ASTM C 172.

7. Concrete temperature shall be tested according to ASTM C 1064. Concrete temperature during normal daytime temperatures shall be below 90 Deg. F.

F. Formwork Erection:

1. Erect formwork, shoring and bracing to achieve design requirements.

2. Camber slabs and framing to achieve ACI 301 tolerances.

3. Provide bracing to ensure stability of formwork.
4. Apply form release agent to formwork in accordance with manufacturer's

instructions, prior to placing for accessories and reinforcement.

5. Clean forms as erection proceeds, to remove foreign matter.

G. Inserts, Embedded Components and Openings:

1. Provide formed openings where required for work to be embedded in and passing through concrete members.

2. Coordinate work of other sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors, and other inserts.

3. Install concrete accessories straight, level, and plumb.

4. Install waterstops where shown on the plan and at all pit penetrations and cold joints.

H. Reinforcement Placement:

1. Place reinforcement, supported and secured against displacement.

2. Ensure reinforcing is clean, free of loose scale, dirt, or other foreign coatings.

I. Placing Concrete:

1. Place concrete continuously between predetermined expansion, control and construction joints. Screed floors, slabs-on-grade and concrete toppings level.

J. Form Removal:

1. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads. Remove formwork progressively and in accordance with code requirements.

K. Finishing:

1. Uniformly spread, screed, and float concrete.

2. Maintain surface flatness, with maximum variation of 1/4 inch in 10 ft.

L. Curing:

1. Immediately after placement, protect concrete from premature drying.

2. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

M. Concrete Testing:

1. A test of concrete shall include all of the following: Cylinders, Slump, Air Content and Temperature. Each test shall be taken once every 100 cubic yards of concrete placed and at least one test every day 10 or more cubic yards of concrete are placed. Additional testing is required to represent new mixes and different concrete suppliers.

2. Concrete cylinders:
    a. Take three 3 test cylinders for 100 cubic yards of concrete placed but not less than three 3 test cylinders each day that 10 or more cubic yards are placed. Keep one of each three cylinders on the job site and allow to field cure. Within two days, deliver two of the three cylinders to a licensed testing laboratory to be cured and tested at seven 7 days and 28 days. Additional testing is required to represent new mixes and different concrete suppliers.

3. Concrete Rebound Hammer:
    a. Rebound hammer tests may be taken after the pit is complete and at least 7 days after the last concrete was poured. Concrete shall be tested according to ASTM C 805.

N. Defective Concrete:

1. Modify or replace concrete not conforming to required lines, details, elevations or strength as directed by Engineer.

2. Cracks which may extend through the concrete liner must be cleaned and sealed with MasterSeal NP1 Polyurethane Sealant, or approved equal. Larger cracks or defects may need an inspection by the Engineer to determine the proper repair.

3. Honeycombing shall be patched with a sand/grout mix or commercial patching products such as TK-Complete Concrete Patch, Meadow-Patch 5 or approved equal.

COLD WEATHER CONCRETING

A. Cold weather is defined as a period when for more than 3 successive days the mean daily temperature drops below 40°F. When temperatures above 50°F occur during more than half of any 24-hour period, the concrete should no longer be regarded as winter concrete. Cold weather concrete shall be placed, cured, and protected according to ACI 306 COLD WEATHER CONCRETING and these abbreviated specifications taken from ACI 306 COLD WEATHER CONCRETING.

B. Plans to protect fresh concrete from freezing and to maintain temperatures above the designated minimum for the required time after placing should be made in advance of expected freezing temperatures. Preparation for cold weather concreting consists primarily in insuring that all surfaces to be in contact with newly placed concrete are at a temperature that cannot cause early freezing or seriously delay proper curing (hardening) of the concrete. Originally, the temperature of these contact surfaces, including sub-grade materials, need not be higher than a few degrees above freezing.

C. In moderately cold weather, when heavy frost or freezing is forecast at the job site, all unformed concrete surfaces should be protected from freezing for at least 24-hrs after it is placed.

D. During colder weather when mean daily temperatures are generally below 40°F, concrete shall be placed at a temperature not lower than:

1. 60°F when temperature is above 30°F.
2. 65°F when temperature is 0°F to 30°F.
3. 70°F when temperature is below 0°F.
4. Maintain the placed concrete at a minimum temperature of 55°F for that time period indicated in E. below.
5. Concrete should be placed at or near the lowest allowable temperature and not more than 10°F above the temperatures indicated above.

E. **Air entrained concrete (5% to 7%) shall be used for cold weather concrete.** Footings and pit floor slabs shall be maintained at a minimum temperature of 55°F for 2 days following placement. Walls shall be maintained at a minimum temperature of 55°F for 3 days following placement.

F. Heated enclosures, if used, must be strong, windproof, and weatherproof. Heating units should be vented and not permitted to heat or dry the concrete locally.

G. Generally, the outline below should be followed:

1. Never place concrete on frozen ground or on snow or ice.
2. Supply the concrete mix at a temperature in accordance with D. above but not less than 55°F.
3. After placement of the concrete mix, keep the concrete at a temperature of 55°F for 2 days (floors and footings) and 3 days (walls) by the use of insulated blankets, straw, or the use of properly applied heat. Leave forms in-place during these days.
4. Be particularly concerned with thin concrete, edges, and openings that will be exposed to wind or drafts.
5. Have the necessary insulating material on site before placement of concrete when cold weather is likely to occur.

HOT WEATHER CONCRETING

Hot Weather is defined as any combination of high air temperature, low relative humidity, and wind velocity tending to impair the quality of fresh or hardened concrete or otherwise resulting in abnormal properties. When any of these conditions are present, the contractor shall place and protect the concrete in accordance with Chapter 4 of ACI 305 as described below:

4.1 General

4.1.1 The requirements for good results in hot weather concrete placing and curing is no different than in other seasons. The same necessities exist:

- **a.** That concrete be handled and transported with a minimum of segregation and slump loss.
- **b.** That concrete is placed where it is to remain.
- **c.** That the concrete be placed in layers shallow enough to assure vibration well into the layer below.
- **d.** That joints be made on sound, clean concrete.
- **e.** That finishing operations and their timing be guided only by the readiness of the concrete for them, and nothing else.
- **f.** That curing be conducted in such a manner that at no time during the prescribed period will the concrete lack ample moisture and temperature control, so that hydration continues to develop the full potential of strength and durability of the concrete.

4.2 Preparations for placing and curing

4.2.1 Preparations for placing and curing in hot weather include recognition at the start of work that certain abnormal conditions will exist which will require some items of preparation that cannot readily be provided the last minute before concrete is placed. If concrete temperatures as placed are expected to be abnormally high, preparation must be made to transport, place, consolidate, and finish the concrete at the fastest possible rate.

4.2.1.1 This means, first, delivery of concrete to the job must be scheduled so it will be placed promptly on arrival, particularly the first batch. Many concrete operations get off to a bad start because concrete was ordered before the job was ready and slump control was lost at this most critical time.

4.2.1.2 Equipment for placing the concrete must have adequate capacity to perform its functions efficiently so there will be no delays at distant portions of the work. There should be ample vibration equipment and manpower to consolidate the concrete quickly after placement and to maintain the rate of

placement in difficult areas. All equipment should be in first class operating condition. Breakdowns or delays that stop or slow the placement can seriously affect the quality of the work. Cold joints may be apparent when forms are removed; vibration failure can cause obvious lack of consolidation.

4.2.1.3 Due to more rapid slump loss in hot weather, the strain on vibrating equipment will be greater. Accordingly, provision should be made for an ample number of standby vibrators, at least one standby for each three vibrators in use. A concrete placing operation is in serious trouble, especially in hot weather, when vibration equipment fails and the standby equipment is inadequate. If possible, arrangements should be made in advance to secure another crane or pump quickly, in event of an equipment breakdown.

4.2.2 When there is to be flatwork on grade, early planning may make it feasible to plan a temporary windbreak or provide shade. In any event, the job should be equipped with ample water supply hose. The subgrade should be moist but free of standing water and soft spots at the time of concreting. Fogging can be used to cool and moisten surrounding air to prevent excessive evaporation form flatwork during finishing. Fog nozzles for this use should produce a fog blanket and they should not be confused with the common garden hose nozzles, which produce an excessive washing spray.

4.2.3 Preparation for placing includes proper location and preparation of construction joints. In hot weather, due to faster setting and hardening of the concrete, the timing of clean up by various methods, such as green cutting or surface retardant application, becomes more critical. Preparation must be made for prompt and adequate attention to these matters at the right time.

4.2.4 Work plans should include preparation to limit the temperature of concrete as placed. As the selected limiting temperature, usually but not always between 75 F (24C) and 100 F (38C) is approached and exceeded, it is increasingly likely that the unfavorable effects of high temperature will occur.

4.2.4.1 Whatever temperature limitation is considered worthwhile can be maintained to best advantage if mixers, belts, pump lines, and chutes are shaded. Where they cannot be shaded, they will absorb appreciably less heat from the sun if painted white and kept white. Pump lines and other surfaces can be kept appreciably cooler by covering them with damp burlap, kept damp with soil soaker hose. When daytime temperature and drying conditions may be critical, scheduling concrete placement to begin in the late afternoon will materially improve placing conditions. On massive slabs and pavements this has been found to result in much less thermal shrinkage and cracking. Concrete placed during the early morning may attain an undesirably high temperature, particularly during the middle of the day, when the maximum sun radiation and heat of hydration occur. Such concrete could subsequently be exposed to severe thermal stress on cooling.

4.2.5 Finally, preparation for placing concrete in hot weather includes the special provisions necessary for its hot proper protection and curing, since hot weather causes rapid drying. To avoid serious damage and cracking, facilities must be ready to protect promptly all exposed surfaces from drying. Water curing is much to be preferred for most concrete work, but it is recognized that prompt application of white-pigmented curing compound (ASTM C309) Type 2, is more practical for curing vast areas of flatwork on subgrade. Other alternatives for curing are described in ACI 308. Water curing must be continuous and the continuity of water curing is best assured if provision is made for covering all exposed surfaces, vertical, horizontal, and otherwise, with saturated material (burlap, cotton mats, old carpets, etc.) kept wet with soil soaker hose. This material should be kept in direct contact with the concrete surface at all times. Alternate cycles of wetting and drying promote the development of pattern cracking, and should be avoided. Curing water should not be much colder than the concrete because of temperature change stresses, which could be introduced with resultant cracking.

4.3 Placement and Finishing

4.3.1 Speed-up of placement and finishing materially reduces hot weather difficulties. Delays increase slump loss and invite the addition of water to offset it. Each operation in concrete finishing should be carried out promptly when the concrete is ready for it. It is necessary to make sure that concrete is not placed in the forms faster than it can be properly consolidated by men and equipment, or be properly finished by the men at hand. If the placing rate is not coordinated with available men and equipment, a job will soon be marked with cold joints, poor consolidation, and irregular surface finishes.

4.3.2 Regardless of the thickness of layers of concrete as placed under normal temperatures, each layer may have to be shallower in hot weather to assure coverage of the previous layer while it will still respond readily to vibration. The interval between monolithic wall and deck placements (to let the wall concrete develop its settlement shrinkage) becomes very short in hot weather, especially with warm concrete.

4.3.3 In placing beam and deck concrete, it is necessary in hot weather to keep the operation confined to a small area and to proceed on a front having a minimum amount of exposed surface to which concrete is to be added. A fog nozzle should be used generously to cool the air, to cool the forms and steel immediately ahead, and to lessen rapid evaporation from the concrete surface before and after each finishing operation. Excessive fog spraying (that which would wash the fresh concrete surface or cause water to stand on the surface during floating or troweling) must be avoided.

4.3.3.1 Without such fog spray between the finishing operations in hot weather, particularly if it is windy and humidity is low, water may be evaporated from the surface faster than it will rise naturally to the surface. This will create a growing tension in the surface, which often causes irregular, plastic-shrinkage cracking. Careful use of the fog spray previously mentioned, spreading and removing polyethylene sheeting between finishing operations, or application of monomolecular films after the strike-off, are recommended. Sometimes in relatively massive placement, revibration prior to floating will prevent the development of plastic-shrinkage cracking. When such cracking occurs prior to the final set, the cracks can be closed by striking the surface on each side of the crack with a float. It serves no lasting purpose to merely trowel slurry over them.

4.3.4 In summary, for best assurance of good results with concrete placing in hot weather, the initial concrete placement temperature should be limited to preferably between 75F (24C) and 100F (38C) as discussed in Sections 2.2.2 and 4.2.4. Every effort should be made to keep the concrete temperature uniform. All necessary precautions should be taken to see that concrete is promptly placed on arrival at the job and immediately vibrated after placement. Flatwork should be protected from excessive drying during finishing operations, and each operation should be performed without delay as soon as the concrete is ready for it. Under extreme conditions of high ambient temperature, exposure to direct rays of the sun, low relative humidity, and wind – perhaps aggravated by a slow rate of placement due to complexity of the structure in size and shape – careful and complete adherence to the foregoing practices may not produce the degree of quality desired for the work. Under such circumstances, it has been found worthwhile to restrict concrete placement to late afternoon or evening.

4.4 Curing and Protection

4.4.1 Curing and protection have been largely covered under Section 4.2. It should be emphasized that in hot weather there is great need for continuous curing, preferably by water. The need is greatest during the first few hours, and in fact throughout the first day after concrete is placed. All surfaces should be protected from drying, even intermittently, as this contributes to development of pattern cracking.

4.4.2 For water containment structures absorptive wood forms remaining in place should not be considered as a satisfactory means of curing in hot, drying weather. Forms should be covered and kept moist. The forms should be loosened, as soon as this can be done without damage to the concrete, and provisions made for the curing water to run down inside them. During form removal, care should be taken to provide wet cover to newly exposed surfaces to avoid exposure to hot sun and wind. Form tie cone holes can be filled and any necessary repairs made by uncovering a small portion at a time as necessary to carry on this work. These repairs should be completed in the first few days after stripping, so the repairs and

cone hole fillings can cure with the surrounding concrete. At the end of the prescribed curing period (7 days minimum; 10 is better), the coverage should be left in place without wetting for several (4 days suggested), so that the concrete surface will dry slowly and be less subject to surface shrinkage cracking. The effects of drying are further minimized by closing such structures as tunnels and pipelines against drafts and free circulation of drying air.

4.4.3 In summary, providing proper temperature and moisture conditions for curing of concrete are much more critical and important in hot weather than under normal temperatures. It is, therefore, of first importance that curing be promptly commenced, ample in coverage, and continued without interruption.

STRUCTURAL NOTES

A. GENERAL
1. NOTES AND DETAILS ON THE STRUCTURAL DRAWINGS TAKE PRECEDENCE OVER THESE STRUCTURAL NOTES.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, AND SITE CONDITIONS BEFORE STARTING WORK. THE ENGINEER SHALL BE NOTIFIED OF ANY CHANGES.
3. IN NO CASE SHALL DIMENSIONS BE SCALED FROM PLANS, SECTIONS, OR DETAILS ON THE STRUCTURAL DRAWINGS.
4. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE REQUIREMENTS OF THE FOLLOWING CODES:
   a. INTERNATIONAL BUILDING CODE (IBC)
   b. MINNESOTA STATE BUILDING CODE
   c. AMERICAN CONCRETE INSTITUTE (ACI)
   d. CONCRETE REINFORCING STEEL INSTITUTE (CRSI) MANUAL OF STANDARD PRACTICE

B. PERIMETER DRAIN TILE
1. THE DRAIN TILE SHALL BE HEAVY DUTY PERFORATED POLYETHYLENE TUBING, 4" DIAMETER.
2. THE TILE SHALL BE COVERED WITH A WASHED AGGREGATE, UP TO THE TOP OF FOOTING ELEVATION, AS SHOWN ON THE PLANS.
3. CONNECT THE DRAIN TILE TO AN EXISTING FARM TILE IF AVAILABLE; DISCHARGE TO SURFACE DRAINAGE; OR DRAIN TO A SUMP AND PUMP TO THE SURFACE.

C. TEMPORARY BRACING AND BACKFILL
1. PROVIDE TEMPORARY LATERAL SUPPORT FOR ALL WALLS WHERE GRADE VARIES ON THE TWO SIDES UNTIL THE PERMANENT STRUCTURAL SUPPORT SYSTEM IS INPLACE.
2. BACKFILL ONLY AFTER THE FLOOR SLATS OR SOLID FLOOR HAS BEEN INSTALLED.

D. FOOTINGS AND FOUNDATION
1. SOIL BEARING DESIGN VALUE:....2500 PSF (ASSUMED) ON VIRGIN SOIL OR COMPACTED FILL FOR FOOTINGS.
2. PROTECT FOUNDATION EXCAVATIONS FROM FROST. DO NOT PLACE CONCRETE ON FROZEN GROUND.
3. FOUNDATION EXCAVATION SHALL BE KEPT FREE OF LOOSE MATERIAL AND STANDING WATER.
4. ANCHOR BOLTS SHALL BE 1/2" DIAMETER WITH 7" EMBEDMENT AND 2-3/4" PROJECTION.

E. REINFORCED CONCRETE
1. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF Fc=4000 PSI.
2. WATER CEMENT RATIO SHALL BE 0.45 MAXIMUM.
3. CEMENT SHALL CONFORM TO ASTM C150 TYPE 1
4. COARSE AGGREGATE SHALL BE 3/4" MAX.
5. READY-MIX CONCRETE SHALL BE MIXED AND DELIVERED IN ACCORDANCE WITH ASTM C94.
6. SLUMP SHALL BE 6" MAXIMUM.
7. AIR CONTENT SHALL BE BETWEEN 4%-6%.
8. CONCRETE WORK SHALL CONFORM TO ALL THE REQUIREMENTS OF ACI 301.
9. ADMIXTURES MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER FOR THE PURPOSE OF INCREASING THE WORKABILITY BUT NOT TO REDUCE THE SPECIFIED MINIMUM CEMENT CONTENT. CALCIUM CHLORIDE SHALLNOT BE USED.

F. REINFORCING STEEL
1. BAR REINFORCEMENT SHALL BE ASTM A615, GRADE 40 OR 60.
2. MINIMUM LAP SPLICE OF REINFORCING BAR, BASED ON ACI 318, CLASS B, SHALL BE AS FOLLOWED, UNLESS NOTED OTHERWISE:
   a. #3 BARS.....15"
   b. #4 BARS.....20"
   c. #5 BARS.....24"
   d. #6 BARS.....30"
   e. #7 BARS.....36"
   f. #8 BARS.....42"
3. REINFORCING STEEL SHALL BE PROVIDED WITH THE FOLLOWING MINIMUM COVER UNLESS NOTED OTHERWISE:
   a. CONCRETE PLACED AGAINST EARTH....3"
   b. FORMED CONCRETE EXPOSED TO EARTH OR WEATHER:
      1) #6 BARS THROUGH #8 BARS.....2"
      2) #5 BARS AND SMALLER.....1 1/2"
      3) STIRRUPS & TIES.....1 1/2"
4. ALL REINFORCING STEEL, ANCHOR BOLTS, DOWELS, AND INSERTS SHALL BE SECURED IN POSITION WITH WIRE POSITIONERS, OR EQUAL, BEFORE PLACING CONCRETE.
5. DOWELS BETWEEN FOOTINGS AND WALLS SHALL BE THE SAME GRADE, SIZE, AND SPACING AS VERTICAL WALL REINFORCEMENT
6. ALL LAP SPLICES SHALL BE TIED AT 3 LOCATIONS.

G. TOLERANCES AND QUALITY CONTROL
1. COLUMN FINISH ELEVATIONS SHALL BE +/- 1/4" FROM DESIGN ELEVATION.
2. WALL ALIGNMENT (HORIZONTAL) SHALL DEVIATE NO MORE THAN 1/4" IN 10' NOR MORE THAN 3/4" OVER THE FULL LENGTH OF THE WALL.
3. WALL BEARING LEDGE ELEVATIONS SHALL BE +/- 1/4" FROM DESIGN ELEVATION IN 10' AND NO MORE THAN 1/2" OVER THE FULL LENGTH OF THE WALL.
4. OVERALL FOUNDATION LENGTH AND WIDTH DIMENSIONS AND DIAGONAL DIMENSIONS SHOULD BE WITHIN 1/2" OF PLAN DIMENSIONS.
5. MINOR HONEYCOMBING SHALL BE REPAIRED ON THE SAME DAY THAT THE FORMS ARE REMOVED. MAJOR HONEYCOMBING (GREATER THAN 1-1/2" DEEP) SHALL BE INSPECTED BY THE ENGINEER AND REPAIRED OR REMOVED AT HIS DIRECTION.
6. CRACKS WHICH MAY EXTEND THROUGH THE CONCRETE LINER MUST BE CLEANED AND SEALED WITH MASTERSEAL NP1 POLYURETHANE SEALANT, OR APPROVED EQUAL. LARGER CRACKS OR DEFECTS MAY NEED AN INSPECTION BY THE ENGINEER TO DETERMINE THE PROPER REPAIR.
7. TEST CYLINDERS: TAKE THREE (3) TEST CYLINDERS FOR EACH 100 CUBIC YARDS OF CONCRETE PLACED BUT NOT LESS THAN THREE (3) TEST CYLINDERS EACH DAY THAT 10 OR MORE CUBIC YARDS ARE PLACED. KEEP ONE OF EACH THREE CYLINDERS ON THE JOB SITE AND ALLOW TO FIELD CURE. DELIVER 2 OF THE 3 CYLINDERS TO A LICENSED TESTING LABORATORY TO BE CURED AND TESTED AT 7 AND 28 DAYS.

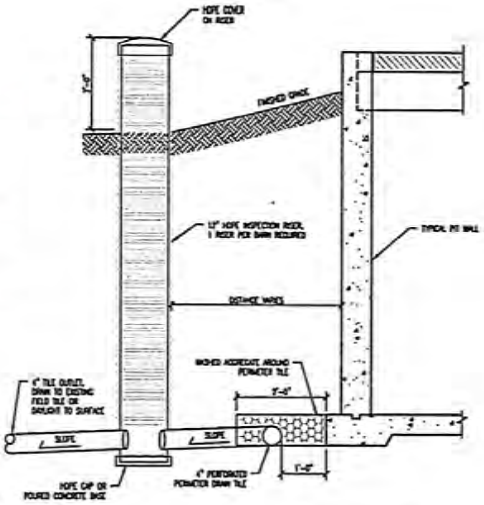
H. ELECTRICAL GROUND
1. INSTALL REINFORCING BARS AS SHOWN ON THE DRAWING. VERIFY ELECTRICAL GROUND REQUIREMENTS WITH ELECTRICAL CONTRACTOR. NOTIFY ELECTRICAL INSPECTOR FOR INSPECTION PRIOR TO PLACING CONCRETE.

I. COLD WEATHER CONCRETE
1. WHEN, FOR MORE THAN 3 SUCCESSIVE DAYS, THE MEAN DAILY TEMPERATURE DROPS BELOW 40 DEG. F., THE CONTRACTOR SHALL PLACE AND PROTECT THE CONCRETE IN ACCORDANCE WITH ACI 306.

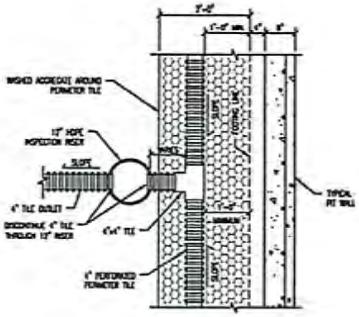
J. HOT WEATHER CONCRETE
1. WHEN IT IS LIKELY THAT TEMPERATURES BETWEEN 75 DEG. F. AND 100 DEG. F. WILL BE APPROACHED OR EXCEEDED; THAT LOW RELATIVE HUMIDITY IS PRESENT; OR WIND VELOCITY WILL EXCEED 10 MPH, THE CONTRACTOR SHALL PLACE AND PROTECT THE CONCRETE IN ACCORDANCE WITH CHAPTERS 4 & 5 OF ACI 305.

K. WATERSTOPS
1. WATERSTOP CAN BE BENTONITE/BUTYL RUBBER, EQUAL TO WATERSTOP-RX, ULTRASTOP, SWELLSTOP OR A 4" RIBBED WITH CENTER BULB PVC WATERSTOP, EQUAL TO VINYLE-X RCB-4316. WATERSTOP SHALL BE PLACED IN ALL CONSTRUCTION JOINTS ON THE FLOOR AND IN THE PERIMETER WALLS. LOCATION AND NUMBER OF CONSTRUCTION JOINTS ARE TO BE DETERMINED BY THE CONTRACTOR.

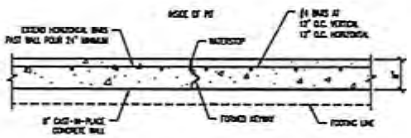
L. FIBERMESH
1. FIBERMESH FIBERS SHALL BE ADDED TO THE CONCRETEMIX AT A MINIMUM RATE OF 2.0 LBS PER CUBIC YARDOF CONCRETE. THE FIBERMESH SHALL BE FIBRILLATED POLYPROPYLENE OLEFIN FIBERS, 3/4" IN LENGTH.



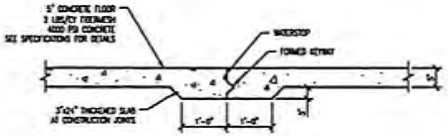
1/S3 **INSPECTION RISER - SECTION VIEW**
SCALE 3/4" = 1'-0"



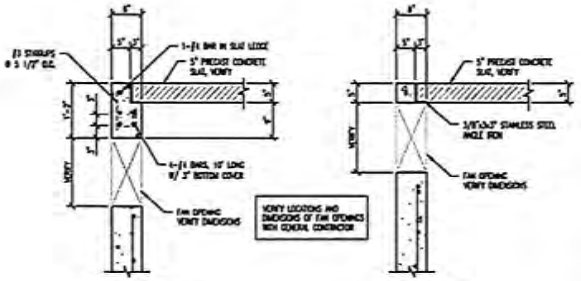
2/S3 **INSPECTION RISER - PLAN VIEW**
SCALE 3/4" = 1'-0"



3/S3 **WALL CONSTRUCTION JOINT DETAIL**
SCALE 3/4" = 1'-0"



4/S3 **FLOOR SECTION**
SCALE 3/4" = 1'-0"



OPTION 1 OPTION 2

5/S3 **FAN OPENING DETAILS**
SCALE 3/4" = 1'-0"

ISG

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

JASON E. HOEHN

DATE 3-14-17 LIC. NO. 40422

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DATE LIC. NO.

PROJECT
KNOTT ET AL, LLC
HOG BARN
51'-2" x 200'-0"
JEFF KNOTT
1676 280TH AVENUE
TRACY, MN 56175
NW 1/4 SECTION 33, T110N, R39W
GALES TWP., REDWOOD CO., MN

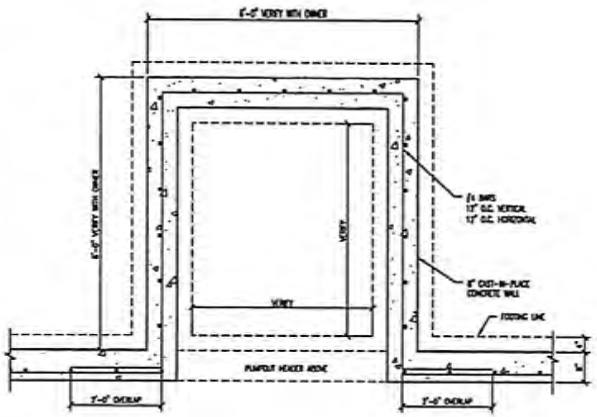
REVISION SCHEDULE

NO	DATE	DESCRIPTION

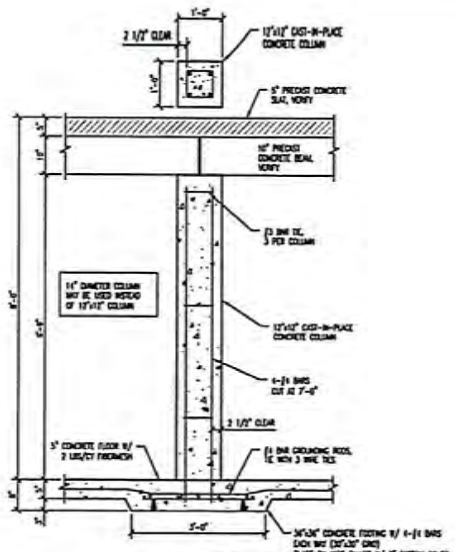
PROJECT NO.	17-20251
FILE NAME	20251 S1-S3
DRAWN BY	MDH
DESIGNED BY	JEH
REVIEWED BY	JEH
ORIGINAL ISSUE DATE	3-14-17
CLIENT PROJECT NO.	

TITLE
DETAILS & SPECIFICATIONS

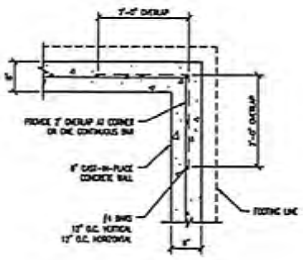
SHEET
S3



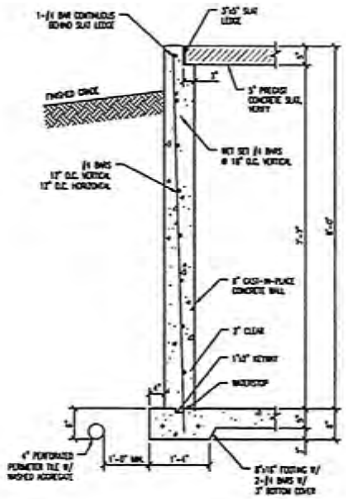
1/S2 **PUMPOUT DETAIL**
SCALE 3/4" = 1'-0"



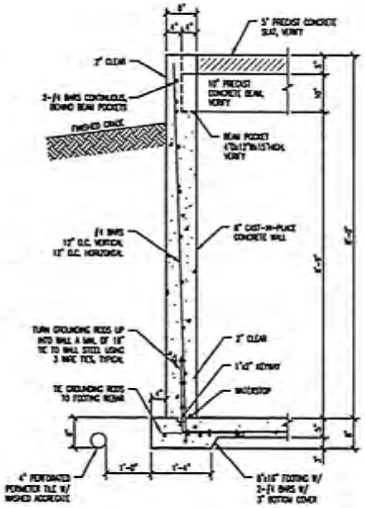
7/S2 **COLUMN DETAIL**
SCALE 3/4" = 1'-0"



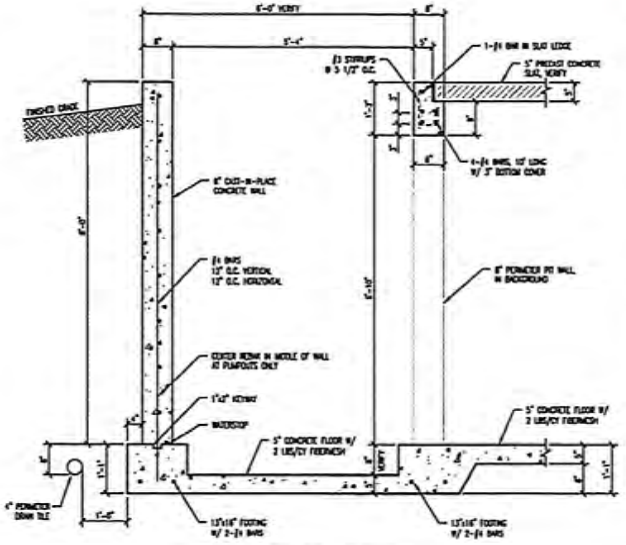
3/S2 **CORNER DETAIL**
SCALE 3/4" = 1'-0"



4/S2 **SIDEWALL DETAIL**
SCALE 3/4" = 1'-0"



5/S2 **ENDWALL DETAIL**
SCALE 3/4" = 1'-0"



6/S2 **PUMPOUT DETAIL**
SCALE 3/4" = 1'-0"

ISG

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JASON E. HOEHN

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DATE_____ LIC. NO._____

PROJECT

KNOTT ET AL, LLC
HOG BARN
51'-2" x 200'-0"

JEFF KNOTT
1876 280TH AVENUE
TRACY, MN 56175
NW 1/4 SECTION 33, T110N, R39W
GALES TWP., REDWOOD CO., MN

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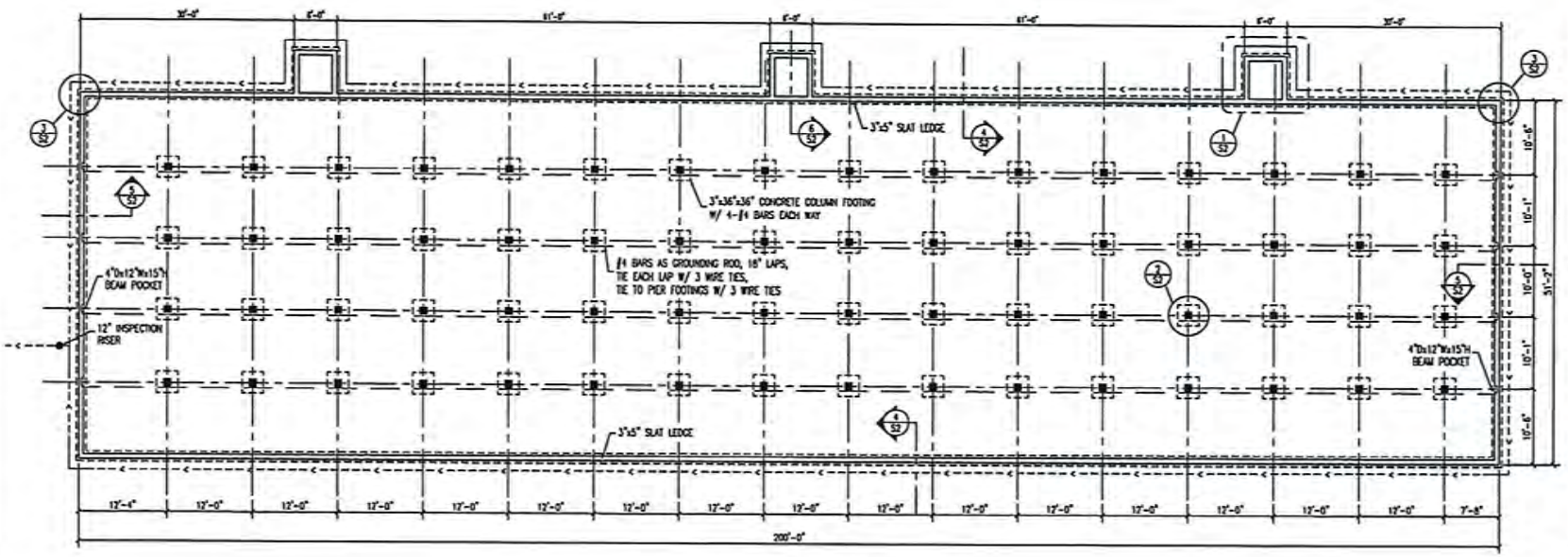
TITLE

DETAILS

SHEET

S2



PIT PLAN

SCALE 1/8" = 1'-0"

NOTES

STEM WALLS:
PIT CONTRACTOR SHALL COORDINATE WITH THE OWNER, BUILDING CONTRACTOR AND EQUIPMENT CONTRACTOR FOR DIMENSIONS OF STEM WALLS AND LOCATIONS OF FAN OPENINGS AND DOOR OPENINGS.

FAN OPENINGS:
PIT CONTRACTOR SHALL COORDINATE WITH THE OWNER, BUILDING CONTRACTOR AND EQUIPMENT CONTRACTOR FOR DIMENSIONS OF FAN OPENINGS, TYPES OF FANS AND LOCATIONS OF ALL FAN OPENINGS

CONCRETE SLATS / NURSERY FLOORING:
PIT CONTRACTOR SHALL COORDINATE WITH THE OWNER, BUILDING CONTRACTOR AND EQUIPMENT CONTRACTOR FOR DIMENSIONS AND LOCATIONS OF SLAT LEDGE AND TYPE OF FLOORING.
PRECAST CONCRETE BEAMS AND SLATS SHALL BE INSTALLED AND GROUTED PRIOR TO BACKFILL OF THE PERIMETER PIT WALLS

NOTES

IF AN EXISTING FIELD TILE IS FOUND, THE PERIMETER DRAIN TILE OF THE PIT MAY BE CONNECTED. A 12" INSPECTION RISER IS REQUIRED BETWEEN THE BARN AND THE FIELD TILE. AN INSPECTION RISER IS NOT REQUIRED IF THE TILE DAYLIGHTS ONTO THE SAME PROPERTY AS THE BARN.

WATER SUPPLY LINES, FUEL LINES, ELECTRICAL CONDUIT, OR OTHER EQUIPMENT NOT SOLELY FUNCTIONING AS PART AS PART OF THE MANURE HANDLING OR TRANSFER SYSTEM MUST NOT BE DESIGNED OR CONSTRUCTED TO PENETRATE THE LINER OF THIS LIQUID MANURE STORAGE AREA.

VOLUME OF PIT

8'-0" DEEP PIT
- 1'-3" FREEBOARD
499,250 GALLONS - 12 MONTH STORAGE

CONSTRUCTION NOTIFICATIONS

☐ REDWOOD COUNTY
JON MITCHELL
507-637-4023

3 DAY PRE CONSTRUCTION NOTIFICATION

☐ THE OWNER SHALL NOTIFY THE MPCA/CFO 3 BUSINESS DAYS BEFORE ANY CONSTRUCTION BEGINS.
DATE OF NOTIFICATION: _____

3 DAY POST CONSTRUCTION NOTIFICATION

☐ THE OWNER SHALL NOTIFY THE MPCA/CFO WITHIN 3 BUSINESS DAYS FOLLOWING COMPLETION OF CONSTRUCTION, BEFORE BACKFILL.
DATE OF NOTIFICATION: _____

CONSTRUCTION INSPECTIONS

☐ NOTIFY ISG A MINIMUM OF 24 HOURS PRIOR TO ALL CONCRETE POURS.
PROJECT MANAGER - MATT HUDSON
507-317-2526

ISG

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JASON E. HOEHN
Jason E. Hoehn
DATE 3-14-17 LIC. NO. 40422

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DATE _____ LIC. NO. _____

PROJECT
KNOTT ET AL, LLC
HOG BARN
51'-2" x 200'-0"
JEFF KNOTT
1676 280TH AVENUE
TRACY, MN 56175
NW 1/4 SECTION 33, T110N, R39W
GALES TWP., REDWOOD CO., MN

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ORIGINAL ISSUE DATE	3-14-17
CLIENT PROJECT NO	

TITLE
FOOTINGS & FOUNDATION PLAN

SHEET
S1

Land Application Agreement
For Receiving Manure on Cropland

The undersigned landowner agrees to allow manure from Knott et. al, LLC livestock feedlot to be spread on 800 acres of his/her land. The land is located in the ____ quarter of Section 33/4,17, in Gales / Springdale Township, Redwood County, Minnesota.

The undersigned landowner is the holder of Permit Number NONE (if none is held, please indicate NONE).

If the land indicated above received manure from livestock in addition to that from the feedlot indicated above, please list the number and types of livestock below (if none, please indicate NONE).

NONE

Enclose a Farm Service Agency aerial photo of all areas on which manure will be spread. Outline the areas used.

Steven R Knott
Signature of Landowner

This Agreement is good until _____

Steve Knott
Name of Landowner

15433 County Hwy 8 — 507-629-3186
Address — Phone Number

Tracy MN 56175 — 4-18-17
City, State, Zip — Date

SPRINGDALE TWP

LAND OWNER

T 109 N

R 39 W

JOINS GALES TWP

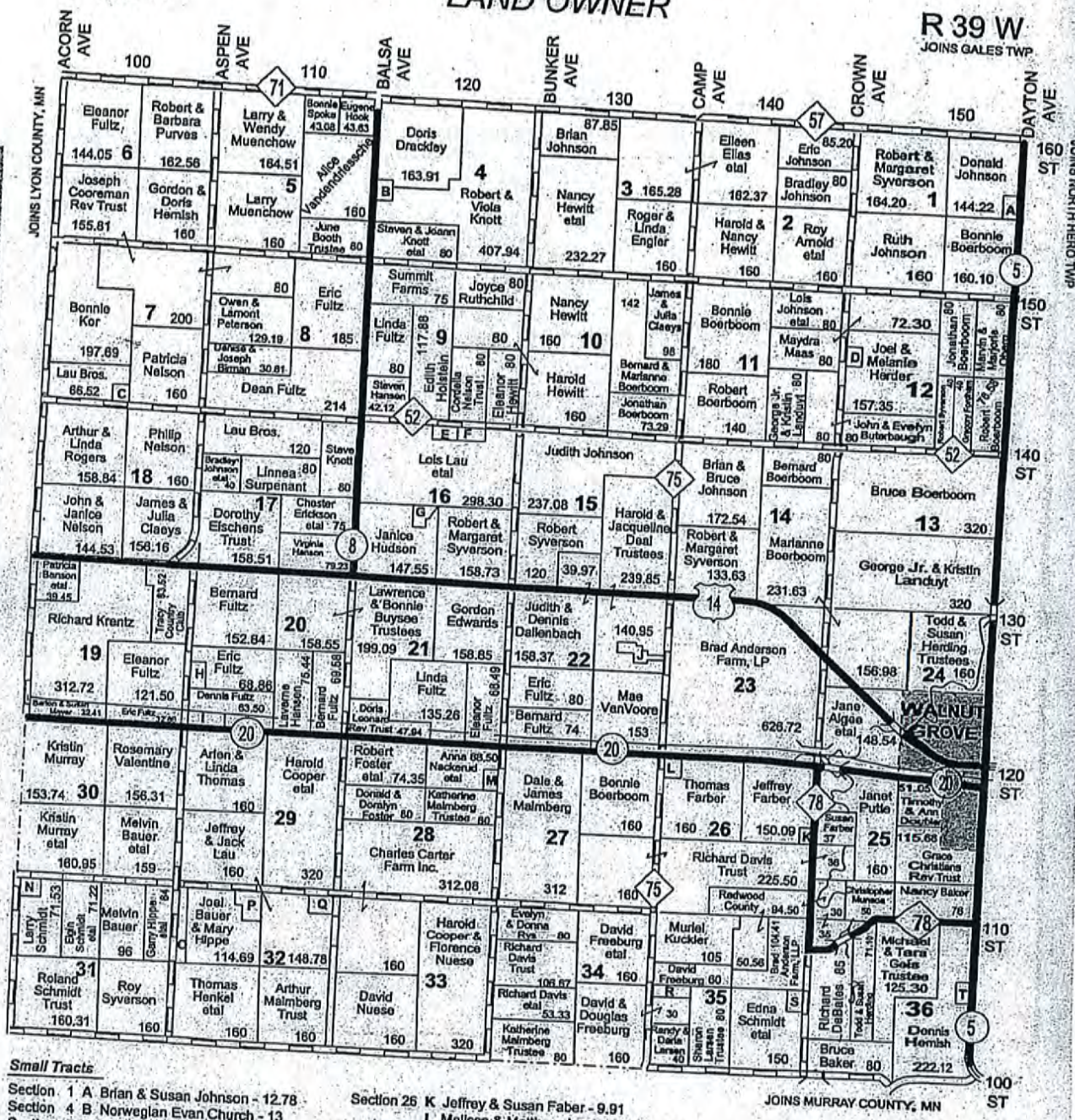
JOINS LYON COUNTY, MN

JOINS NORTH HERO TWP

ACORN AVE | ASPEN AVE | BALSA AVE | BUNKER AVE | CAMP AVE | CROWN AVE | DAYTON AVE

100 | 110 | 120 | 130 | 140 | 150

160 ST | 150 ST | 140 ST | 130 ST | 120 ST | 110 ST | 100 ST



Small Tracts

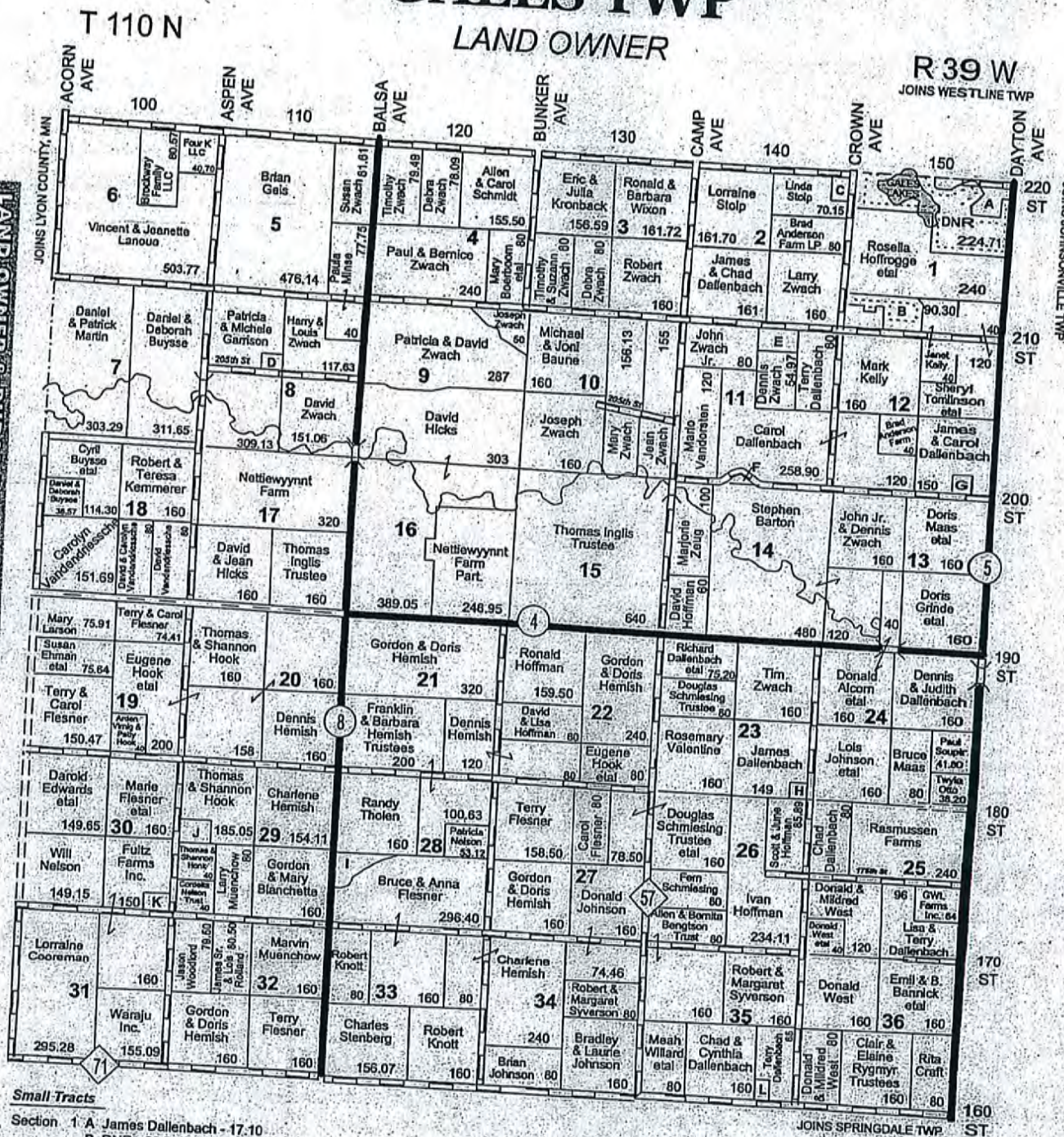
Section 1 A Brian & Susan Johnson - 12.78
Section 4 B Norwegian Evan Church - 13
Section 7 C Generation Pork Inc. - 10
Section 12 D Bradley & Laurie Johnson - 10.35
Section 16 E Lau Bros. - 11.20
F Jeffrey & Belinda Lau - 10.50
G Kyle Lanners - 11.33
Section 20 H Fultz Farms Inc. - 11.14
I Fultz Farms Inc. - 10.50
Section 22 J Chublong Yang & Ter Vang - 18.90
Section 26 K Jeffrey & Susan Faber - 9.91
L Melissa & Matthew Jones - 13.07
Section 28 M Dale & Merna Malmberg - 11.50
Section 31 N Ya Yang - 18.17
Section 32 O Sandra Fultz - 32
P Brian & Sheila Lavole - 13.31
Q Khyle & Traci Radke - 11.22
Section 35 R David & Lori Freeburg - 10
S John Schmidt - 10
Section 36 T Kerry & Rebecca Knakmuhs - 10.03

Section 4 All except NW 160

Section 17 NE 80

GALES TWP

LAND OWNER



Small Tracts

Section 1 A James Dallenbach - 17.10
B DNR - 29.70
Section 2 C Edwin Groebner - 12
Section 8 D Beau & Sarah Schlemmer - 10.87
Section 11 E City of Redwood Falls - 25.03
F Aisleen Benda - 21.10
Section 12 G Terry & Lisa Dallenbach - 10
Section 23 H Wayne Truedson - 11
Section 28 I Dennis Hemish - 23.60
Section 29 J Samuel & Melissa Sahlstrom - 14.95
Section 30 K David & Cindy Swenhaugen - 10
Section 35 L Jim Payne - 15

Section 33
NW 80
SE 160

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Animal Feedlot or Manure Storage Area Permit Application

CSF and Interim Permit Program

Doc Type: Permit Application

Applicability: To obtain a construction short form (CSF) or interim permit, you must complete and submit this form to the Minnesota Pollution Control Agency (MPCA), or to the County Feedlot Officer (CFO) in delegated counties.

Keep a copy of this application form and all submittals for your records.

Feedlot Registration Number: _____

I. Permit type and reason for application

Please indicate which type of feedlot permit you are applying for *(choose only one)*

☒ Construction Short Form ☐ Interim (correcting a pollution hazard)

Please indicate the reason for the permit application *(choose only one)*

☒ New Permit
(No existing CSF or interim permit)

☐ Permit Modification
(Changes to sites with an existing CSF or interim permit)

☐ Permit Extension - Current CSF or Interim Permit Number: _____
(Work not completed prior to permit expiration)
Indicate below the reason(s) the work may not be completed prior to permit expiration

Estimated amount of time required to complete the work: _____ ☐days ☐months
Note: The length of the extension is limited to 24 months for CSF permits and 90 days for interim permits

A permit extension request only requires completion of pages 1 and 6 of this application form (the remaining pages can be left blank).

Note: When the notice to neighbors and property owners is applicable (page 6) the content of the notice must include the date the original permit was issued and the new proposed completion date as well as the normally required information.

II. Owner's name(s) and address(es) - (All partners of a Limited Liability Partnership (LLP) must be listed.)

Primary owner – Will be used as the mailing address

Name: Knott et al., LLC
Address: 1876 280th Avenue
City: Tracy State: MN
Phone: 507-626-5829 Zip: 56175
Email: jeff.knott@feedideal.com

Additional owner – attach additional sheets as necessary

Name: Jeffrey and Jeanne Knott
Address: 1876 280th Avenue
City: Tracy State: MN
Phone: 507-626-5829 Zip: 56175
Email: jeff.knott@feedideal.com

Note: *The term owner includes all persons having possession, control, or title to an animal feedlot or manure storage area (including lessees or renters). All owners must be listed. Attach to this application the names, addresses, and phone numbers of all additional owners.*

III. Facility name and site address

Site Name: IDEAL Research 1

☐ Facility is a MN Ag Water Quality Certified Farm (MAWQCP)

Complete if facility address is different than the primary owner address:

Street: County Highway 8
City: Tracy State: MN
Phone: _____ Zip: 56175

Contact person for day-to-day activities

Name: Jeffrey Knott
Street: 1876 280th Avenue
City: Tracy State: MN
Phone: 507-626-5829 Zip: 56175
Cell phone: 507-626-5829
Email: jeff.knott@feedideal.com

(General letters/notices may be sent by e-mail where one is indicated.)

IV. Facility location

County: Redwood Township name: Gales

Township (26 – 71 or 101 – 168)	Range (1 – 51)	Section (1 – 36)	¼ Section (160 acre) (NW, NE, SW, SE)	¼ of ¼ Section (40 acre) (NW, NE, SW, SE)
T 110 N	R 39 W	33	NW	

V. Sensitive features

1. Is any part of the facility within 1,000 feet of any type of surface waters? ☐ Yes ☒ No
   If Yes, complete a. and b. below:
   a. List the name of the surface water feature: _____
   b. Select the type of surface water feature below:
   ☐ Lake/Pond larger than 25 acres ☐ Wetland ☐ Drainage ditch ☐ Other
   ☐ River/Stream Is any part of the facility within 300 feet of the river/stream? ☐ Yes ☐ No
2. Is any part of the facility located within a delineated flood plain *(100 year flood)*? ☐ Yes ☒ No
3. Is any part of the facility located within designated shoreland? ☐ Yes ☒ No
4. Is any part of the facility located within 1,000 feet of a karst feature? ☐ Yes ☒ No
   (sinkholes, caves, disappearing springs, resurgent springs, karst windows, dry valleys, or blind valleys)
   If Yes, complete a. and b. below:
   a. Are there 4 or more sinkholes within 1,000 feet? ☐ Yes ☐ No
   b. Is any part of the facility within 300 feet of a known sinkhole? ☐ Yes ☐ No
5. Is any part of the facility located within 1,000 feet of the following types of wells: ☐ Yes ☒ No
   If Yes, select the applicable well type below:
   ☐ a community water supply well
   ☐ a well serving a public school as defined under Minn. Stat. § 120A.05
   ☐ a well serving a private school excluding home school sites
   ☐ a well serving a licensed child care center where the well is vulnerable (Minn. R. 4720.5550, subp. 2)
6. Is any part of the facility located within 1,000 feet of an open tile intake? ☒ Yes ☐ No

VI. Environmental Review (complete when construction or expansion is proposed)

Mandatory environmental review is required when the addition of 1,000 or more animal units (AU) is proposed as part of the construction/expansion at any facility. The threshold when environmental review is mandatory is reduced to 500 AU when any part of the facility is located within a "sensitive area". The facility is within a sensitive area when any of the following apply.

- Any part of the facility is within a delineated floodplain (yes to question 2 above)
- Any part of the facility is within designated shoreland (yes to question 3 above)
- Any part of the facility is within 1,000 feet of a karst feature (yes to question 4 above)
- Any part of the facility is within a vulnerable drinking water supply management area
- Any part of the facility is within a federal, state, or local wild and scenic river district
- Any part of the facility is located within the Minnesota River Project Riverbend area or the Mississippi headwaters area

Additionally mandatory environmental review is required for "Phased actions". Phased actions are defined under Minnesota law (Minn. R. ch. 4410) as two or more projects located in the same geographic area and constructed sequentially within three years of each other by the same proposer. When this is the case, the animal units from all projects are combined to determine if environmental review is required. The following will assist the MPCA to evaluate if your project qualifies as a "phased action".

Do you have ownership interest in another livestock operation that was constructed/expanded within the past three years or are you substantially certain you will be constructing/expanding another livestock operation within the next three years?

☐ Yes ☒ No

If Yes, how far away *(straight-line distance)* is it located from the project proposed in this application? _____ miles

There are also rule provisions to require completion of the environmental review process in the event of a citizen petition or upon the discretion of the MPCA. Please see the MPCA fact sheet entitled "When is Environmental Review Required for Feedlots" (available on the MPCA website at http://www.pca.state.mn.us/publications/wq-f1-10.pdf) and/or Minn. R. 4410 for further details.

VII. Animal numbers and animal unit (AU) calculation

Complete the table below to identify the **maximum** number of animals housed at that facility. All animal numbers and animal sizes used to complete this table should reflect the animal holding **capacity** of the facility even if the facility does not currently house or propose to house that number of animals. At no time is the number of animals at the facility allowed to exceed the capacity provided below without first obtaining a permit or permit modification.

Current Capacity - List the current head count **capacity** for each animal type in column 3 below. For sites with a permit, this should match the currently permitted number of animals. Next, multiply the AU Factor in column 2 by the number of animals listed in column 3 to get the *Current AU Capacity* for each animal type (column 4). Finally, add together all AU's in column 4 to get a total at the bottom of the chart. *If this application is for a brand-new feedlot site leave columns 3 and 4 blank. (ie. bare piece of ground)*

Final Capacity - List the final head count **capacity** for each animal type in column 5 below. This number should include current animals plus or minus any expansion or reduction in each animal type. This should reflect the maximum AU capacity requested with this permit application. Next, multiply the AU Factor in column 2 by the number of animals listed in column 5 to get the *Final AU Capacity* for each animal type (column 6). Finally, add together all AU's in column 6 to get a total at the bottom of the chart.

1. Animal type	2. Animal unit factor	*Current* facility capacity 3. Head count	4. Animal units = column 2 x column 3	*Final* facility capacity (Current +/- Changes) 5. Head count	6. Animal units = column 2 x column 5
A. Dairy cattle					
Mature cow (milked or dry) over 1,000 lbs.	1.4				
Mature cow (milked or dry) under 1,000 lbs.	1.0				
Heifer	0.7				
Calf	0.2				
B. Veal					
Veal	0.2				
C. Beef cattle					
Slaughter steer/heifer, stock cow, or bull	1.0				
Feeder cattle (stocker or backgrounding), heifer	0.7				
Cow and calf pair	1.2				
Calf (weaned)	0.2				
D. Swine					
Over 300 lbs.	0.4				
Between 55 and 300 lbs.	0.3				
Under 55 lbs.	0.05			1250	375
E. Horses					
Horse	1.0				
F. Sheep					
Sheep or Lamb	0.1				
G. Chickens with a *liquid* manure system					
Layer Hens or Broilers	0.033				
H. Chickens with a *dry* manure system					
Broilers over 5 lbs.	0.005				
Broilers under 5 lbs.	0.003				
Layer Hens over 5 lbs.	0.005				
Layer Hens under 5 lbs.	0.003				
I. Turkeys					
Over 5 lbs.	0.018				
Under 5 lbs.	0.005				
J. Ducks					
Duck (with a liquid manure handling system)	0.01				
Duck (with a dry manure handling system)	0.01				
K. Animals not listed in A to J (AU factor in column 2 = average weight of the animal type divided by 1,000 lbs.)					
Animal type:					
Total animal unit capacity Add all numbers in column 4 for Current AU total Add all numbers in column 6 for Final AU total			**Current AU capacity**		**Final AU capacity** 375

VIII. Animal holding areas

Complete the table below for all your animal holding areas.
If you have more than six animal holding areas on your site, continue your list on an additional copy of this page.

Animal holding area ID	***List each animal holding area in a separate column***					
Facility Site Sketch ID (i.e., #1, A, Barn 1)	IDR #1					
Status: (check one box only) *Proposed* - not permitted previously *Approved* - permitted but not yet operational *Existing* - current operational component *Modifying* - change to a permitted component	☒Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating	☐Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating	☐Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating	☐Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating	☐Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating	☐Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating
Distance to nearest well (ft.)						
Pasture Access	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No

Type of animal holding areas (indicate dimensions and floor type)	***Write approximate dimensions in feet in the space below (width x length or area with units for irregular shapes)***					
Total confinement barn (slatted floor)	51x200					
Total confinement barn (solid floor)						
Partial confinement barn						
Open lot with runoff controls						
Open lot without runoff controls						
Animal Holding Area Floor Type (check all that apply)	☒Concrete ☐Asphalt ☐Soil ☐Other	☐Concrete ☐Asphalt ☐Soil ☐Other	☐Concrete ☐Asphalt ☐Soil ☐Other	☐Concrete ☐Asphalt ☐Soil ☐Other	☐Concrete ☐Asphalt ☐Soil ☐Other	☐Concrete ☐Asphalt ☐Soil ☐Other

Animal numbers	***Indicate the maximum capacity (number of animals) of each animal holding area*** *The total number of all animals listed should match the final animal numbers listed on page 3*					
Mature dairy cows (over 1,000 lbs.)						
Mature dairy cows (under 1,000 lbs.)						
Dairy heifers						
Dairy calves						
Veal						
Slaughter steer/heifer, stock cow or bull						
Feeder cattle-stocker/background/heifer						
Cow and calf pair						
Beef calves (weaned)						
Swine over 300 lbs.						
Swine between 55 and 300 lbs.	1250					
Swine under 55 lbs.						
Horses						
Sheep or lamb						
All chickens with liquid manure system						
Broiler chickens over 5 lbs. - dry system						
Broiler chickens under 5 lbs. - dry system						
Laying hens over 5 lbs. - dry system						
Laying hens under 5 lbs. - dry system						
Turkeys - over 5 lbs.						
Turkeys - under 5 lbs.						
Ducks						
Other:						

IX. Manure handling, feed storage, and dead animal areas

Complete the table below for your manure storage, feed/silage storage areas and dead animal disposal areas on your site. If you have more than six manure storage, feed/silage storage, and dead animal management areas on your site, continue your list on an additional copy of this page.

Manure, feed, or dead animal areas	***List each manure handling, feed storage, and dead animal area in a separate column***					
Facility Site Sketch ID (i.e., #1, A, Basin 1)	IDR#1					
Status: (check one box only) *Proposed* - not permitted previously *Approved* - permitted but not yet operational *Existing* - current operational component *Modifying* - change to a permitted component	☒Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating	☐Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating	☐Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating	☐Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating	☐Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating	☐Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating
Distance to nearest well (ft.)						
Type of liquid manure or process wastewater storage/treatment areas (indicate dimensions)	***Write approximate top dimensions in feet in the space below*** *(width x length x depth or volume with units for irregular shapes)*					
Earthen or GCL lined basin						
Below barn concrete tank	51x200x8					
In-ground concrete tank/basin (outdoor)						
Above-ground concrete tank						
Synthetic lined (HDPE, EPDM, etc.) basin						
Steel tank (i.e., slurry-store)						
Composite lined (2 liner types) basin/tank						
Vegetated Infiltration Area						
Other (describe):						
Type of solid manure, feed storage, and dead animal areas (indicate dimensions and floor type)	***Write approximate dimensions in feet in the space below*** *(width x length or area with units for irregular shapes)*					
Permanent Stockpile						
Dead Animal Management Area						
Covered Feed Storage Area						
Uncovered Feed Storage Area						
Sweet Corn Silage Storage Storage Pad Area						
Tonnage on site at any one time						
Other (describe):						
Stockpile, Feed Storage, or Mortality Area Floor/Liner Type (check all that apply)	☐Concrete ☐Asphalt ☐Soil ☐Other	☐Concrete ☐Asphalt ☐Soil ☐Other	☐Concrete ☐Asphalt ☐Soil ☐Other	☐Concrete ☐Asphalt ☐Soil ☐Other	☐Concrete ☐Asphalt ☐Soil ☐Other	☐Concrete ☐Asphalt ☐Soil ☐Other

X. Changes to groundwater monitoring plan (complete only if applicable)

If groundwater monitoring is required at the facility, this application can request changes to the MPCA-approved groundwater monitoring plan. In order to request changes to the groundwater monitoring plan, please indicate the type of change requested.

☐ Elimination of monitoring ☐ Change to sampling frequency

☐ Change to sample testing protocol ☐ Other

When a change is requested, please include with this permit application documentation from a qualified professional that provides a technical analysis and justification for the requested changes.

XI. Non-delegated county public meeting minutes (complete only if applicable)

A county which has not accepted delegation of the feedlot program must hold a public meeting prior to issuance of a feedlot permit by the MPCA for an animal feedlot with a capacity of 300 or more animal units.

Date meeting has occurred or is scheduled to occur: May 22, 2017

Verification of public meeting.

A copy of the meeting minutes must be provided to the MPCA for verification of completion prior to permit issuance.

XII. 500 or more AU: Notice to residents and property owners within 5,000 feet

When required. A notice is required in ***either*** of the following situations:

- ***Construction of a new*** feedlot, or manure storage area, which will have a capacity of 500 AU or more.
- ***Expansion of an existing*** feedlot, or manure storage area, which currently has, or will have upon completion of the expansion, a capacity of 500 AU or more.

Notice methods. The owner shall not less than 20 business days before the anticipated issuance date of the permit, provide notice to each resident and each owner of real property within 5,000 feet of the perimeter of the proposed facility. This notice *must* include, at a minimum, the information provided in Minn. R. 7020.2000, subp.4.

An example notice can be found in the factsheet *Permit Notification Requirements – Feedlots with more than 500 Animal Units* available on the MPCA website http://www.pca.state.mn.us/feedlots.

Verification of notice. The MPCA must verify that this notice has been completed prior to permit issuance. Documentation that this notice has been completed can be provided with the permit application (preferred) or submitted at a later date, prior to permit issuance.

When the notice has been completed prior to this application

Please include with this application one of the following to provide verification that the required notice has been completed:

- An affidavit of publication from a newspaper of general circulation used to provide this notification.
- A list of all parties, with their location, that were notified by certified mail and copies of all signed mail return receipts.
- A list of all parties, with their location, that were personally visited with a date and signature from each party and certification signed by a notary public indicating in detail what was discussed.

When the notice has not been completed prior to this application

Please include with this permit application both of the following:

- A copy of the content of the notification
- Date notification is scheduled to occur: _____

Note: The permit cannot be issued prior to receiving verification that the notice has actually taken place. This verification must be one of the three items listed above.

XIII. Certifications and signature

Notification to local officials

The Applicant certifies that, if the application includes construction of a new facility or expansion of an existing facility, all local zoning authorities have been notified in accordance with Minn. R. 7020.2000 subp. 5.

Construction Stormwater (CSW) Requirements

The Applicant certifies that, if construction will disturb 5 or more acres, they have made a separate application for a CSW permit. For construction activities that disturb at least 1 acre but less than 5 acres, the Applicant certifies to comply with the requirements of the current CSW NPDES general permit (Minn. R. 7090.2020 provides permit coverage even though no application has been made).

Need for NPDES or SDS permit

If the MPCA determines that a NPDES or SDS permit is required, the Applicant certifies that this application will serve as an application for a NPDES or SDS permit, as appropriate. The Applicant agrees to submit additional information, as requested by the MPCA, in order to complete the NPDES or SDS permit application process including payment of the applicable permit application fee.

Applicant Signature

I hereby certify that the design, construction, and operation of the facility will be in accordance with this application and plans, specifications, reports, and related communications approved by the MPCA, and in accordance with applicable permit conditions or regulations/standards of the MPCA. I also certify under penalty of law that this document and all attachments were prepared under my direction or supervision and the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

The person that signs this application must be one of the following:

A. For a corporation, a principal executive officer of at least the level of vice president
B. For a partnership, a general partner
C. For a sole proprietorship, the proprietor

Print name: Jeffrey Steven Knott Print official title: President

Office phone: 507-626-5829 Cell phone: 507-626-5829

Signature: _____ Date: 4-19-17

A "wet signature" is required. No reproductions (i.e., copies or scans) of the signature will be accepted.

To sign up for electronic communications including the MPCA feedlot newsletters, please go to the MPCA website at https://public.govdelivery.com/accounts/MNPCA/subscriber/new.

Required enclosures (Permit applications submitted without all required enclosures are incomplete.)

☐ A. A site sketch/aerial photograph indicating the location of the existing and proposed facility components.

☐ B. A Manure/Nutrient Management Plan (MMP) The following are optional forms to assist with MMP development:

When **all** manure is transferred to another entity for utilization, complete a MMP using the optional form below:

Transferred Ownership MMP: http://www.pca.state.mn.us/index.php/view-document.html?gid=3763

When **any** portion of manure is applied to land owned, rented, or leased by the applicant(s), or applied to other land where nutrient application decisions are made by the applicant(s), complete a MMP using the optional spreadsheet form below:

MPCA Manure Management Planner: http://www.pca.state.mn.us/index.php/view-document.html?gid=3548

Notes: The transferred ownership MMP form is incorporated into the spreadsheet to account for instances when only some of the manure is transferred.

A paper version is available at: http://www.pca.state.mn.us/index.php/view-document.html?gid=23197

☐ C. Plans and Specifications for construction, modification, or expansion of any liquid manure storage area.

☐ D. **Conditional** - Environmental Assessment Worksheet (EAW) Fee
When the project requires environmental review and is located in a county that has not accepted delegation of the county feedlot program, there is a fee of $4,650 for processing of an Environmental Assessment Worksheet (EAW) that must be included with this permit application. (Check payable to: Minnesota Pollution Control Agency)

☐ E. **Optional** – Verification of the notifications required in part XII of this application. If not submitted with the application, the MPCA must receive the verification prior to permit issuance. It is strongly recommended that the applicable verifications be included with the permit application.

Permit application submittal

Please mail the completed permit application and all necessary attachments to either the County Feedlot Officer (CFO) or the MPCA as indicated in the chart below. Mailing addresses for the MPCA offices are below.

County	Mail To:	County	Mail To:	County	Mail To:
Aitkin	MPCA – Rochester	Isanti	MPCA – Rochester	Pipestone	CFO – County
Anoka	MPCA – Rochester	Itasca	MPCA – Rochester	Polk	CFO – County
Becker	MPCA – Mankato	Jackson	CFO – County	Pope	CFO – County
Beltrami	MPCA – Mankato	Kanabec	MPCA – Rochester	Ramsey	MPCA – Rochester
Benton	MPCA – Rochester	Kandiyohi	CFO – County	Red Lake	CFO – County
Big Stone	CFO – County	Kittson	CFO – County	Redwood	MPCA – Rochester
Blue Earth	CFO – County	Koochiching	MPCA – Rochester	Renville	CFO – County
Brown	CFO – County	Lac Qui Parle	CFO – County	Rice	CFO – County
Carlton	MPCA – Rochester	Lake	MPCA – Rochester	Rock	CFO – County
Carver	CFO – County	Lake Of The Woods	CFO – County	Roseau	MPCA – Mankato
Cass	MPCA – Rochester	Le Sueur	CFO – County	St. Louis	MPCA – Rochester
Chippewa	MPCA – Rochester	Lincoln	CFO – County	Scott	MPCA – Rochester
Chisago	MPCA – Rochester	Lyon	CFO – County	Sherburne	MPCA – Rochester
Clay	CFO – County	Mahnomen	MPCA – Mankato	Sibley	CFO – County
Clearwater	MPCA – Mankato	Marshall	CFO – County	Stearns	CFO – County
Cook	MPCA – Rochester	Martin	CFO – County	Steele	CFO – County
Cottonwood	CFO – County	McLeod	CFO – County	Stevens	CFO – County
Crow Wing	MPCA – Rochester	Meeker	CFO – County	Swift	CFO – County
Dakota	MPCA – Rochester	Mille Lacs	MPCA – Rochester	Todd	CFO – County
Dodge	CFO – County	Morrison	CFO – County	Traverse	CFO – County
Douglas	CFO – County	Mower	CFO – County	Wabasha	MPCA – Rochester
Faribault	CFO – County	Murray	CFO – County	Wadena	CFO – County
Fillmore	CFO – County	Nicollet	CFO – County	Waseca	CFO – County
Freeborn	CFO – County	Nobles	CFO – County	Washington	MPCA – Rochester
Goodhue	CFO – County	Norman	CFO – County	Watonwan	CFO – County
Grant	MPCA – Mankato	Olmsted	MPCA – Rochester	Wilkin	MPCA – Mankato
Hennepin	MPCA – Rochester	Otter Tail	MPCA – Mankato	Winona	CFO – County
Houston	CFO – County	Pennington	CFO – County	Wright	CFO – County
Hubbard	MPCA – Mankato	Pine	MPCA – Rochester	Yellow Medicine	CFO – County

MPCA – Rochester Mailing Address

MPCA Feedlot Permit Coordinator
18 Woodlake Drive SE
Rochester, MN 55904

MPCA – Mankato Mailing Address

MPCA Feedlot Permit Coordinator
12 Civic Center Plaza, Suite 2165
Mankato, MN 56001

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Manure Management Plan (MMP) Requirements when Ownership of Manure is Transferred

Feedlot Program

Doc Type: Permit Information Form

Are you transferring ownership of manure?

MMP and record keeping requirements for feedlot owners are different when manure ownership is transferred. Manure ownership is not considered to be transferred (i.e., feedlot owner/operator retains ownership) when you answer "yes" to either question:

1. ☐ Yes ☒ No Is manure from the feedlot facility applied onto land that is owned, leased, or rented by the feedlot owner/operator?
2. ☐ Yes ☒ No For manure application sites not owned, leased, or rented by the feedlot owner/operator, have you as the feedlot owner/operator or employees working under your direction been given control of the crop and nutrient planning decisions, including planning for manure application rates, timing, and methods?

If you answered "Yes" to either question, you are retaining ownership of manure, and you should see the Minnesota Pollution Control Agency (MPCA) guidelines "Manure Management Plan Requirements" which describe requirements when manure ownership is not transferred (found on the MPCA website at http://www.pca.state.mn.us/index.php/view-document.html?gid=3537). If you answered "No" to both questions, then you are transferring ownership of your manure and the feedlot operator may use these guidelines to complete a MMP.

If only a portion of your manure is considered to have transferred ownership, then use these guidelines for the manure which has transferred ownership, and develop the more comprehensive MMP for the manure which does not have transferred ownership.

MMP development

The MMP can be developed by answering the questions below or by using other formats that include all required information in Minn. R. ch. 7020.

Name of feedlot facility or operator: IDEAL Research 1 Registration No.: _____

1. **Describe the manure storage and handling system and the expected amount of manure and nutrients that will need to be land applied.**

   a) How is the manure stored and handled? What happens to the manure from the time it is generated to the time it is either sold or land applied? Where is it kept? For how long?

   Stored in 51'x200'x8' deep concrete pit. Approximately every 12 months the pit will be pumped.

   b) How many months can manure be stored before the storage capacity is exceeded?

   15 months

   c) When will manure be provided to the recipient? Which months do you expect that manure will be applied?

   After cropping practices have finished. October through December. Emergency pumping will be completed in the spring.

   d) How much manure is removed from barns or storage areas per year? How much manure will eventually need to be land-applied?

   Amount removed from barns or storage: 315,000 ☐ Tons ☒ Gallons

   Amount land applied: 100% ☐ Tons ☐ Gallons

   e) How much of this manure will be transferred ownership: 100%

f) How many pounds of nitrogen (N) and phosphorus (P_2O_5) will need to be land applied per year? (Multiply the expected nutrient content from Part 3.c) by the amount of manure land applied from Part 1.d) to get your answer.) (e.g., 77 pounds N + 1,000 gallons x 1,300,000 gallons = 100,100 pounds of N **or alternatively** 45 pounds per ton x 3,000 tons = 135,000 pounds of N) (figure P_2O_5 using the same calculations)

N: =81/1000*315,000=25,515 pounds of N P_2O_5: =35/1000*315,000=11,025 pounds of phosphorus

g) For new or expanding feedlot facilities, is there enough land potentially available for spreading manure in accordance with allowable rates? ☒ Yes ☐ No

How will you ensure that enough land owners in the area are willing to purchase your manure or otherwise receive your manure? (e.g., enough land to allow spreading in accordance with state nutrient rate limits)

Relatives own suitable acres to accommodate manure.

2. Describe the manure application methods and equipment.

a) How will the manure be applied? What method(s) and type(s) of equipment do you expect will be used for manure application by the recipient of your manure, if known?

Direct soil injection using tanks

3. Describe your nutrient testing methods, the frequency of testing, and the expected nutrient content of the manure to be applied.

a) How often will manure be sampled and sent to a laboratory for nutrient analysis? (Minimum state requirements are: annual sampling at NPDES-permitted facilities; annual sampling for the first three years and once every four years for other feedlots.)

Yearly

b) How will the manure samples be collected to ensure that representative samples are obtained for nutrient analysis? (e.g., How many subsamples? When collected? Where collected? University of Minnesota Extension Service publications may be referenced.)

Use composite sample and send in 2 samples/year. Use previous years sample to determine nutrient content unless major production change occur.

c) What is the expected nutrient content of manure to be collected? (e.g., What is the nitrogen and phosphorus content expected from each major type of manure storage area?

N: 81 ☐ Pounds per Ton ☒ Pounds per 1,000 Gallons

P_2O_5: 35 ☐ Pounds per Ton ☒ Pounds per 1,000 Gallons

4. Describe how Minnesota's manure application requirements will be provided to manure recipients.

a) Attach a copy of the state manure application requirements that you will provide to all recipients of your transferred manure. Will you be using Attachment A or another list of state requirements?

Attachment A

b) How will you, as a feedlot owner/operator, maintain records associated with the manure transfer and land application sites/rates? Will you use MPCA recordkeeping forms for transferred ownership (Attachment B) or will you use a different form? **Note**: Attachments A and B can be obtained from MPCA offices or on the MPCA website at http://www.pca.state.mn.us/hot/feedlot-management.html.

Attachment B

c) How will you provide the manure recipient with manure nutrient test results and expected manure nutrient content? You may use Attachment B or other forms which include test results.

Attachment B

Animal mortality management (NPDES and SDS permitted sites only)

Indicate with a check mark the anticipated method(s) of dead animal disposal.

☒ **Rendering**

Carcasses at the pick-up point will comply with the following:

- Kept in an animal-proof, enclosed area.
- At least 200 yards from a neighbor's buildings.
- Picked up within 72 hours (7 days if refrigerated to less then 45 degrees).
- Other: _____

☐ **Composting**

The composting area will comply with the following:

- Built on an impervious, weight-bearing pad that is large enough to allow equipment to maneuver.
  Note: Class V gravel material is not considered to be impervious.
- Covered with a roof to prevent excessive moisture on the composting material, but if sawdust or other water-repelling material is used as the bulking agent, a roof may not be necessary.
- Built of rot-resistant material that is strong enough to withstand the force exerted by equipment.
- Large enough to handle each day's normal mortality through the endpoint of the composting which consists of a minimum of two (2) heat cycles.
- Other: _____

☐ **Burial**

The following operational practices will be implemented:

- Stay 5 feet above seasonal high water table.
- Stay 1000 feet away from lakes and 300 feet away from rivers, streams, ditches, etc.
- Be covered immediately with enough soil to keep scavengers out (three feet is sufficient).
- Not be placed in sandy or gravelly soil types.
- Maintain at least 10 feet vertical separation between dead animals and bedrock.
- Other: _____

☐ **Incineration**

The incinerator will meet the following:

- Capable of producing emissions not to exceed 20 percent opacity.
- Fitted with an afterburner that maintains flue gases at 1,200 degrees Fahrenheit for at least 0.3 seconds.
- Ash from the incinerator must be handled in such a manner as to prevent particulate matter from becoming airborne.

☐ **Other Method**

The following operational practices will be implemented (describe the alternative method below):

Attachment A – Summary of state requirements for recipients of transferred manure and table for rate calculation

I. Rate limits

Match N needs - Limit rates so that estimated plant-available N from all manure and fertilizer sources combined does not exceed expected crop N needs for the upcoming crop unless rates are limited by P (see section II)

Legumes - Crop-available manure N applied to legumes can not exceed 3.5 lbs N per bushel of soybeans; 50 lbs N per ton of alfalfa; 27 lbs N per ton grass hay or pasture; 43 lbs N per ton grass/legume; 45 lbs N per ton red clover.

Base on Univ. of Minn. recommendations – Determine crop nitrogen needs and the amount of nitrogen available from manure or legumes from most recent published recommendations of the University of Minnesota Extension Service or another land grant college in a contiguous state. Contact MPCA staff if you need the most recent Univ. of Minn. recommendations.

Base rates on: crop sequence, expected yields and soil organic matter category when applicable, previous year manure credits, method of application, and manure analysis nutrient levels.

Calibrate equipment – Calibrate equipment regularly and apply evenly to ensure that the intended rates of application are consistent with actual rates of application.

Summer applications – Plant a cover crop where manure is applied in June, July or August to harvested fields that would otherwise remain without crop cover for the rest of the growing season. Use a soil nitrate test during the following spring to credit remaining nutrients.

II. Soil Phosphorus (P) management

Soil P testing – Test soils for P at least once every four years.

Avoid P build-up along waters – Manage manure additions (crop P removal can be used as a guide, don't exceed removal over time) so that soil P levels do not show increase within 300 feet of certain waters*, except where soil P is insufficient for crop growth (less than 21 Bray P-1 or 16 Olsen), or where a 50-100' vegetative buffer is established along waters.

Avoid extremely high P soils – Avoid manure application onto fields where soils exceed P levels in the table below, unless a plan is submitted to the MPCA or County Feedlot Officer that describes how water pollution will be prevented when applying manure to these soils.

Soil Test Method	Outside of 300 ft from waters*	Within 300 ft from waters* and open tile intakes
Bray P1	150 ppm	75 ppm
Olsen	120 ppm	60 ppm

** "waters" refers to lakes, streams, intermittent streams, wetlands over 10 acres, and drainage ditches without protective berms.*

III. Setbacks when applying manure in sensitive areas

Feature	Surface Application	Incorporation Within 24 hrs
Lakes, Streams	300'*	25'
Wetlands (10+ ac)	300'*	25'
Ditches w/o Berms	300'*	25'
Open Tile Intakes	300'	0'
Sinkholes w/o Berms		
Downslope	50'	50'
Upslope	300'	50'
Wells and Quarries	50'	50'

** 100' vegetated buffer can be used instead of 300' setback for non-winter applications (50' buffer for wetlands/ditches)*

IV. Keeping records

The cropland manager where manure is applied must keep records for at least three years (six years if applying manure near waters):

- Manure nutrient test results (provided by feedlot owner), Field locations and acreage, Dates of application and timing of incorporation, Amount of manure applied per acre, Total N and P applied on each field, and Soil nutrient test results.
- If manure is applied in during the winter, record the land slopes, distance to nearest water, and field conservation practices in place.

V. Short-term stockpiling practices

Follow all stockpiling setbacks for waters and conduits to waters (ranging from 50 to 300 feet); avoid sandy soils and high water table soils (<2'); avoid slopes over 6%; use diversions if slopes exceed 2%; and keep records as required in Minn. R. ch. 7020.2125. The stockpile size must not exceed the amount of manure needed to supply nutrient needs to the tract of land where applied.

VI. Spills

If manure spills occur that have the potential to pollute waters, immediately contact the state duty officer at 1-800-422-0798.

VII. Manure rate calculator

If the P management requirements (see Section II) are being met, the calculator can be used at the time of application to determine the manure rate to apply at N-based rates.

Field location: Twnsp _____ Sec__1/4___

	N	*Example*
Step 1. N needs of crop (lb/acre) (base the N needs as described in Sec I)		*130 lb/a*
Step 2. Total N in manure (lb/ton or lb/1000 gallons)		*50 lb/1000 gal*
Step 3. Take step 2 value & multiply by applicable % factor from table 2 below. (% ranges from .20 to .80)		*50 X .80 = 40*
Step 4: Divide the number from step 1 by the number in Step 3.		*130/40 = 3.25*
Step 4 is in tons/acre or 1000 gal/acre		*3,250 gal/a*

Table 2. Manure nitrogen availability and loss as affected by method of application and animal species.

	Surface broadcast – Incorporation[1]			Injection	
	None	< 4 days	< 12 hours	Sweep	Knife
	% Total N				
Beef					
Year 1	25	45	60	60	50
Year 2	25	25	25	25	25
Lost[2]	40	20	5	5	10
Dairy					
Year 1	20	40	55	55	50
Year 2	25	25	25	25	25
Lost[2]	40	20	10	5	10
Swine					
Year 1	35	55	75	80	70
Year 2	15	15	15	15	15
Lost[2]	50	30	10	5	15
Poultry					
Year 1	45	55	70	NA	NA
Year 2	25	25	25	NA	NA
Lost[2]	30	20	5	NA	NA

For more detailed information on these specific requirements contact MPCA or go to the link:
http://www.pca.state.mn.us/index.php/topics/feedlots/feedlot-nutrient-and-manure-management.html?menuid=&redirect=1

Attachment B - Records when manure ownership is transferred - 300 or more animal units

Records for feedlot owners (manure generator) and commercial applicators

Pads of triplicate carbon copies of this form, along with instructions, are available from the MPCA.

Copy 1: Kept by feedlot owner where manure is generated after completion of step #1.
Copy 2: Kept by applicator after completion of step #3.
Copy 3: Returned to feedlot owner where manure was generated after completion of step #3.

Step 1: Manure generation. *Completed by feedlot owner where manure is generated.*

Name of facility where manure generated: IDEAL Research 1

Mailing address: 1876 280th Avenue

City: Tracy State: MN Zip code: 56175

Phone: 507-626-5829 Fax: _____ Email: jeff.knott@feedideal.com

Date(s) of transfer (mm/dd/yyyy): _____ **Total quantity transferred:** _____ ☐ tons ☒ gallons

Manure analysis results (must be representative of manure transferred):

Manure source: _____ Date analyzed (mm/dd/yyyy): _____

N: _____ P_2O_5: _____ K_2O: _____ Units: ☐ lb/ton ☐ lb/1000 gallons

Name of company or individual taking manure from feedlot: _____

Mailing address: _____

City: _____ State: _____ Zip code: _____

Phone: _____ Fax: _____ Email: _____

Step 2: Short-term stockpiling. *Completed by owner of the stockpile – Provide form to person applying manure. If no stockpile, go to step 3.*

Stockpile location(s)				Quantity stockpiled (tons)	Date stockpile established	Date land applied
County	Township	Section	Quarter			

Step 3: Manure Application. *Completed by individual applying the manure at the time of application. Return a copy to the feedlot owner where manure was generated within 60 days after applying manure. See the back of this form for manure spreading requirements when manure is from a facility with 300 or more animal units.*

Name of company or individual that applied manure: _____

Mailing address: _____

City: _____ State: _____ Zip code: _____

Phone: _____ Fax: _____ Email: _____

Minnesota Department of Agriculture license number of commercial applier: _____

Field ID	County	Township	Section	Application rate (tons or gallons/ac)

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Animal Feedlot or Manure Storage Area Permit Application

CSF and Interim Permit Program

Doc Type: Permit Application

Applicability: To obtain a construction short form (CSF) or interim permit, you must complete and submit this form to the Minnesota Pollution Control Agency (MPCA), or to the County Feedlot Officer (CFO) in delegated counties.

Keep a copy of this application form and all submittals for your records.

Feedlot Registration Number: _____

I. Permit type and reason for application

Please indicate which type of feedlot permit you are applying for *(choose only one)*

☒ Construction Short Form ☐ Interim (correcting a pollution hazard)

Please indicate the reason for the permit application *(choose only one)*

☒ New Permit
(No existing CSF or interim permit)

☐ Permit Modification
(Changes to sites with an existing CSF or interim permit)

☐ Permit Extension - Current CSF or Interim Permit Number: _____
(Work not completed prior to permit expiration)
Indicate below the reason(s) the work may not be completed prior to permit expiration

Estimated amount of time required to complete the work: _____ ☐days ☐months
Note: The length of the extension is limited to 24 months for CSF permits and 90 days for interim permits

A permit extension request only requires completion of pages 1 and 6 of this application form (the remaining pages can be left blank).

Note: When the notice to neighbors and property owners is applicable (page 6) the content of the notice must include the date the original permit was issued and the new proposed completion date as well as the normally required information.

II. Owner's name(s) and address(es) - (All partners of a Limited Liability Partnership (LLP) must be listed.)

Primary owner – Will be used as the mailing address

Name: Knott et al., LLC
Address: 1876 280th Avenue
City: Tracy State: MN
Phone: 507-626-5829 Zip: 56175
Email: jeff.knott@feedideal.com

Additional owner – attach additional sheets as necessary

Name: Jeffrey and Jeanne Knott
Address: 1876 280th Avenue
City: Tracy State: MN
Phone: 507-626-5829 Zip: 56175
Email: jeff.knott@feedideal.com

Note: *The term owner includes all persons having possession, control, or title to an animal feedlot or manure storage area (including lessees or renters). All owners must be listed. Attach to this application the names, addresses, and phone numbers of all additional owners.*

III. Facility name and site address

Site Name: IDEAL Research 1

☐ Facility is a MN Ag Water Quality Certified Farm (MAWQCP)

Complete if facility address is different than the primary owner address:

Street: County Highway 8
City: Tracy State: MN
Phone: _____ Zip: 56175

Contact person for day-to-day activities

Name: Jeffrey Knott
Street: 1876 280th Avenue
City: Tracy State: MN
Phone: 507-626-5829 Zip: 56175
Cell phone: 507-626-5829
Email: jeff.knott@feedideal.com

(General letters/notices may be sent by e-mail where one is indicated.)

IV. Facility location

County: Redwood Township name: Gales

Township (26 – 71 or 101 – 168)	Range (1 – 51)	Section (1 – 36)	¼ Section (160 acre) (NW, NE, SW, SE)	¼ of ¼ Section (40 acre) (NW, NE, SW, SE)
T 110 N	R 39 W	33	NW	

V. Sensitive features

1. Is any part of the facility within 1,000 feet of any type of surface waters? ☐ Yes ☒ No
   If Yes, complete a. and b. below:
   a. List the name of the surface water feature: _____
   b. Select the type of surface water feature below:
   ☐ Lake/Pond larger than 25 acres ☐ Wetland ☐ Drainage ditch ☐ Other
   ☐ River/Stream Is any part of the facility within 300 feet of the river/stream? ☐ Yes ☐ No
2. Is any part of the facility located within a delineated flood plain *(100 year flood)*? ☐ Yes ☒ No
3. Is any part of the facility located within designated shoreland? ☐ Yes ☒ No
4. Is any part of the facility located within 1,000 feet of a karst feature? ☐ Yes ☒ No
   (sinkholes, caves, disappearing springs, resurgent springs, karst windows, dry valleys, or blind valleys)
   If Yes, complete a. and b. below:
   a. Are there 4 or more sinkholes within 1,000 feet? ☐ Yes ☐ No
   b. Is any part of the facility within 300 feet of a known sinkhole? ☐ Yes ☐ No
5. Is any part of the facility located within 1,000 feet of the following types of wells: ☐ Yes ☒ No
   If Yes, select the applicable well type below:
   ☐ a community water supply well
   ☐ a well serving a public school as defined under Minn. Stat. § 120A.05
   ☐ a well serving a private school excluding home school sites
   ☐ a well serving a licensed child care center where the well is vulnerable (Minn. R. 4720.5550, subp. 2)
6. Is any part of the facility located within 1,000 feet of an open tile intake? ☒ Yes ☐ No

VI. Environmental Review (complete when construction or expansion is proposed)

Mandatory environmental review is required when the addition of 1,000 or more animal units (AU) is proposed as part of the construction/expansion at any facility. The threshold when environmental review is mandatory is reduced to 500 AU when any part of the facility is located within a "sensitive area". The facility is within a sensitive area when any of the following apply.

- Any part of the facility is within a delineated floodplain (yes to question 2 above)
- Any part of the facility is within designated shoreland (yes to question 3 above)
- Any part of the facility is within 1,000 feet of a karst feature (yes to question 4 above)
- Any part of the facility is within a vulnerable drinking water supply management area
- Any part of the facility is within a federal, state, or local wild and scenic river district
- Any part of the facility is located within the Minnesota River Project Riverbend area or the Mississippi headwaters area

Additionally mandatory environmental review is required for "Phased actions". Phased actions are defined under Minnesota law (Minn. R. ch. 4410) as two or more projects located in the same geographic area and constructed sequentially within three years of each other by the same proposer. When this is the case, the animal units from all projects are combined to determine if environmental review is required. The following will assist the MPCA to evaluate if your project qualifies as a "phased action".

Do you have ownership interest in another livestock operation that was constructed/expanded within the past three years or are you substantially certain you will be constructing/expanding another livestock operation within the next three years?

☐ Yes ☒ No

If Yes, how far away *(straight-line distance)* is it located from the project proposed in this application? _____ miles

There are also rule provisions to require completion of the environmental review process in the event of a citizen petition or upon the discretion of the MPCA. Please see the MPCA fact sheet entitled "When is Environmental Review Required for Feedlots" (available on the MPCA website at http://www.pca.state.mn.us/publications/wq-f1-10.pdf) and/or Minn. R. 4410 for further details.

VII. Animal numbers and animal unit (AU) calculation

Complete the table below to identify the **maximum** number of animals housed at that facility. All animal numbers and animal sizes used to complete this table should reflect the animal holding **capacity** of the facility even if the facility does not currently house or propose to house that number of animals. At no time is the number of animals at the facility allowed to exceed the capacity provided below without first obtaining a permit or permit modification.

Current Capacity - List the current head count **capacity** for each animal type in column 3 below. For sites with a permit, this should match the currently permitted number of animals. Next, multiply the AU Factor in column 2 by the number of animals listed in column 3 to get the *Current AU Capacity* for each animal type (column 4). Finally, add together all AU's in column 4 to get a total at the bottom of the chart. *If this application is for a brand-new feedlot site leave columns 3 and 4 blank. (ie. bare piece of ground)*

Final Capacity - List the final head count **capacity** for each animal type in column 5 below. This number should include current animals plus or minus any expansion or reduction in each animal type. This should reflect the maximum AU capacity requested with this permit application. Next, multiply the AU Factor in column 2 by the number of animals listed in column 5 to get the *Final AU Capacity* for each animal type (column 6). Finally, add together all AU's in column 6 to get a total at the bottom of the chart.

		***Current* facility capacity**		***Final* facility capacity** (Current +/- Changes)	
1. Animal type	**2. Animal unit factor**	**3. Head count**	**4. Animal units = column 2 x column 3**	**5. Head count**	**6. Animal units = column 2 x column 5**
A. Dairy cattle					
Mature cow (milked or dry) over 1,000 lbs.	1.4				
Mature cow (milked or dry) under 1,000 lbs.	1.0				
Heifer	0.7				
Calf	0.2				
B. Veal					
Veal	0.2				
C. Beef cattle					
Slaughter steer/heifer, stock cow, or bull	1.0				
Feeder cattle (stocker or backgrounding), heifer	0.7				
Cow and calf pair	1.2				
Calf (weaned)	0.2				
D. Swine					
Over 300 lbs.	0.4				
Between 55 and 300 lbs.	0.3			1250	375
Under 55 lbs.	0.05				
E. Horses					
Horse	1.0				
F. Sheep					
Sheep or Lamb	0.1				
G. Chickens with a *liquid* manure system					
Layer Hens or Broilers	0.033				
H. Chickens with a *dry* manure system					
Broilers over 5 lbs.	0.005				
Broilers under 5 lbs.	0.003				
Layer Hens over 5 lbs.	0.005				
Layer Hens under 5 lbs.	0.003				
I. Turkeys					
Over 5 lbs.	0.018				
Under 5 lbs.	0.005				
J. Ducks					
Duck (with a liquid manure handling system)	0.01				
Duck (with a dry manure handling system)	0.01				
K. Animals not listed in A to J (AU factor in column 2 = average weight of the animal type divided by 1,000 lbs.)					
Animal type:					
Total animal unit capacity Add all numbers in column 4 for Current AU total Add all numbers in column 6 for Final AU total			**Current AU capacity**		**Final AU capacity** **375**

VIII. Animal holding areas

Complete the table below for all your animal holding areas.
If you have more than six animal holding areas on your site, continue your list on an additional copy of this page.

Animal holding area ID	***List each animal holding area in a separate column***					
Facility Site Sketch ID (i.e., #1, A, Barn 1)	IDR #1					
Status: (check one box only) *Proposed* - not permitted previously *Approved* - permitted but not yet operational *Existing* - current operational component *Modifying* - change to a permitted component	☒Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating	☐Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating	☐Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating	☐Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating	☐Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating	☐Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating
Distance to nearest well (ft.)						
Pasture Access	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No

Type of animal holding areas (indicate dimensions and floor type)	***Write approximate dimensions in feet in the space below*** *(width x length or area with units for irregular shapes)*					
Total confinement barn (slatted floor)	51x200					
Total confinement barn (solid floor)						
Partial confinement barn						
Open lot with runoff controls						
Open lot without runoff controls						
Animal Holding Area Floor Type (check all that apply)	☒Concrete ☐Asphalt ☐Soil ☐Other	☐Concrete ☐Asphalt ☐Soil ☐Other	☐Concrete ☐Asphalt ☐Soil ☐Other	☐Concrete ☐Asphalt ☐Soil ☐Other	☐Concrete ☐Asphalt ☐Soil ☐Other	☐Concrete ☐Asphalt ☐Soil ☐Other

Animal numbers	***Indicate the maximum capacity (number of animals) of each animal holding area*** *The total number of all animals listed should match the final animal numbers listed on page 3*					
Mature dairy cows (over 1,000 lbs.)						
Mature dairy cows (under 1,000 lbs.)						
Dairy heifers						
Dairy calves						
Veal						
Slaughter steer/heifer, stock cow or bull						
Feeder cattle-stocker/background/heifer						
Cow and calf pair						
Beef calves (weaned)						
Swine over 300 lbs.						
Swine between 55 and 300 lbs.	1250					
Swine under 55 lbs.						
Horses						
Sheep or lamb						
All chickens with liquid manure system						
Broiler chickens over 5 lbs. - dry system						
Broiler chickens under 5 lbs. - dry system						
Laying hens over 5 lbs. - dry system						
Laying hens under 5 lbs. - dry system						
Turkeys - over 5 lbs.						
Turkeys - under 5 lbs.						
Ducks						
Other:						

IX. Manure handling, feed storage, and dead animal areas

Complete the table below for your manure storage, feed/silage storage areas and dead animal disposal areas on your site. If you have more than six manure storage, feed/silage storage, and dead animal management areas on your site, continue your list on an additional copy of this page.

Manure, feed, or dead animal areas	***List each manure handling, feed storage, and dead animal area in a separate column***					
Facility Site Sketch ID (i.e., #1, A, Basin 1)	IDR#1					
Status: (check one box only) *Proposed* - not permitted previously *Approved* - permitted but not yet operational *Existing* - current operational component *Modifying* - change to a permitted component	☒Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating	☐Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating	☐Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating	☐Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating	☐Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating	☐Proposed ☐Approved ☐Existing ☐Modifying ☐Eliminating
Distance to nearest well (ft.)						
Type of liquid manure or process wastewater storage/treatment areas (indicate dimensions)	***Write approximate top dimensions in feet in the space below (width x length x depth or volume with units for irregular shapes)***					
Earthen or GCL lined basin						
Below barn concrete tank	51x200x8					
In-ground concrete tank/basin (outdoor)						
Above-ground concrete tank						
Synthetic lined (HDPE, EPDM, etc.) basin						
Steel tank (i.e., slurry-store)						
Composite lined (2 liner types) basin/tank						
Vegetated Infiltration Area						
Other (describe):						
Type of solid manure, feed storage, and dead animal areas (indicate dimensions and floor type)	***Write approximate dimensions in feet in the space below (width x length or area with units for irregular shapes)***					
Permanent Stockpile						
Dead Animal Management Area						
Covered Feed Storage Area						
Uncovered Feed Storage Area						
Sweet Corn Silage Storage Storage Pad Area						
Tonnage on site at any one time						
Other (describe):						
Stockpile, Feed Storage, or Mortality Area Floor/Liner Type (check all that apply)	☐Concrete ☐Asphalt ☐Soil ☐Other	☐Concrete ☐Asphalt ☐Soil ☐Other	☐Concrete ☐Asphalt ☐Soil ☐Other	☐Concrete ☐Asphalt ☐Soil ☐Other	☐Concrete ☐Asphalt ☐Soil ☐Other	☐Concrete ☐Asphalt ☐Soil ☐Other

X. Changes to groundwater monitoring plan (complete only if applicable)

If groundwater monitoring is required at the facility, this application can request changes to the MPCA-approved groundwater monitoring plan. In order to request changes to the groundwater monitoring plan, please indicate the type of change requested.

☐ Elimination of monitoring ☐ Change to sampling frequency

☐ Change to sample testing protocol ☐ Other

When a change is requested, please include with this permit application documentation from a qualified professional that provides a technical analysis and justification for the requested changes.

XI. Non-delegated county public meeting minutes (complete only if applicable)

A county which has not accepted delegation of the feedlot program must hold a public meeting prior to issuance of a feedlot permit by the MPCA for an animal feedlot with a capacity of 300 or more animal units.

Date meeting has occurred or is scheduled to occur: May 22, 2017

Verification of public meeting.

A copy of the meeting minutes must be provided to the MPCA for verification of completion prior to permit issuance.

XII. 500 or more AU: Notice to residents and property owners within 5,000 feet

When required. A notice is required in ***either*** of the following situations:

- ***Construction of a new*** feedlot, or manure storage area, which will have a capacity of 500 AU or more.
- ***Expansion of an existing*** feedlot, or manure storage area, which currently has, or will have upon completion of the expansion, a capacity of 500 AU or more.

Notice methods. The owner shall not less than 20 business days before the anticipated issuance date of the permit, provide notice to each resident and each owner of real property within 5,000 feet of the perimeter of the proposed facility. This notice *must* include, at a minimum, the information provided in Minn. R. 7020.2000, subp.4.

An example notice can be found in the factsheet *Permit Notification Requirements – Feedlots with more than 500 Animal Units* available on the MPCA website http://www.pca.state.mn.us/feedlots.

Verification of notice. The MPCA must verify that this notice has been completed prior to permit issuance. Documentation that this notice has been completed can be provided with the permit application (preferred) or submitted at a later date, prior to permit issuance.

When the notice has been completed prior to this application

Please include with this application one of the following to provide verification that the required notice has been completed:

- An affidavit of publication from a newspaper of general circulation used to provide this notification.
- A list of all parties, with their location, that were notified by certified mail and copies of all signed mail return receipts.
- A list of all parties, with their location, that were personally visited with a date and signature from each party and certification signed by a notary public indicating in detail what was discussed.

When the notice has not been completed prior to this application

Please include with this permit application both of the following:

- A copy of the content of the notification
- Date notification is scheduled to occur: _____

Note: The permit cannot be issued prior to receiving verification that the notice has actually taken place. This verification must be one of the three items listed above.

XIII. Certifications and signature

Notification to local officials

The Applicant certifies that, if the application includes construction of a new facility or expansion of an existing facility, all local zoning authorities have been notified in accordance with Minn. R. 7020.2000 subp. 5.

Construction Stormwater (CSW) Requirements

The Applicant certifies that, if construction will disturb 5 or more acres, they have made a separate application for a CSW permit. For construction activities that disturb at least 1 acre but less than 5 acres, the Applicant certifies to comply with the requirements of the current CSW NPDES general permit (Minn. R. 7090.2020 provides permit coverage even though no application has been made).

Need for NPDES or SDS permit

If the MPCA determines that a NPDES or SDS permit is required, the Applicant certifies that this application will serve as an application for a NPDES or SDS permit, as appropriate. The Applicant agrees to submit additional information, as requested by the MPCA, in order to complete the NPDES or SDS permit application process including payment of the applicable permit application fee.

Applicant Signature

I hereby certify that the design, construction, and operation of the facility will be in accordance with this application and plans, specifications, reports, and related communications approved by the MPCA, and in accordance with applicable permit conditions or regulations/standards of the MPCA. I also certify under penalty of law that this document and all attachments were prepared under my direction or supervision and the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

The person that signs this application must be one of the following:

A. For a corporation, a principal executive officer of at least the level of vice president
B. For a partnership, a general partner
C. For a sole proprietorship, the proprietor

Print name: Jeffrey Steven Knott Print official title: President

Office phone: 507-626-5829 Cell phone: 507-626-5829

Signature: Jeffrey S Knott Date: 4-19-17

A "wet signature" is required. No reproductions (i.e., copies or scans) of the signature will be accepted.

To sign up for electronic communications including the MPCA feedlot newsletters, please go to the MPCA website at https://public.govdelivery.com/accounts/MNPCA/subscriber/new.

Required enclosures (Permit applications submitted without all required enclosures are incomplete.)

☐ A. A site sketch/aerial photograph indicating the location of the existing and proposed facility components.

☐ B. A Manure/Nutrient Management Plan (MMP) The following are optional forms to assist with MMP development:

When **all** manure is transferred to another entity for utilization, complete a MMP using the optional form below:

Transferred Ownership MMP: http://www.pca.state.mn.us/index.php/view-document.html?gid=3763

When **any** portion of manure is applied to land owned, rented, or leased by the applicant(s), or applied to other land where nutrient application decisions are made by the applicant(s), complete a MMP using the optional spreadsheet form below:

MPCA Manure Management Planner: http://www.pca.state.mn.us/index.php/view-document.html?gid=3548

Notes: The transferred ownership MMP form is incorporated into the spreadsheet to account for instances when only some of the manure is transferred.

A paper version is available at: http://www.pca.state.mn.us/index.php/view-document.html?gid=23197

☐ C. Plans and Specifications for construction, modification, or expansion of any liquid manure storage area.

☐ D. **Conditional** - Environmental Assessment Worksheet (EAW) Fee
When the project requires environmental review **and** is located in a county that has not accepted delegation of the county feedlot program, there is a fee of $4,650 for processing of an Environmental Assessment Worksheet (EAW) that must be included with this permit application. (Check payable to: Minnesota Pollution Control Agency)

☐ E. **Optional** – Verification of the notifications required in part XII of this application. If not submitted with the application, the MPCA must receive the verification prior to permit issuance. It is strongly recommended that the applicable verifications be included with the permit application.

Permit application submittal

Please mail the completed permit application and all necessary attachments to either the County Feedlot Officer (CFO) or the MPCA as indicated in the chart below. Mailing addresses for the MPCA offices are below.

County	Mail To:	County	Mail To:	County	Mail To:
Aitkin	MPCA – Rochester	Isanti	MPCA – Rochester	Pipestone	CFO – County
Anoka	MPCA – Rochester	Itasca	MPCA – Rochester	Polk	CFO – County
Becker	MPCA – Mankato	Jackson	CFO – County	Pope	CFO – County
Beltrami	MPCA – Mankato	Kanabec	MPCA – Rochester	Ramsey	MPCA – Rochester
Benton	MPCA – Rochester	Kandiyohi	CFO – County	Red Lake	CFO – County
Big Stone	CFO – County	Kittson	CFO – County	Redwood	MPCA – Rochester
Blue Earth	CFO – County	Koochiching	MPCA – Rochester	Renville	CFO – County
Brown	CFO – County	Lac Qui Parle	CFO – County	Rice	CFO – County
Carlton	MPCA – Rochester	Lake	MPCA – Rochester	Rock	CFO – County
Carver	CFO – County	Lake Of The Woods	CFO – County	Roseau	MPCA – Mankato
Cass	MPCA – Rochester	Le Sueur	CFO – County	St. Louis	MPCA – Rochester
Chippewa	MPCA – Rochester	Lincoln	CFO – County	Scott	MPCA – Rochester
Chisago	MPCA – Rochester	Lyon	CFO – County	Sherburne	MPCA – Rochester
Clay	CFO – County	Mahnomen	MPCA – Mankato	Sibley	CFO – County
Clearwater	MPCA – Mankato	Marshall	CFO – County	Stearns	CFO – County
Cook	MPCA – Rochester	Martin	CFO – County	Steele	CFO – County
Cottonwood	CFO – County	McLeod	CFO – County	Stevens	CFO – County
Crow Wing	MPCA – Rochester	Meeker	CFO – County	Swift	CFO – County
Dakota	MPCA – Rochester	Mille Lacs	MPCA – Rochester	Todd	CFO – County
Dodge	CFO – County	Morrison	CFO – County	Traverse	CFO – County
Douglas	CFO – County	Mower	CFO – County	Wabasha	MPCA – Rochester
Faribault	CFO – County	Murray	CFO – County	Wadena	CFO – County
Fillmore	CFO – County	Nicollet	CFO – County	Waseca	CFO – County
Freeborn	CFO – County	Nobles	CFO – County	Washington	MPCA – Rochester
Goodhue	CFO – County	Norman	CFO – County	Watonwan	CFO – County
Grant	MPCA – Mankato	Olmsted	MPCA – Rochester	Wilkin	MPCA – Mankato
Hennepin	MPCA – Rochester	Otter Tail	MPCA – Mankato	Winona	CFO – County
Houston	CFO – County	Pennington	CFO – County	Wright	CFO – County
Hubbard	MPCA – Mankato	Pine	MPCA – Rochester	Yellow Medicine	CFO – County

MPCA – Rochester Mailing Address

MPCA Feedlot Permit Coordinator
18 Woodlake Drive SE
Rochester, MN 55904

MPCA – Mankato Mailing Address

MPCA Feedlot Permit Coordinator
12 Civic Center Plaza, Suite 2165
Mankato, MN 56001

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Manure Management Plan (MMP) Requirements when Ownership of Manure is Transferred

Feedlot Program

Doc Type: Permit Information Form

Are you transferring ownership of manure?

MMP and record keeping requirements for feedlot owners are different when manure ownership is transferred. Manure ownership is not considered to be transferred (i.e., feedlot owner/operator retains ownership) when you answer "yes" to either question:

1. ☐ Yes ☒ No Is manure from the feedlot facility applied onto land that is owned, leased, or rented by the feedlot owner/operator?
2. ☐ Yes ☒ No For manure application sites not owned, leased, or rented by the feedlot owner/operator, have you as the feedlot owner/operator or employees working under your direction been given control of the crop and nutrient planning decisions, including planning for manure application rates, timing, and methods?

If you answered "Yes" to either question, you are retaining ownership of manure, and you should see the Minnesota Pollution Control Agency (MPCA) guidelines "Manure Management Plan Requirements" which describe requirements when manure ownership is not transferred (found on the MPCA website at http://www.pca.state.mn.us/index.php/view-document.html?gid=3537). If you answered "No" to both questions, then you are transferring ownership of your manure and the feedlot operator may use these guidelines to complete a MMP.

If only a portion of your manure is considered to have transferred ownership, then use these guidelines for the manure which has transferred ownership, and develop the more comprehensive MMP for the manure which does not have transferred ownership.

MMP development

The MMP can be developed by answering the questions below or by using other formats that include all required information in Minn. R. ch. 7020.

Name of feedlot facility or operator: IDEAL Research 1 Registration No.: _____

1. **Describe the manure storage and handling system and the expected amount of manure and nutrients that will need to be land applied.**

   a) How is the manure stored and handled? What happens to the manure from the time it is generated to the time it is either sold or land applied? Where is it kept? For how long?

   Stored in 51'x200'x8' deep concrete pit. Approximately every 12 months the pit will be pumped.

   b) How many months can manure be stored before the storage capacity is exceeded?

   15 months

   c) When will manure be provided to the recipient? Which months do you expect that manure will be applied?

   After cropping practices have finished. October through December. Emergency pumping will be completed in the spring.

   d) How much manure is removed from barns or storage areas per year? How much manure will eventually need to be land-applied?

   Amount removed from barns or storage: 315,000 ☐ Tons ☒ Gallons

   Amount land applied: 100% ☐ Tons ☐ Gallons

   e) How much of this manure will be transferred ownership: 100%

f) How many pounds of nitrogen (N) and phosphorus (P_2O_5) will need to be land applied per year? (Multiply the expected nutrient content from Part 3.c) by the amount of manure land applied from Part 1.d) to get your answer.) (e.g., 77 pounds N ÷ 1,000 gallons x 1,300,000 gallons = 100,100 pounds of N **or alternatively** 45 pounds per ton x 3,000 tons = 135,000 pounds of N) (figure P_2O_5 using the same calculations)

N: =81/1000*315,000=25,515 pounds of N P_2O_5: =35/1000*315,000=11,025 pounds of phosphorus

g) For new or expanding feedlot facilities, is there enough land potentially available for spreading manure in accordance with allowable rates? ☒ Yes ☐ No

How will you ensure that enough land owners in the area are willing to purchase your manure or otherwise receive your manure? (e.g., enough land to allow spreading in accordance with state nutrient rate limits)

Relatives own suitable acres to accommodate manure.

2. Describe the manure application methods and equipment.

a) How will the manure be applied? What method(s) and type(s) of equipment do you expect will be used for manure application by the recipient of your manure, if known?

Direct soil injection using tanks

3. Describe your nutrient testing methods, the frequency of testing, and the expected nutrient content of the manure to be applied.

a) How often will manure be sampled and sent to a laboratory for nutrient analysis? (Minimum state requirements are: annual sampling at NPDES-permitted facilities; annual sampling for the first three years and once every four years for other feedlots.)

Yearly

b) How will the manure samples be collected to ensure that representative samples are obtained for nutrient analysis? (e.g., How many subsamples? When collected? Where collected? University of Minnesota Extension Service publications may be referenced.)

Use composite sample and send in 2 samples/year. Use previous years sample to determine nutrient content unless major production change occur.

c) What is the expected nutrient content of manure to be collected? (e.g., What is the nitrogen and phosphorus content expected from each major type of manure storage area?

N: 81 ☐ Pounds per Ton ☒ Pounds per 1,000 Gallons

P_2O_5: 35 ☐ Pounds per Ton ☒ Pounds per 1,000 Gallons

4. Describe how Minnesota's manure application requirements will be provided to manure recipients.

a) Attach a copy of the state manure application requirements that you will provide to all recipients of your transferred manure. Will you be using Attachment A or another list of state requirements?

Attachment A

b) How will you, as a feedlot owner/operator, maintain records associated with the manure transfer and land application sites/rates? Will you use MPCA recordkeeping forms for transferred ownership (Attachment B) or will you use a different form? **Note**: Attachments A and B can be obtained from MPCA offices or on the MPCA website at http://www.pca.state.mn.us/hot/feedlot-management.html.

Attachment B

c) How will you provide the manure recipient with manure nutrient test results and expected manure nutrient content? You may use Attachment B or other forms which include test results.

Attachment B

Animal mortality management (NPDES and SDS permitted sites only)

Indicate with a check mark the anticipated method(s) of dead animal disposal.

☒ **Rendering**

Carcasses at the pick-up point will comply with the following:

- Kept in an animal-proof, enclosed area.
- At least 200 yards from a neighbor's buildings.
- Picked up within 72 hours (7 days if refrigerated to less then 45 degrees).
- Other: _____

☐ **Composting**

The composting area will comply with the following:

- Built on an impervious, weight-bearing pad that is large enough to allow equipment to maneuver.
  Note: Class V gravel material is not considered to be impervious.
- Covered with a roof to prevent excessive moisture on the composting material, but if sawdust or other water-repelling material is used as the bulking agent, a roof may not be necessary.
- Built of rot-resistant material that is strong enough to withstand the force exerted by equipment.
- Large enough to handle each day's normal mortality through the endpoint of the composting which consists of a minimum of two (2) heat cycles.
- Other: _____

☐ **Burial**

The following operational practices will be implemented:

- Stay 5 feet above seasonal high water table.
- Stay 1000 feet away from lakes and 300 feet away from rivers, streams, ditches, etc.
- Be covered immediately with enough soil to keep scavengers out (three feet is sufficient).
- Not be placed in sandy or gravelly soil types.
- Maintain at least 10 feet vertical separation between dead animals and bedrock.
- Other: _____

☐ **Incineration**

The incinerator will meet the following:

- Capable of producing emissions not to exceed 20 percent opacity.
- Fitted with an afterburner that maintains flue gases at 1,200 degrees Fahrenheit for at least 0.3 seconds.
- Ash from the incinerator must be handled in such a manner as to prevent particulate matter from becoming airborne.

☐ **Other Method**

The following operational practices will be implemented (describe the alternative method below):

Attachment A – Summary of state requirements for recipients of transferred manure and table for rate calculation

I. Rate limits

Match N needs - Limit rates so that estimated plant-available N from all manure and fertilizer sources combined does not exceed expected crop N needs for the upcoming crop unless rates are limited by P (see section II)

Legumes - Crop-available manure N applied to legumes can not exceed 3.5 lbs N per bushel of soybeans; 50 lbs N per ton of alfalfa; 27 lbs N per ton grass hay or pasture; 43 lbs N per ton grass/legume; 45 lbs N per ton red clover.

Base on Univ. of Minn. recommendations – Determine crop nitrogen needs and the amount of nitrogen available from manure or legumes from most recent published recommendations of the University of Minnesota Extension Service or another land grant college in a contiguous state. Contact MPCA staff if you need the most recent Univ. of Minn. recommendations.

Base rates on: crop sequence, expected yields and soil organic matter category when applicable, previous year manure credits, method of application, and manure analysis nutrient levels.

Calibrate equipment – Calibrate equipment regularly and apply evenly to ensure that the intended rates of application are consistent with actual rates of application.

Summer applications – Plant a cover crop where manure is applied in June, July or August to harvested fields that would otherwise remain without crop cover for the rest of the growing season. Use a soil nitrate test during the following spring to credit remaining nutrients.

II. Soil Phosphorus (P) management

Soil P testing – Test soils for P at least once every four years.

Avoid P build-up along waters – Manage manure additions (crop P removal can be used as a guide, don't exceed removal over time) so that soil P levels do not show increase within 300 feet of certain waters*, except where soil P is insufficient for crop growth (less than 21 Bray P-1 or 16 Olsen), or where a 50-100' vegetative buffer is established along waters.

Avoid extremely high P soils – Avoid manure application onto fields where soils exceed P levels in the table below, unless a plan is submitted to the MPCA or County Feedlot Officer that describes how water pollution will be prevented when applying manure to these soils.

Soil Test Method	Outside of 300 ft from waters*	Within 300 ft from waters* and open tile intakes
Bray P1	150 ppm	75 ppm
Olsen	120 ppm	60 ppm

** "waters" refers to lakes, streams, intermittent streams, wetlands over 10 acres, and drainage ditches without protective berms.*

III. Setbacks when applying manure in sensitive areas

Feature	Surface Application	Incorporation Within 24 hrs
Lakes, Streams	300'*	25'
Wetlands (10+ ac)	300'*	25'
Ditches w/o Berms	300'*	25'
Open Tile Intakes	300'	0'
Sinkholes w/o Berms		
Downslope	50'	50'
Upslope	300'	50'
Wells and Quarries	50'	50'

** 100' vegetated buffer can be used instead of 300' setback for non-winter applications (50' buffer for wetlands/ditches)*

IV. Keeping records

The cropland manager where manure is applied must keep records for at least three years (six years if applying manure near waters):

- Manure nutrient test results (provided by feedlot owner), Field locations and acreage, Dates of application and timing of incorporation, Amount of manure applied per acre, Total N and P applied on each field, and Soil nutrient test results.
- If manure is applied in during the winter, record the land slopes, distance to nearest water, and field conservation practices in place.

V. Short-term stockpiling practices

Follow all stockpiling setbacks for waters and conduits to waters (ranging from 50 to 300 feet); avoid sandy soils and high water table soils (<2'); avoid slopes over 6%; use diversions if slopes exceed 2%; and keep records as required in Minn. R. ch. 7020.2125. The stockpile size must not exceed the amount of manure needed to supply nutrient needs to the tract of land where applied.

VI. Spills

If manure spills occur that have the potential to pollute waters, immediately contact the state duty officer at 1-800-422-0798.

VII. Manure rate calculator

If the P management requirements (see Section II) are being met, the calculator can be used at the time of application to determine the manure rate to apply at N-based rates.

Field location: Twnsp _____ Sec__ 1/4___

	N	*Example*
Step 1. N needs of crop (lb/acre) (base the N needs as described in Sec I)		*130 lb/a*
Step 2. Total N in manure (lb/ton or lb/1000 gallons)		*50 lb/1000 gal*
Step 3. Take step 2 value & multiply by applicable % factor from table 2 below. (% ranges from .20 to .80)		*50 X .80 = 40*
Step 4: Divide the number from step 1 by the number in Step 3.		*130/40 = 3.25*
Step 4 is in tons/acre or 1000 gal/acre		*3,250 gal/a*

Table 2. Manure nitrogen availability and loss as affected by method of application and animal species.

	Surface broadcast – Incorporation[1]			Injection	
	None	< 4 days	< 12 hours	Sweep	Knife
	% Total N				
Beef					
Year 1	25	45	60	60	50
Year 2	25	25	25	25	25
Lost[2]	40	20	5	5	10
Dairy					
Year 1	20	40	55	55	50
Year 2	25	25	25	25	25
Lost[2]	40	20	10	5	10
Swine					
Year 1	35	55	75	80	70
Year 2	15	15	15	15	15
Lost[2]	50	30	10	5	15
Poultry					
Year 1	45	55	70	NA	NA
Year 2	25	25	25	NA	NA
Lost[2]	30	20	5	NA	NA

For more detailed information on these specific requirements contact MPCA or go to the link:
http://www.pca.state.mn.us/index.php/topics/feedlots/feedlot-nutrient-and-manure-management.html?menuid=&redirect=1

Attachment B - Records when manure ownership is transferred - 300 or more animal units

Records for feedlot owners (manure generator) and commercial applicators

Pads of triplicate carbon copies of this form, along with instructions, are available from the MPCA.

Copy 1: Kept by feedlot owner where manure is generated after completion of step #1.
Copy 2: Kept by applicator after completion of step #3.
Copy 3: Returned to feedlot owner where manure was generated after completion of step #3.

Step 1: Manure generation. *Completed by feedlot owner where manure is generated.*

Name of facility where manure generated: IDEAL Research 1

Mailing address: 1876 280th Avenue

City: Tracy State: MN Zip code: 56175

Phone: 507-626-5829 Fax: _____ Email: jeff.knott@feedideal.com

Date(s) of transfer (mm/dd/yyyy): _____ **Total quantity transferred:** _____ ☐ tons ☒ gallons

Manure analysis results (must be representative of manure transferred):

Manure source: _____ Date analyzed (mm/dd/yyyy): _____

N: _____ P_2O_5: _____ K_2O: _____ Units: ☐ lb/ton ☐ lb/1000 gallons

Name of company or individual taking manure from feedlot: _____

Mailing address: _____

City: _____ State: _____ Zip code: _____

Phone: _____ Fax: _____ Email: _____

Step 2: Short-term stockpiling. *Completed by owner of the stockpile – Provide form to person applying manure. If no stockpile, go to step 3.*

Stockpile location(s)				Quantity stockpiled (tons)	Date stockpile established	Date land applied
County	Township	Section	Quarter			

Step 3: Manure Application. *Completed by individual applying the manure at the time of application. Return a copy to the feedlot owner where manure was generated within 60 days after applying manure. See the back of this form for manure spreading requirements when manure is from a facility with 300 or more animal units.*

Name of company or individual that applied manure: _____

Mailing address: _____

City: _____ State: _____ Zip code: _____

Phone: _____ Fax: _____ Email: _____

Minnesota Department of Agriculture license number of commercial applier: _____

Field ID	County	Township	Section	Application rate (tons or gallons/ac)

Land Application Agreement
For Receiving Manure on Cropland

The undersigned landowner agrees to allow manure from Knott et al. LLC livestock feedlot to be spread on 800 acres of his/her land. The land is located in the _____ quarter of Section 33/4,17, in Gales/Springdale Township, Redwood County, Minnesota.

The undersigned landowner is the holder of Permit Number NONE (if none is held, please indicate NONE).

If the land indicated above received manure from livestock in addition to that from the feedlot indicated above, please list the number and types of livestock below (if none, please indicate NONE).

NONE

Enclose a Farm Service Agency aerial photo of all areas on which manure will be spread. Outline the areas used.

Signature of Landowner

This Agreement is good until _____

David Knott
Name of Landowner

15443 Cty Hwy 8 — 507 626-5396
Address — Phone Number

Tracy MN 56175 — 4-18-17
City, State, Zip — Date

Land Application Agreement
For Receiving Manure on Cropland

The undersigned landowner agrees to allow manure from Knott et. al, LLC livestock feedlot to be spread on 800 acres of his/her land. The land is located in the ____ quarter of Section 33/4,17, in Gales / Springdale Township, Redwood County, Minnesota.

The undersigned landowner is the holder of Permit Number NONE (if none is held, please indicate NONE).

If the land indicated above received manure from livestock in addition to that from the feedlot indicated above, please list the number and types of livestock below (if none, please indicate NONE).

NONE

Enclose a Farm Service Agency aerial photo of all areas on which manure will be spread. Outline the areas used.

Steven R. Knott
Signature of Landowner

This Agreement is good until _____

Steve Knott
Name of Landowner

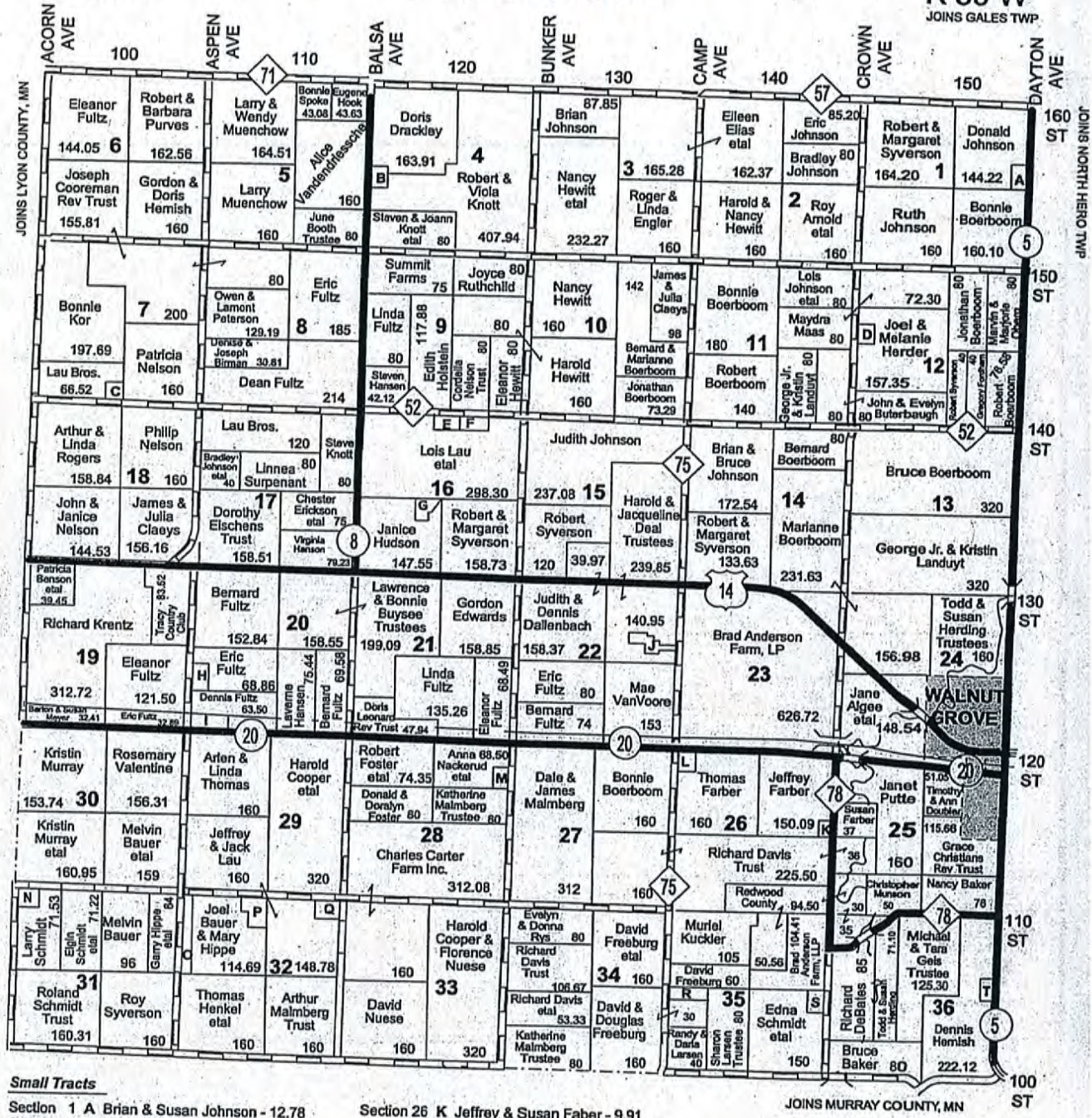
15433 County Hwy 8 — 507-629-3186
Address — Phone Number

Tracy MN 56175 — 4-18-17
City, State, Zip — Date

SPRINGDALE TWP

T 109 N — LAND OWNER — R 39 W

JOINS GALES TWP

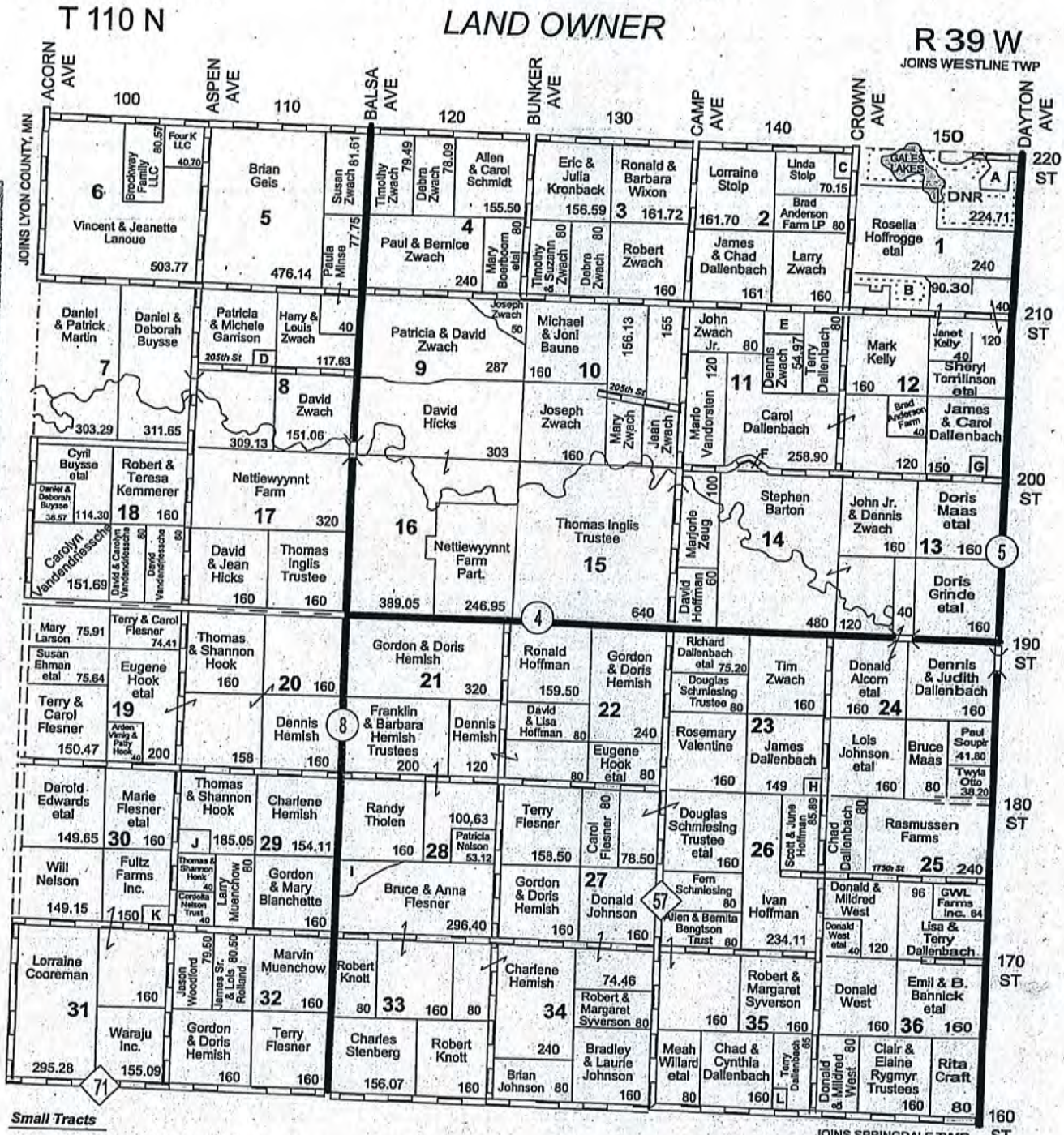


Section 4 All except NW 160

Section 17 NE 80

GALES TWP

LAND OWNER



Small Tracts

Section 1 A James Dallenbach - 17.10
B DNR - 29.70
Section 2 C Edwin Groebner - 12
Section 8 D Beau & Sarah Schlemmer - 10.87
Section 11 E City of Redwood Falls - 25.03
F Aisleen Benda - 21.10
Section 12 G Terry & Lisa Dallenbach - 10
Section 23 H Wayne Truedson - 11
Section 28 I Dennis Hemish - 23.60
Section 29 J Samuel & Melissa Sahlstrom - 14.95
Section 30 K David & Cindy Swenhaugen - 10
Section 35 L Jim Payne - 15

REDWOOD COUNTY, MN

Redwood County Swine Composting Protocol:

I. Purpose and scope: To allow hog producers to compost their dead livestock (carcasses) in lieu of rendering. These guidelines are based upon Minnesota Rules 1719 (Board of Animal Health), which are incorporated herein by reference. In any instance where these guidelines diverge from Minnesota Rules 1719, the stricter rule shall control.

II. Site selection – must take into account:
   a. Prevailing winds – reasonable attempts must be made to avoid sites where the prevailing winds will carry odors onto neighboring land uses (excepting agricultural fields and feedlots).
   b. Public view – the compost facility must be shielded from public view, so that the composting material is not visible from public roadways or neighboring land uses.

III. Facility – requirements for construction:
   a. Overall design: Compost facility must consist of at least three (3) compost bays each with 20 cubic feet of area for every one (1) pound daily normal mortality. Each bay must have poured concrete walls on three sides and be gated on the front so that wild and domestic animals cannot access the compost. The entire structure must sit on a concrete pad and have a roof to deflect rainwater from the compost.
   b. Floor: Floor must be constructed of 5" thick impervious concrete. Floor must be sloped toward the rear of the facility to keep liquid from running out of the composting area onto the ground.
   c. Walls: Walls must be constructed of 6" thick impervious concrete. Cement walls must be no more than 5' high. If lower than 5', the walls must include fencing up to 5' to prevent wild or domestic animals from accessing the compost. Cement walls must be high enough to contain the compost material.
   d. Roof: Roof must be supported by treated wood or metal supports and rafters. Roof must completely cover the composting bays so as to deflect rainwater.

IV. Process – the following practices must be observed:
   a. Dead pigs must be added within 24 hours of death.
   b. Each composting bay shall begin with a 1' layer of litter. Thereafter, carcasses shall be stacked up to 1' and covered by 1' of litter. Add additional layers as needed.
   c. Litter can be finely chopped vegetable matter (such as corn stalks), sawdust, or finished compost. The carbon to nitrogen ratio must in the range of 15:1 to 35:1.
   d. Carcasses must be kept at least 6" from the edge of the compost bay.
   e. The 3 compost bays allow for a three stage composting process. When the first bay is full, start a new pile in the second bay. When the second bay is full, start a new pile in the third bay. When the third bay is full, empty the first bay and start over. Turn each bay every 7 to 10 days. Add water as necessary to keep up the heat.
   f. Temperature:
      i. Must be taken and recorded in each bay daily.
      ii. Must be at least 130 degrees Fahrenheit.
      iii. Temperature records must be kept on hand for 2 years.

V. Protocol:
   a. Must keep a written composting protocol describing the composting steps on-site.
   b. Must instruct all employees on-site about the protocol.

VI. Pests, such as flies and rodents, must be controlled

VII. Transportation of Carcasses on public roads:
   a. An owner who transports the owner's own carcasses does not need a permit to do so.
   b. Carcasses transported on public roads must be in leak-proof, covered containers.

VIII. Finished compost:
   a. Must contain no visible soft tissue pieces.
   b. May be handled and stored according to PCA and Dept. of Agriculture rules.

OFFSET Summary and Results

OFFSET Ver 2.0
University of Minnesota
1/21/2017

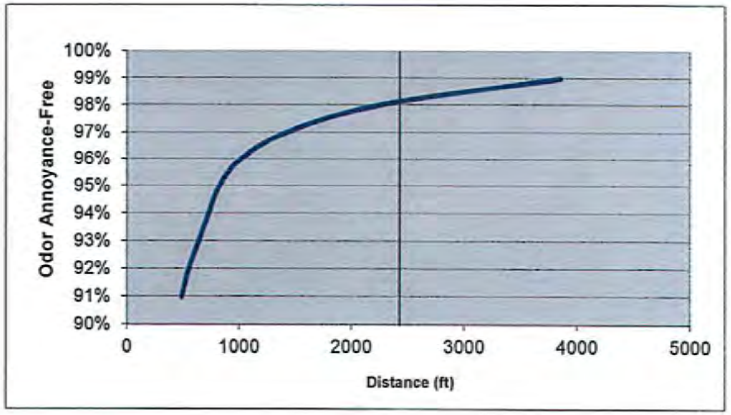
Farm Name	Jeff Knott
County	to Flesner site
Evaluator	NB
Date	5-15-17

Source Characteristics Summary					Flux Rates (with control technology)				Source Emission Rates*		
	Similar Sources	Emit Area sq ft	Control Technology Type	Percent Treated	Odor ou/s/m2	OFFSET OER	H2S ug/s/m2	Ammonia ug/s/m2	Odor ou/s	H2S ug/s	Ammonia ug/s
Buildings											
Swine Finishing - deep pit	1	10200	None	0%	10.5	34.2	6.0	99.0	9955	5689	93862
Dairy - free stall	0	0	None	0%	1.8	6	0.7	31.0	0	0	0
Dairy - loose housing	0	0	None	0%	1.8	6	0.9	13.0	0	0	0
Area Sources											
Earthen manure storage		0	None		14.0	13	25.3	107.0	0	0	0
User added		0	None		0.0	0.0	0.0	0.0	0	0	0

*includes control technologies

Site Emissions	
Total Site Area (ft2)	10,200
Total Odor Emission Factor (TOEF)	35
Total Site H2S Emissions (mg/s)	6
Total Site H2S Emission AVERAGE (lbs/day)	1
Total Site H2S Emission MAX (lbs/day)	2
Total Site H2S Emissions (tons/yr)	0
Total Site Ammonia Emissions (mg/s)	94
Total Site Ammonia Emission AVERAGE (lbs/day)	18
Total Site Ammonia Emissions MAX (lbs/day)	36
Total Site Ammonia Emissions (tons/yr)	3

Source Edge to Nearest Neighbor (ft)	2430
OFFSET Annoyance-free frequency	98%



OFFSET Summary and Results

OFFSET Ver 2.0
University of Minnesota
1/21/2017

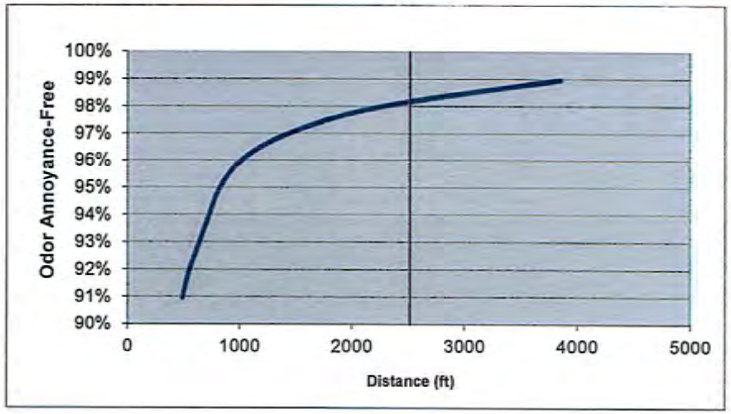
Farm Name	Jeff Knott
County	to Blanchette site
Evaluator	NB
Date	5-15-17

Source Characteristics Summary					Flux Rates (with control technology)				Source Emission Rates*		
	Similar Sources	Emit Area sq ft	Control Technology Type	Percent Treated	Odor ou/s/m2	OFFSET OER	H2S ug/s/m2	Ammonia ug/s/m2	Odor ou/s	H2S ug/s	Ammonia ug/s
Buildings											
Swine Finishing - deep pit	1	10200	None	0%	10.5	34.2	6.0	99.0	9955	5689	93862
Dairy - free stall	0	0	None	0%	1.8	6	0.7	31.0	0	0	0
Dairy - loose housing	0	0	None	0%	1.8	6	0.9	13.0	0	0	0
Area Sources											
Earthen manure storage		0	None		14.0	13	25.3	107.0	0	0	0
User added		0	None		0.0	0.0	0.0	0.0	0	0	0

*includes control technologies

Site Emissions	
Total Site Area (ft2)	10,200
Total Odor Emission Factor (TOEF)	35
Total Site H2S Emissions (mg/s)	6
Total Site H2S Emission AVERAGE (lbs/day)	1
Total Site H2S Emission MAX (lbs/day)	2
Total Site H2S Emissions (tons/yr)	0
Total Site Ammonia Emissions (mg/s)	94
Total Site Ammonia Emission AVERAGE (lbs/day)	18
Total Site Ammonia Emissions MAX (lbs/day)	36
Total Site Ammonia Emissions (tons/yr)	3

Source Edge to Nearest Neighbor (ft)	2520
OFFSET Annoyance-free frequency	98%



OFFSET Summary and Results

OFFSET Ver 2.0
University of Minnesota
1/21/2017

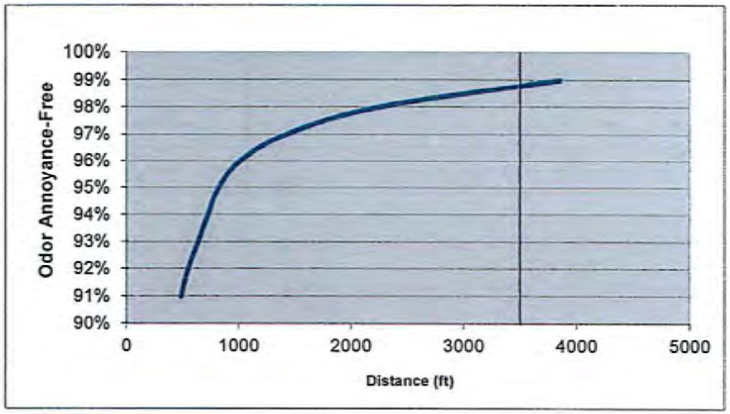
Farm Name	Jeff Knott
County	to Anderson site
Evaluator	NB
Date	5-15-17

Source Characteristics Summary					Flux Rates (with control technology)				Source Emission Rates*		
	Similar Sources	Emit Area sq ft	Control Technology Type	Percent Treated	Odor ou/s/m2	OFFSET OER	H2S ug/s/m2	Ammonia ug/s/m2	Odor ou/s	H2S ug/s	Ammonia ug/s
Buildings											
Swine Finishing - deep pit	1	10200	None	0%	10.5	34.2	6.0	99.0	9955	5689	93862
Dairy - free stall	0	0	None	0%	1.8	6	0.7	31.0	0	0	0
Dairy - loose housing	0	0	None	0%	1.8	6	0.9	13.0	0	0	0
Area Sources											
Earthen manure storage		0	None		14.0	13	25.3	107.0	0	0	0
User added		0	None		0.0	0.0	0.0	0.0	0	0	0

*includes control technologies

Site Emissions	
Total Site Area (ft2)	10,200
Total Odor Emission Factor (TOEF)	35
Total Site H2S Emissions (mg/s)	6
Total Site H2S Emission AVERAGE (lbs/day)	1
Total Site H2S Emission MAX (lbs/day)	2
Total Site H2S Emissions (tons/yr)	0
Total Site Ammonia Emissions (mg/s)	94
Total Site Ammonia Emission AVERAGE (lbs/day)	18
Total Site Ammonia Emissions MAX (lbs/day)	36
Total Site Ammonia Emissions (tons/yr)	3

Source Edge to Nearest Neighbor (ft)	3500
OFFSET Annoyance-free frequency	99%



OFFSET Summary and Results

OFFSET Ver 2.0
University of Minnesota
1/21/2017

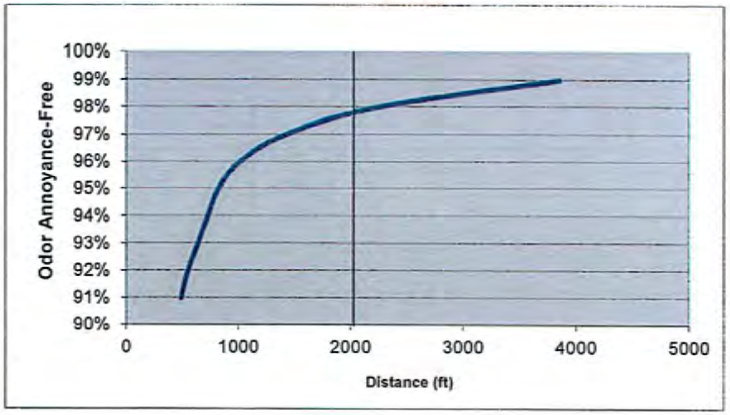
Farm Name	Jeff Knott
County	to Muenchow site
Evaluator	NB
Date	5-15-17

Source Characteristics Summary					Flux Rates (with control technology)				Source Emission Rates*		
	Similar Sources	Emit Area sq ft	Control Technology Type	Percent Treated	Odor ou/s/m2	OFFSET OER	H2S ug/s/m2	Ammonia ug/s/m2	Odor ou/s	H2S ug/s	Ammonia ug/s
Buildings											
Swine Finishing - deep pit	1	10200	None	0%	10.5	34.2	6.0	99.0	9955	5689	93862
Dairy - free stall	0	0	None	0%	1.8	6	0.7	31.0	0	0	0
Dairy - loose housing	0	0	None	0%	1.8	6	0.9	13.0	0	0	0
Area Sources											
Earthen manure storage		0	None		14.0	13	25.3	107.0	0	0	0
User added		0	None		0.0	0.0	0.0	0.0	0	0	0

*includes control technologies

Site Emissions	
Total Site Area (ft2)	10,200
Total Odor Emission Factor (TOEF)	35
Total Site H2S Emissions (mg/s)	6
Total Site H2S Emission AVERAGE (lbs/day)	1
Total Site H2S Emission MAX (lbs/day)	2
Total Site H2S Emissions (tons/yr)	0
Total Site Ammonia Emissions (mg/s)	94
Total Site Ammonia Emission AVERAGE (lbs/day)	18
Total Site Ammonia Emissions MAX (lbs/day)	36
Total Site Ammonia Emissions (tons/yr)	3

Source Edge to Nearest Neighbor (ft)	2030
OFFSET Annoyance-free frequency	98%



Odors From Feedlots Setback Estimation Tool

Farm Name	Jeff Knott
Address or County	to Hemish site
Evaluator	NB
Date	5-15-17

Clear All

OFFSET Ver 2.0
University of Minnesota
1/21/2012

OFFSET
Annoyance-free
more than 99%

Source Edge to Nearest Neighbor (ft)	5500
Source Edge to Property Line (ft)	

Building Sources

Building Type	Width (ft)	Length (ft)	# of Similar Sources	Total Area (sqft)	Control Technology	% air treated
Swine Finishing - deep pit	51	200	1	10200	None	0%
Dairy - free stall				0	None	
Dairy - loose housing				0	None	
None				0	None	
None				0	None	
None				0	None	
None				0	Biofilter	

AREA SOURCES

Source Description	Shape	Width (ft) (or Dia)	Length (ft)	Area (sqft)	Control Technology
Earthen manure storage	Rectangle			0	None
User added	Rectangle			0	None
None	Rectangle			0	None
None	Rectangle			0	None
None	Rectangle			0	None
None	Rectangle			0	None
None	Rectangle			0	None

Building Sources	
Add Source Type	
Name of Source	
Odor Flux (ou/s/m2)	
H2S Flux (ug/s/m2)	
NH3 Flux (ug/s/m2)	
Documentation	
Add a Control Technology	
Name of technology	
Odor reduction (%)	
H2S reduction (%)	
NH3 Reduction (%)	
Documentation	

Area Sources	
Add a Source Type	
Name of Source	
Odor Flux (ou/s/m2)	
H2S Flux (ug/s/m2)	
NH3 Flux (ug/s/m2)	
Documentation	
Add Control Technology	
Name of technology	
Odor reduction (%)	
H2S reduction (%)	
NH3 Reduction (%)	
Documentation	

REDWOOD COUNTY ENVIRONMENTAL OFFICE

Planning & Zoning ● Parks & Trails ● GIS
Aquatic Invasive Species ● Septic Inspector
Drainage Inspector ● Agricultural Inspector

PO BOX 130
REDWOOD FALLS
MINNESOTA 56283
PH: 507-637-4023

NOTICE OF PUBLIC HEARING

An *Animal Confinement Feedlot Conditional Use Permit Application* has been filed by Jeff Knott under land purchase agreement with property owner David Knott for the construction and operation of a new swine feedlot pursuant to Minnesota Statute 116.07 Subd. 7(a) and Section 17, Subd. 3 and Section 25 of Redwood County Zoning Ordinance. The proposed feedlot will consist of one 1250 head (500 County animal units, or 375 State animal units) total confinement barn housing finishing swine, with under-floor reinforced concrete pit to hold manure. The proposed feedlot will be located on the following described property, situated in the County of Redwood, State of Minnesota, to wit:

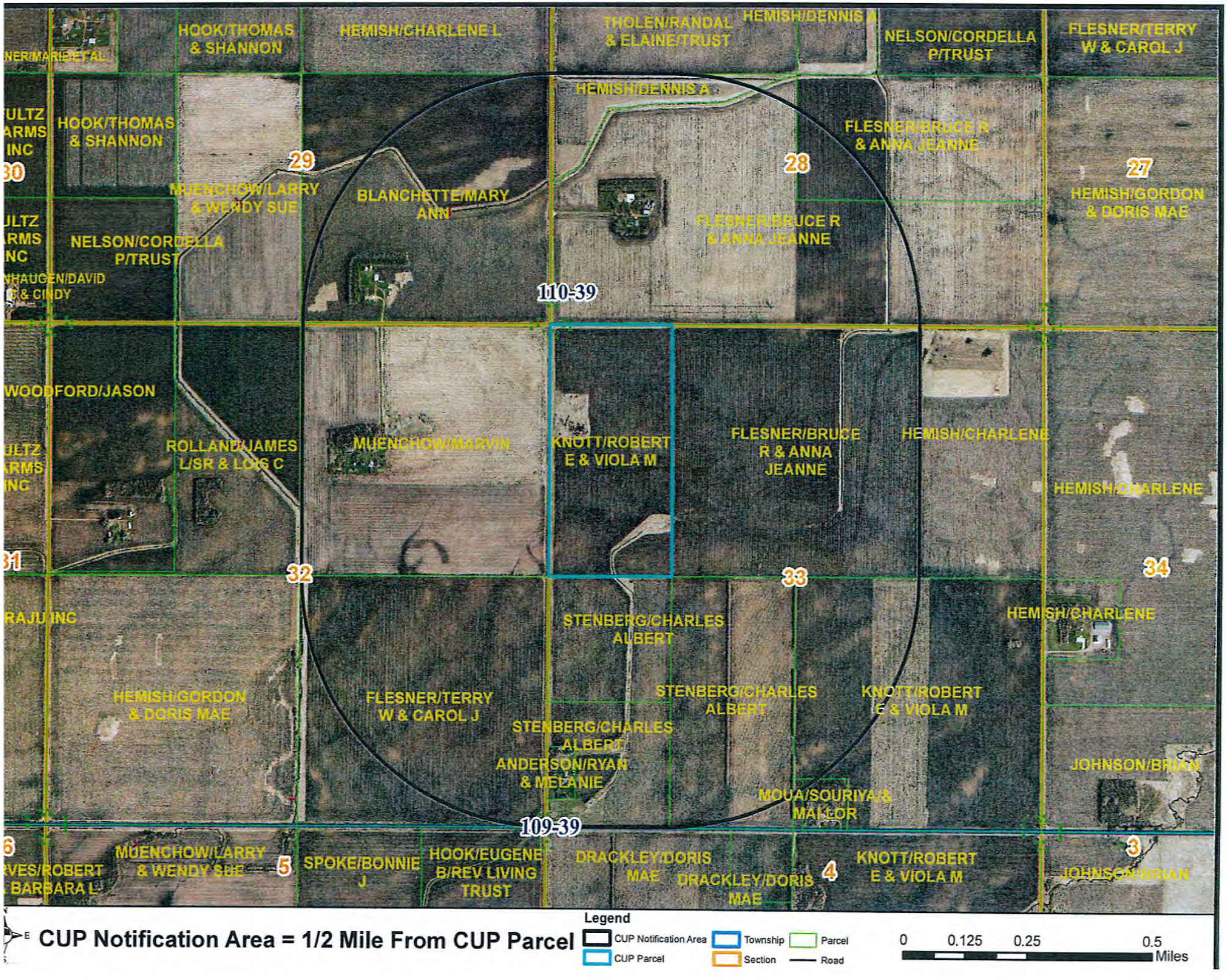
> The West Half of the Northwest Quarter (W1/2 NW1/4) of Section 33, Township 110 North, Range 37 West, Gales Township.

A public hearing thereon will be held before the Redwood County Planning Commission at the regularly scheduled Planning Commission meeting starting at 1:00 o'clock p.m. on Monday, the 22nd day of May, 2017, at the Board Room of the Redwood County Government Center located at 403 South Mill Street, Redwood Falls, MN 56283.

If you have any comments or questions regarding this matter, please contact the Redwood County Environmental Office by telephone at (507) 637-4023 or in writing at *Redwood County Environmental Office, P.O. Box 130, Redwood Falls, MN 56283.*

DATED: May 1st, 2017

Nicholas W. Brozek
Land Use & Zoning Supervisor
Redwood County Environmental Office


HOOK/THOMAS & SHANNON
HEMISH/CHARLENE L
THOLEN/RANDAL & ELAINE/TRUST
HEMISH/DENNIS A
NELSON/CORDELLA P/TRUST
FLESNER/TERRY W & CAROL J
HOOK/THOMAS & SHANNON
HEMISH/DENNIS A
FLESNER/BRUCE R & ANNA JEANNE
29
28
27
MUENCHOW/LARRY & WENDY SUE
BLANCHETTE/MARY ANN
HEMISH/GORDON & DORIS MAE
NELSON/CORDELLA P/TRUST
FLESNER/BRUCE R & ANNA JEANNE
110-39
WOODFORD/JASON
ROLLAND/JAMES L/SR & LOIS C
MUENCHOW/MARVIN
KNOTT/ROBERT E & VIOLA M
FLESNER/BRUCE R & ANNA JEANNE
HEMISH/CHARLENE
HEMISH/CHARLENE
32
33
34
STENBERG/CHARLES ALBERT
HEMISH/CHARLENE
HEMISH/GORDON & DORIS MAE
FLESNER/TERRY W & CAROL J
STENBERG/CHARLES ALBERT
KNOTT/ROBERT E & VIOLA M
STENBERG/CHARLES ALBERT
ANDERSON/RYAN & MELANIE
JOHNSON/BRIAN
MOUA/SOURIYA/& MAI LOR
109-39
MUENCHOW/LARRY & WENDY SUE
SPOKE/BONNIE J
HOOK/EUGENE B/REV LIVING TRUST
DRACKLEY/DORIS MAE
DRACKLEY/DORIS MAE
KNOTT/ROBERT E & VIOLA M
JOHNSON/BRIAN
5
4
3
CUP Notification Area = 1/2 Mile From CUP Parcel
Legend
CUP Notification Area
CUP Parcel
Township
Section
Parcel
Road
0
0.125
0.25
0.5
Miles

Conditions for Permit No. 9-17 (Jeff Knott)

1. The permit holder shall comply with all applicable laws, rules, and regulations, including but not limited to Redwood County Ordinance, as hereafter amended from time to time.

2. The permit holder shall allow the Redwood County Environmental Office to inspect the site for all purposes permitted by law whenever deemed necessary by the Redwood County Environmental Office.

3. All waste, refuse, and the like generated by or from the conditional use must be disposed of in the manner provided by the applicable local, state, and federal statutes, rules, and regulations. A copy of all disposal records and receipts must be kept on file for no less than five (5) years and shall be provided to the Redwood County Environmental Office upon request.

4. The permit holder shall contact all relevant local, state, and federal authorities/entities and inquire as to whether a permit and/or license is required. If a permit and/or license is required, the permit holder shall apply for and obtain any and all required permits and/or licenses. A copy of all such permits and/or licenses shall be provided to the Redwood County Environmental Office upon request.

5. The permit holder shall take appropriate and reasonable measures to assure that all surface water runoff satisfies all applicable local, state, and federal discharge standards.

6. The permit holder shall not allow the conditional use to be injurious to the use and enjoyment of other property in the immediate vicinity for the purposes already permitted.

7. The permit holder shall not allow the conditional use to impede the normal and orderly development and improvement of surrounding vacant property for uses predominant to the area.

8. Adequate utilities, access roads, drainage, and other necessary facilities will be provided and continue to be provided by the permit holder now and in the future.

9. Adequate measures shall be taken to prevent or control offensive odor, fumes, dust, and vibration, so that none of the foregoing will constitute a nuisance now or in the future.

10. The manner in which manure is stored and disposed of shall comply with all applicable local, state, and federal laws, rules, and regulations. If manure is applied to land, it shall be applied to land at agronomic rates. When applied to land, manure will be injected or incorporated within 24 hours. The permit holder shall retain a record of all locations where manure is applied to land. Such records shall be maintained for a period of no less than five (5) years, measured from the date the manure is applied to land. Such records shall be submitted to the Redwood County Environmental Office upon request.

11. The permit holder shall report any changes in spread agreements or spread areas to the Redwood County Environmental Office within thirty (30) days subsequent to any such change.

12. The County Board of Commissioners may at any time impose additional conditions as necessary and appropriate including but not limited to: the planting of trees and shrubs for use as a windbreak

for the feedlot operation; the furnishing and placing in a dedicated account, to be administered by the County, an annual payment for reclamation purposes based upon the number of Animal Units involved; and restrictions on the days on which a manure storage structure may be disturbed or manure may be transferred, applied, incorporated, or injected.

13. Dead livestock shall be stored and rendered in such a manner as to not create a nuisance. Disposal of dead livestock by burial is strictly prohibited. Dead hogs may be composted according to the Redwood County Swine Composting Protocol.

14. The permit holder shall construct the manure storage structure/concrete pit(s) to meet or exceed the minimum requirements set forth in the plans and specifications prepared by Jason E. Hoehn and signed by him on 3-14-17, attached to the permit holder's application.

15. A perimeter tile line shall be installed around the outside of the base of the pit(s) walls and an inspection manhole shall be provided where the perimeter tile branches out into the local drain tile system.

16. The permit holder shall install a warning sign at all entrances to the concrete pits. These signs shall warn the reader of the dangers of entering the pits.

17. The Redwood County Environmental Office shall be contacted for two on-site inspections during the construction of the pits: once when the floor is ready to be poured, and once when the walls are ready to be poured.

18. No construction on the pit shall be done between October 15th and April 15th, except by approval of the Zoning Administrator.

19. The land on which the feedlot it to be built will be transferred into Jeff Knott's ownership prior to beginning construction of the feedlot.

20. The Redwood County Planning Commission shall review the conditional use permit and shall be authorized to take any and all necessary action(s), including but not limited to revoking the conditional use permit and/or requiring the permit holder to reapply for a conditional use permit, if: 1) The Redwood County Environmental Office acquires information previously unavailable that indicates the terms and conditions of the permit do not accurately represent the actual circumstances of the permitted facility or the conditional use; 2) It is discovered subsequent to the issuance of the permit the permit holder failed to disclose all facts relevant to the issuance of the permit or submitted false or misleading information to the Redwood County Environmental Office, the Redwood County Planning Commission, or the Redwood County Board of Commissioners; 3) The Redwood County Environmental Office determines the permitted facility or conditional use endangers human health or the environment; and/or (4) The permit holder violates any of the herein described conditions, the Redwood County Ordinances, State statutes, or Federal laws.

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REDWOOD COUNTY PLANNING COMMISSION
Jeff Knott
Conditional Use Permit Application #9-17
May 22, 2017

FINDINGS OF FACT

ORDINANCE CRITERIA – The Planning Commission may recommend the granting of a Conditional Use Permit in any district provided the proposed use is listed as a conditional use for the district and upon a showing that the standards and criteria stated in this Ordinance will be satisfied and that the use is in harmony with the general purposes and intent of this Ordinance and the Comprehensive Plan.

In determining whether the proposed use is in harmony with the general purposes and intent of the Ordinance and the Comprehensive Plan, the Planning Commission shall consider and make findings on the following questions:

1) Will the proposed use have an adverse impact on the health, safety, and general welfare of the residents in the surrounding neighborhood?

Yes _____ No _____

Why?:_____
_____
_____
_____

2) Has evidence been presented that shows the proposed use will cause material injury to the use and enjoyment of other property in the surrounding neighborhood for land uses that are already permitted?

Yes _____ No _____

Why?:_____
_____
_____
_____

3) Will the proposed use have a substantial adverse effect on property values or future development of land in the surrounding neighborhood for uses common to the area?

Yes _____ No _____

Why?:_____
_____
_____
_____

4) Are there, or will there be provided, adequate utilities, access roads, drainage, off-street parking and loading areas, and other necessary facilities to support the proposed use of the property?

Yes _____ No _____

Why?:_____
_____
_____
_____

5) Have adequate measures been taken, or will adequate measures be taken, to prevent or control offensive odor, fumes, dust, noise, lights, and vibration, so that no disturbance to neighboring properties will result?

Yes _____ No _____

Why?:_____
_____
_____
_____

6) Is the proposed use of the property consistent with the general purpose and intent of the Zoning Ordinance and the goals and policies adopted in the Comprehensive Plan?

Yes _____ No _____

Why?:_____
_____
_____
_____

NAME: _____ DATE: _____