



Redwood County

Animal Confinement Feedlot Conditional Use Permit Application

www.co.redwood.mn.us

Proposed Location of Feedlot Operation:

Permit #: 5-24

Date: 5-2-24

Address: 21132 330th Street City: Belview MN State: MN Zip: 56214
House # Street Name

Parcel #: 72-012-2040 Township: Vesta Section: 12 Twp #: 112 Range: 38

Information about the Operation:

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

Two 10,000 turkey barns and one new 10,000 turkey barn.
(existing) (broader)

Legal Description of Proposed Feedlot Location:

See attached.

Site / Plan Information:

Zoning District: Ag

Soil Type 1: 421 B Amiret loam

Soil Type 2: L223B Amiret-Swanlake loams

Water source for the site: well

Drainage System:

Estimated water use:

Animal 1

Animal Type: Turkeys			
3000 gallons/day/animal	x	total 0 number of animals on site	x 100 days number of days present
<small>total</small>			= 1,000,000

Animal 2

Animal Type:			
0 gallons/day/animal	x	0 number of animals on site	x 0 number of days present
			= 0 gallons/yr/site

Animal 3

Animal Type:			
gallons/day/animal	x	number of animals on site	x number of days present
			= 0 gallons/yr/site

Total Gallons: 1,000,000 - 0

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

Building 1: Width: 76 Length: 400

Building 3: Width: 76 Length: 160

Building 2: Width: 76 Length: 400

Building 4: Width: Length:

Setback from road right-of-way: 75-0 feet

Setback from center line of road: 108-0 feet

Estimated date for beginning construction: June 2024 Estimated completion date: December 2024

General Contractor:

Name: Marcus Building Movers City: Raymond State: MN

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: Daniel Last Name: Alexander

Business Name:

Address: PO Box 56 City: Vesta State: MN Zip: 56292

Home Phone: Cell Phone: 507 430 2993 Email: 1990danielalexander@gmail.com

List any additional applicants:

Land Owner: Complete only if different from Applicant

First Name: Last Name:

Business Name:

Address: City: State: MN Zip:

Home Phone: Cell Phone: Email:

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:

Feedlot Operator: Complete only if different from Applicant

If the operator is not a natural person(s), you must also provide documentation of the operator's legal identity.

First Name: Last Name:

Business Name:

Address: City: State: MN Zip:

Home Phone: Cell Phone: Email:

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): [Signature] Date: 5/1/2024

Landowner Signature Date:

List of Required Documentation: (Application not complete until received)

- MPCA Application
- Manure Spreading Agreements
- Pit Design
- Manure Management Plan

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

Permit fee: 700.00 Receipt #: 332441

Application Received: 5-2-2024

Commission Action:

County Board Action:

Approved: Date: Approved: Date:

Disapproved: Date: Disapproved: Date:

Animal Confinement Feedlot Conditional Use Permit Application #5-24

Legal Description

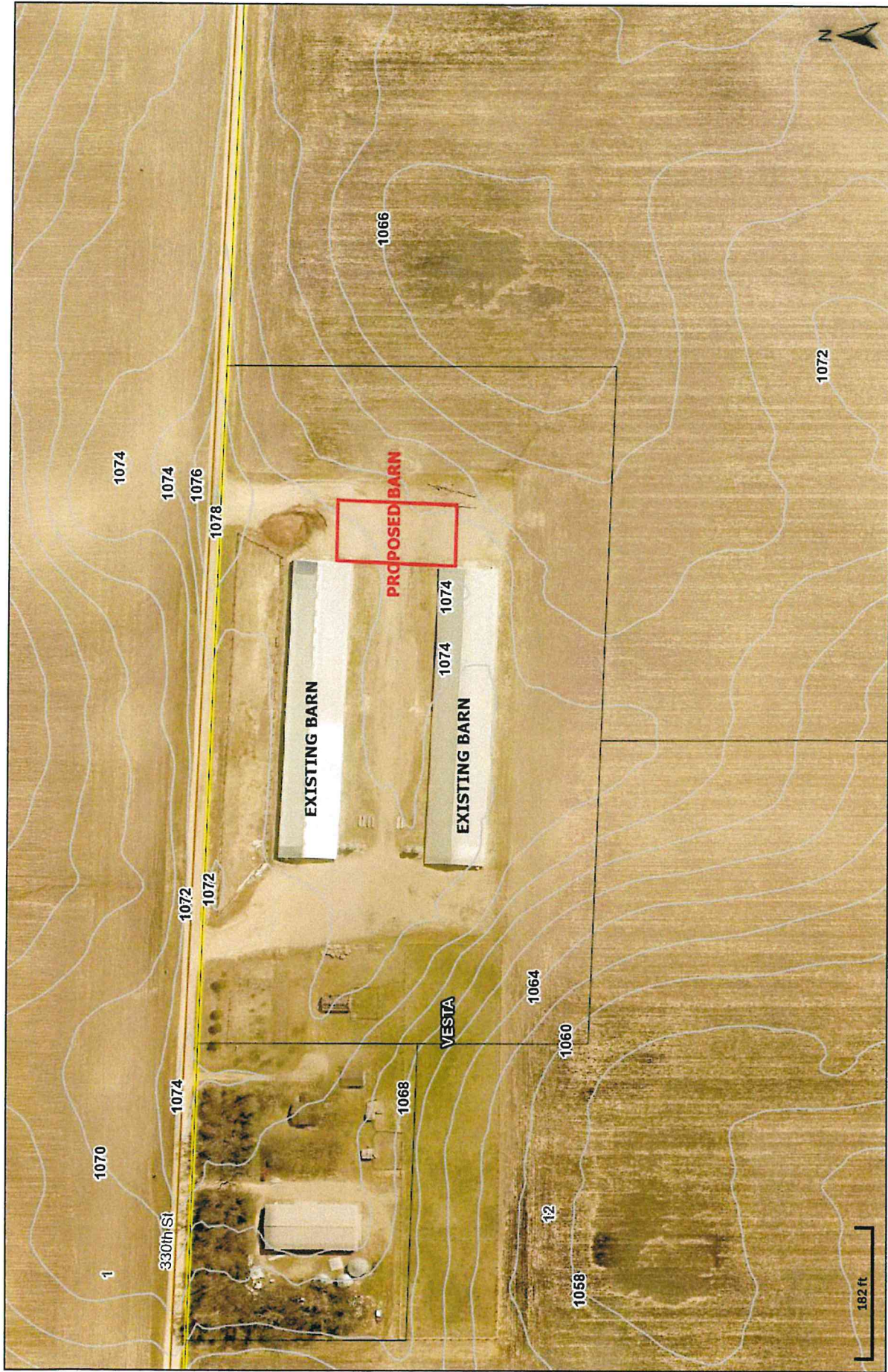
All that Part of the Northwest Quarter of the Northwest Quarter (NW¹/₄NW¹/₄) of Section Twelve (12), Township One Hundred Twelve (112) North, Range Thirty-eight (38) West of the Fifth Principal Meridian, Redwood County Minnesota, described as follows to wit:

Beginning on the North line of said Section Twelve (12) a distance of 544.50 feet on an assumed bearing of South 90°00' East from the Northwest Corner of said Section Twelve (12); thence South 90°00' East along the North line of said Section Twelve (12) for 1303.5 feet; thence South 0°00' West for 528.00 feet; thence North 90°00' West for 1305.5 feet; thence North 0°00' West 528 feet to the point of beginning;

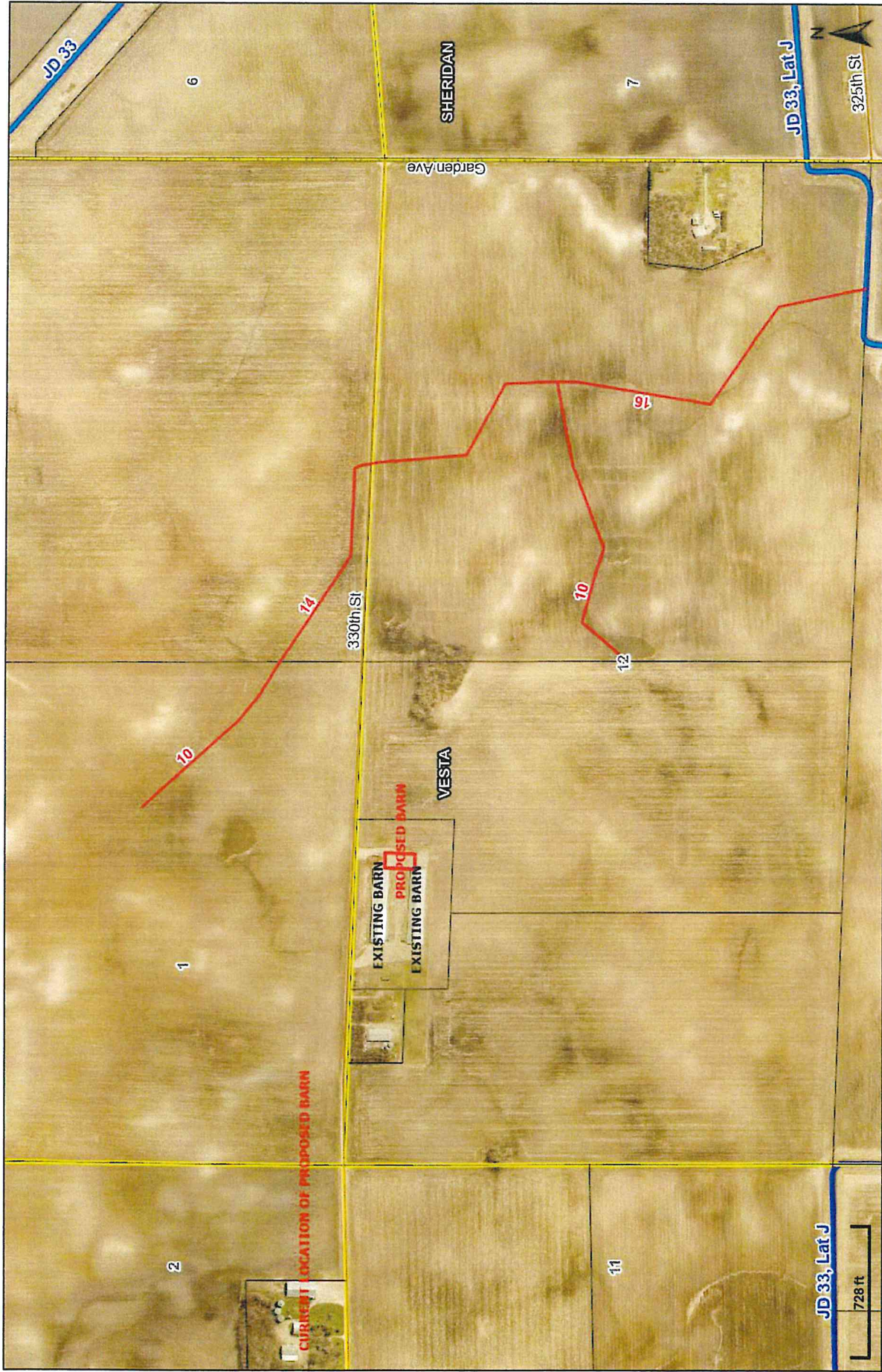
Area Map



Contours



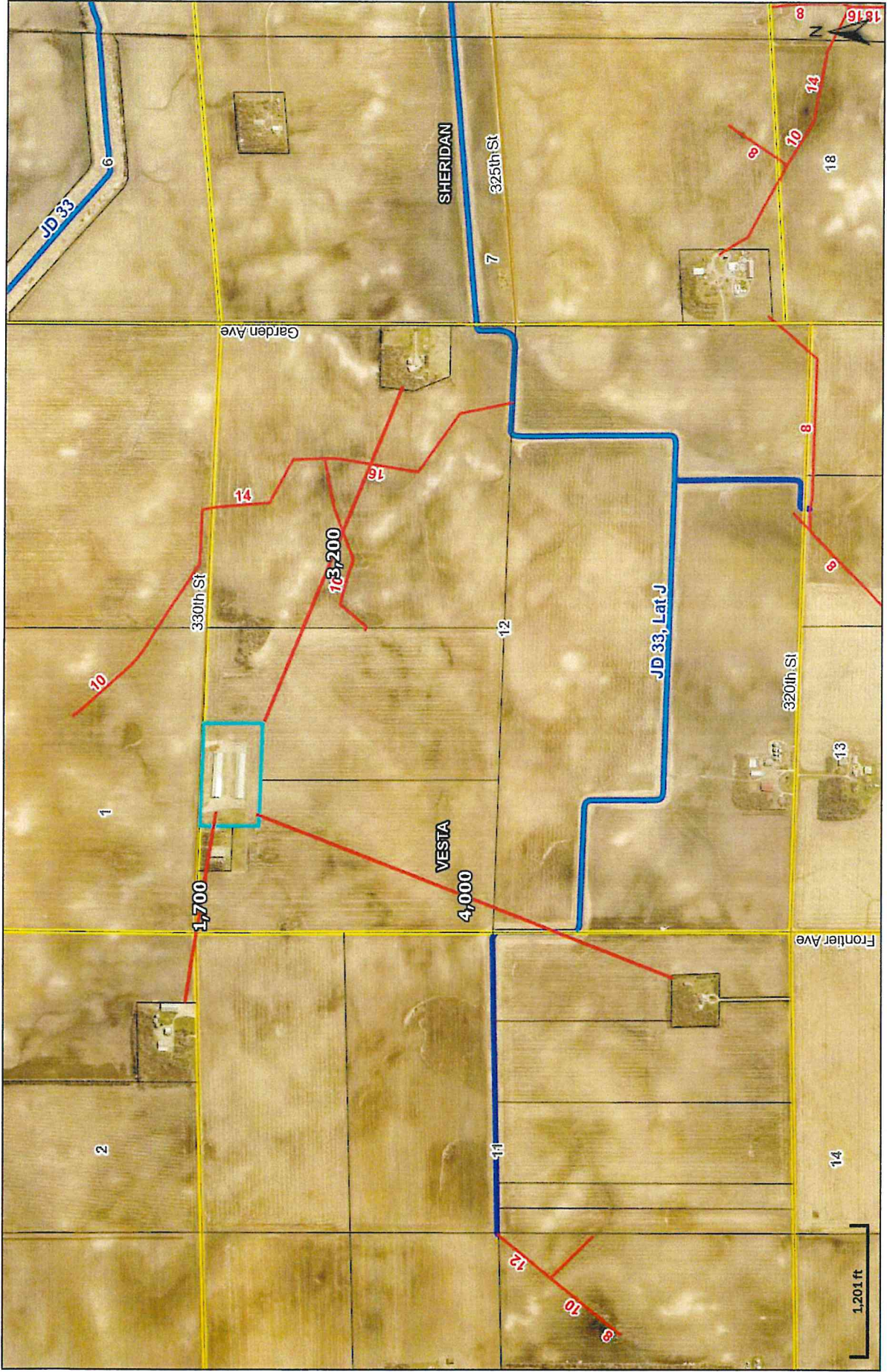
County Tile and Ditches



Soils



Neighbors



OFFSET Summary and Results



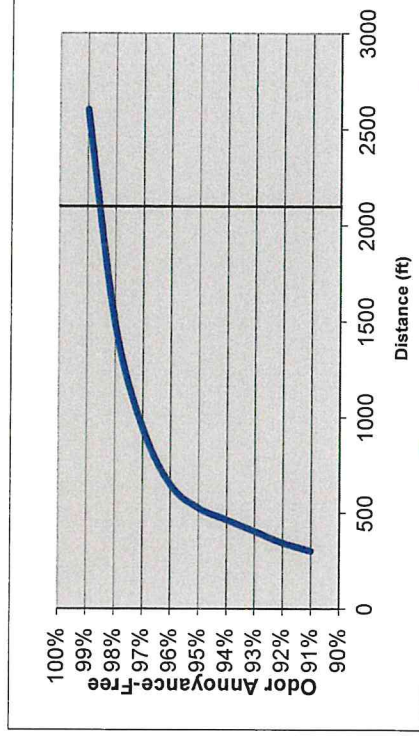
Farm Name: Dan Alexander
 County: 21132 330th St.
 Evaluator: Jeanette Pidde
 Date: 5/3/2024

Source Characteristics Summary				Flux Rates (with control technology)				Source Emission Rates*			
Similar Sources	Emit Area sq ft	Control Technology Type	Percent Treated	Odor oul/s/m2	OFFSET OER	H2S ug/s/m2	Ammonia ug/s/m2	Odor oul/s	H2S ug/s	Ammonia ug/s	
Poultry Turkey - litter	60000	None	0%	0.6	1.9	0.9	48.0	3235	5019	267698	
Poultry Turkey brooder -litter	12400	None	0%	0.6	2	0.0	35.0	669	0	40341	
Area Sources											
Earthen manure storage	1963	None		14.0	13	25.3	107.0	2555	4617	19528	

*includes control technologies

Site Emissions	
Total Site Area (ft2)	74,363
Total Odor Emission Factor (TOEF)	16
Total Site H2S Emissions (mg/s)	10
Total Site H2S Emission AVERAGE (lbs/day)	2
Total Site H2S Emission MAX (lbs/day)	4
Total Site H2S Emissions (tons/yr)	0
Total Site Ammonia Emissions (mg/s)	328
Total Site Ammonia Emission AVERAGE (lbs/day)	62
Total Site Ammonia Emissions MAX (lbs/day)	125
Total Site Ammonia Emissions (tons/yr)	11

Source Edge to Nearest Neighbor (ft)	2100
OFFSET Annoyance-free frequency	99%



Conditions for Permit No. 5-24 (Daniel Alexander)

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. A copy of all required local, state, and federal permits and/or licenses shall be provided to the Redwood County Environmental Office upon request.
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. 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.
4. 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. 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. 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.
5. 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.
6. 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.
7. Temporary manure stockpiles shall not be closer than 150' from the right-of-way of 330th St.
8. 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.
9. Dead livestock shall be stored and disposed of in such a manner as to not create a nuisance, and in accordance with the rules for dead livestock disposal mandated by the Minnesota Board of Animal Health, except that disposal of dead livestock by burial is strictly prohibited.
10. 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.

REDWOOD COUNTY PLANNING COMMISSION

**Daniel Alexander – Animal Confinement Feedlot
Conditional Use Permit Application #5-24
June 25, 2024**



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) What potential health safety and welfare impacts were raised at the hearing and why will they, or why won't they, impact the neighboring residents?

- 2) What potential impacts on area property uses were raised at the hearing and why will they, or why won't they, impact the use and enjoyment of other property in the area?

3) What potential impacts on property values or future development were raised at the hearing, and why will they, or why won't they, impact the neighboring properties?

4) What infrastructure is needed to support the proposed use and how will it be provided?

5) How do the goals, purpose and policies of the Zoning Ordinance and Comprehensive Plan apply to the proposed project?

NAME: _____

DATE: _____

Service Information

Transaction ID: 100037
 Service name and type: Feedlot Registration - Update
 Submitter's name: Daniel Alexander
 Submitted on: 06/12/2024

Feedlot Information

	Previous Information	Updated Information
Feedlot name:	Dan Alexander	Dan Alexander
Agency interest ID:	259768	259768
Registration ID:	127-128048	127-128048
Address:	21132 330th Street Belview MN 56214	21132 330th Street Belview MN 56214
Mailing Address:	PO Box 56 Vesta MN 56292	PO Box 56 Vesta MN 56292
Location Description:		

Contacts

	Previous Information	Updated Information
Contact name:	Daniel D Alexander	Daniel D Alexander
Contact type:	Feedlot Contact	Feedlot Contact
Organization name:		
Organization type:		
Address:	PO Box 56 Vesta MN 56292	PO Box 56 Vesta MN 56292
Email:	1990daniel.alexander@gmail.com	1990daniel.alexander@gmail.com
Phone:	5074302993	5074302993
Contact name:	Daniel D Alexander	Daniel D Alexander
Contact type:	Owner	Owner
Organization name:		
Organization type:		
Address:	PO Box 56 Vesta MN 56292	PO Box 56 Vesta MN 56292
Email:	1990daniel.alexander@gmail.com	1990daniel.alexander@gmail.com
Phone:	5074302993	5074302993

Feedlot Location

	Previous Information	Updated Information
County:	Redwood	Redwood
Tribal Lands:		
Parcel(s) County and ID:		
Township:	112	112
Range:	38W	38W
Section:	12	12
Quarter 160:	NW	NW
Quarter 40:	NW	NW
Quarter 10:	NE	NE
Quarter 2.5:		
Collection Method:	Address Matching House Number	Address Matching House Number
Coordinate System:	Lat Long - decimal degrees	Lat Long - decimal degrees
Point of Reference:	General Location	General Location
Latitude:	44.52948901	44.52948901
Longitude:	-95.36792598	-95.36792598

Sensitive Areas

	Previous Information	Updated Information
Is any part of the facility located within 1,000 feet of surface waters or tile intakes?	N	N
Surface Water Types:		
Is any part of the facility located within 300 feet of a river or stream?	N	N

Sensitive Areas

	Previous Information	Updated Information
Is any part of the facility located within a delineated flood plain (100 year flood)?	N	N
Is any part of the facility located within designated shoreland?	N	N
Is any part of the facility located within 300 feet of a known sinkhole?	N	N

Animal Numbers

	Previous Information	Updated Information
Animal Type (Count):	Turkeys >5 lbs (20000)	Turkeys >5 lbs (20000)
Animal Units:	360	360
Animal Type (Count):	Turkeys <5 lbs (10000)	Turkeys <5 lbs (10000)
Animal Units:	50	50
Total Animal Units:	410	410

Animal Holding Areas

	Previous Information	Updated Information
Which type(s) of animal holding areas does the facility have?	Building	Building
Is there a well within 1000 feet?	N	N
Distance to Well:		

Manure Storage Areas

	Previous Information	Updated Information
Does the facility have a liquid manure storage area?	N	N
Does the facility have a solid manure storage area?	N	N
Is there a well within 1000 feet?		
Distance to Well:		



Marshall Office | 504 Fairgrounds Road | Suite 200 | Marshall, MN 56258-1688 | 507-537-7146
800-657-3864 | Use your preferred relay service | info.pca@state.mn.us | Equal Opportunity Employer

June 12, 2024

VIA EMAIL

Dan Alexander
Paul Alexander Farm - Sec 12
20797 330th St
Belview, MN 56214

RE: MPCA Feedlots Compliance Evaluation
Paul Alexander Farm - Sec 12, Belview, Redwood County

Dear Dan Alexander:

On June 10, 2024, the Minnesota Pollution Control Agency (MPCA) completed a Compliance Evaluation of Paul Alexander Farm - Sec 12, located in Belview, Redwood County. Please refer to the attached Feedlot Inspection Checklist for additional information.

The following non-compliant requirements were identified at the time of the compliance evaluation:

1. The registration for the facility is not up to date
2. Retained and transferred manure application records have not been kept for the required 6-year time period.

Please complete the following actions:

1. In the future, keep all retained and transferred manure application records for a minimum of 6 years.

Note: No action is needed on the registration. The MPCA will merge the new registration that was accidentally created with the current site registration.

Please be aware, this email does not preclude the MPCA from taking further action based on noncompliance identified as a result of the compliance evaluation.

If you have any questions about the Feedlot Inspection Checklist or additional information that addresses any non-compliant requirement, please contact Jason Kaare at 507-735-8584, jason.kaare@state.mn.us, or at the address listed above.

Dan Alexander
Page 2
June 12, 2024

Thank you for your attention to this matter.

Sincerely,

Jason Kaare

This document has been electronically signed.

Jason Kaare
Environmental Specialist
Watershed Division

JK:lf

Attachment

cc: Nick Brozek, Redwood County (electronic) (w/attachment)
Activity ID INS20240001 @ 61242

Feedlot inspection checklist

Feedlot Program

Doc Type: Inspection
wq-f3-45e (Revised 6/18/20)

Instructions: Use this form to evaluate a feedlot's compliance with Minnesota feedlot rules, statutes, and permit conditions. A list of acronyms is included within the key of this checklist.

Facility information

Facility name: Paul Alexander Farm - Sec 12 Registration number: 127-50005
 The feedlot is Ag Water Quality Certified. AI ID number: 61242
 Address: 21132 330th St County ID number: _____
 City: Belview State: MN Zip: 56214
 County: Redwood Township: Vesta Section: 12 Qtr: NW
 Parcel ID no: _____
 Owner name: Daniel Alexander Operator: _____
 Primary phone: 507-430-2993 Secondary phone: _____ Email: 1990daniel.alexander@gmail.com

- A MinnFarm or FLEval exists for the feedlot. Yes No
 The feedlot is located in a Drinking Water Supply Management Area. Yes No
 The feedlot is located in shoreland. Yes No
 The feedlot is enrolled in the Open Lot Agreement. Yes No
 The site meets or exceeds the large CAFO threshold or 1,000 animal units Yes* No

Note: You must also include the maximum capacity of any other commonly owned feedlots adjacent to or within ¼ mile of this feedlot when making this determination. (see MPCA Multi-site policy)

* If Yes, MPCA staff must conduct inspections and permitting

Recent activity

Date of most recent registration: 2013
 Most recent inspection: Compliance Land app Other Date: 2009 Result: Compliant Non-compliant
 Current permit type: NPDES SDS CSF Interim Expiration date: _____
 Most recent enforcement type: LOW NOV APO STIP AO Issuance date: _____

Current inspection information

Inspector name: Jason Kaare Inspection date: 6/10/2024 Time: 9:00
 Others present: Dan Alexander

- Types of inspection(s): Facility compliance (includes N) include optional P review in the compliance inspection
 (check all that apply) Desktop N & P records review In field land application Stockpile only

Animal types	Registered number	On-site number	Notes
Turkeys – over 5 lbs.	20,000	9400	360 AUs.

1. Expansion and stocking requirements

Notes:

Checklist questions		C	NC	NA	NI
1.1.	Facility registration is current (date within previous 4-year block). (7020.0350 Subp. 4.)		✓		
1.2.	Animal units and animal species, (types and numbers) matches the most recent registration or authorization (i.e. permit, notice of construction, change of ownership, termination) AND animal holding areas and manure storage areas match the most recent permit, Notice of Construction or Expansion, MinnFarm or inspection. (7020.0405, subp. 2. & 5., 7020.2000 Subp. 5.)	✓			
<i>Inspection requirement</i>		C	NC	NA	NI
1.4.	Construction or expansion requirements are met. (7020.0405, subp. 2. & 5., 7020.0350 subp 4, 7020.2000 Subp. 5., NPDES/SDS Parts 5.6.1.2. & 11.)	✓			

The owner attempted to update the registration, but accidentally created a new registration for the site. The MPCA will merge these registrations so there will only be 1 registration for the site. The facility will be applying for a CSF permit to move a brooder barn onto the site.

2. Animal confinement barn(s)

Notes:

Checklist questions		C	NC	NA	NI
2.1.	There is evidence (e.g., inadequate buffer, steep slopes, channels, matted or dead vegetation, clean water run-on, stormwater flow) that manure seepage from barn(s) reaches waters of the state or tile intakes, sinkholes, fractured bedrock, well, mine or quarry. (7020.2003, subp. 1. & 3., 7050.0210, subp. 2. & 13., Specific to NPDES/SDS 7020.2003, subp. 2.)	✓			
2.2.	There is evidence (e.g., ponding, coarse-textured soils, depth to water table) that manure seepage from barn(s) could impact ground water. (7020.2003, subp. 1., 7050.0210, subp. 2. & 13., 7060.0600, subp. 2.)	✓			
<i>Inspection requirement</i>		C	NC	NA	NI
2.3.	Confinement barn discharge requirements are met. (7020.2003, subp. 1. & 3., 7050.0210, subp. 2. & 13., 7060.0600, subp. 2., NPDES or SDS permit)	✓			

3. Open lot(s)

4. Feed storage area(s)

Notes:

Checklist questions		C	NC	NA	NI
4.1.	There is evidence (e.g., inadequate buffer, steep slopes, channels, matted or dead vegetation, clean water run-on, stormwater flow) that feed storage area runoff reaches waters of the state or tile intakes, sinkholes, fractured bedrock, well, mine or quarry. (7020.2003, subp. 1. & 3., 7050.0210, subp. 2. & 13., Specific to NPDES/SDS 7020.2003, subp. 2.)	✓			
4.2.	There is evidence (e.g., ponding, coarse-textured soils, depth to water table) that the feed storage area could impact ground water. (7020.2003, subp. 1., 7050.0210, subp. 2. & 13., 7060.0600, subp. 2.)	✓			
<i>Inspection requirement</i>		C	NC	NA	NI
4.6.	Feed storage area discharge requirements are met. (7020.2003, subp. 1. & 3., 7050.0210, subp. 2. & 13., 7060.0600, subp. 2., NPDES or SDS permit)	✓			

Additional considerations:

- If the site stores 1,000 tons or more of sweet corn silage stored on site at any one time and does not have an NPDES or SDS permit, the site should be referred to MPCA staff.

5. Process wastewater handling system(s)

(milk house wastewater / egg wash / truck wash)

6. Short-term manure stockpile site(s)

7. Permanent manure stockpile site(s)

- 8. Manure compost site(s)
- 9. Liquid manure storage area(s) (LMSA)
- 10. Poultry barn floor(s)

Notes:

<i>Checklist question</i>		C	NC	NA	NI
10.1.	The poultry barn floors are properly maintained (e.g., no cracks, saturated spots, holes or divots in the liner) (7020.2000 Subp. 1., 7020.2120)				✓
<i>Inspection requirement</i>		C	NC	NA	NI
10.2.	Poultry barn floor requirements are met. (7020.2003, subp. 1 & 3, 7050.0210, subp. 2 & 13, 7060.0600, subp. 2, CAFO/1000 AU specific - 7020.2003, subp. 2., NPDES/SDS Part 10.2.)				✓

11. Mortality management

Notes:

<i>Technical checklist questions</i>		Y	N	NA	NI
11.1.	For sites that have a mortality box: The mortality box is scavenger proof.			✓	
11.2.	For sites that render mortalities: All mortalities are picked up within 72 hrs.			✓	
11.3.	For sites that are composting mortalities: Mortalities are completely covered by compost material (no exposed mortalities allowed)				✓
11.4.	For sites that bury animal mortalities: - Mortalities are buried at least 5' above the seasonal high water table. - Soil type restrictions for burial are met (no coarse-textured soils).			✓	
11.5.	For sites that incinerate animal mortalities: There is an afterburner on the stack of the primary incineration unit?			✓	

The dead birds are composted at an off site location, this was not inspected.

If the answer to any of questions 11.1 through 11.5 was "No", Refer to Board of Animal Health

<i>Discharge checklist questions</i>		C	NC	NA	NI
11.6.	There is evidence (e.g., inadequate buffer, steep slopes, channels, matted or dead vegetation, clean water run-on, stormwater flow) that process wastewater from the mortality management area reached surface waters of the state or tile intakes, sinkholes, fractured bedrock, well, mine or quarry. (7020.2003, subp. 1 & 3, 7050.0210, subp. 2 & 13, 7060.0600, subp. 2, CAFO/1000 AU specific - 7020.2003, subp. 2., NPDES/SDS Part 10.2.)				✓
11.7.	There is evidence (e.g., ponding, coarse-textured soils, depth to water table) that process wastewater from the animal mortality management area could impact ground water. (7020.2003, subp. 1 & 3, 7050.0210, subp. 2 & 13, 7060.0600, subp. 2, CAFO/1000 AU specific - 7020.2003, subp. 2., NPDES/SDS Part 10.2.)				✓
<i>Discharge inspection requirement</i>		C	NC	NA	NI
11.8.	Mortality management area discharge requirements are met. (7020.2003, subp. 1 & 3, 7050.0210, subp. 2 & 13, 7060.0600, subp. 2, CAFO/1000 AU specific - 7020.2003, subp. 2., NPDES/SDS Part 10.2.)				✓

12. Nitrogen - manure testing requirements

(Include as part of all compliance inspections for sites with 100 AU or more)

Notes:

<i>Checklist questions</i>		C	NC	NA	NI
12.1.	Manure analyses within the last 4 years (Not required if 100 AU or less contribute to manure storage) (7020.2225 Subp. 5. B. (3), 7020.2225 Subp. 2. C.)	✓			
12.3.	Total production of manure is reasonable for facility size (7020.2225 Subp. 4. C. & D., 7020.2225 Subp. 5. B. (7), NPDES/SDS Part 2.3.1. a),)	✓			
<i>Inspection requirement</i>		C	NC	NA	NI
12.4.	Manure testing requirements are met. (7020.2225 Subp. 5. B. (3), 7020.2225 Subp. 2., NPDES/SDS Part 4.1.)	✓			

Manure was tested 3 years ago.

13. Nitrogen - transferred manure ownership land application requirements

(Include for sites with 300 AU or more when some manure ownership is transferred)

Notes:

Checklist questions		C	NC	NA	NI
13.1.	Field ID (minimum: County, Township, Section) (7020.2225 Subp. 5. D. (1) (d), NPDES/SDS Part 4.4.)		✓		
13.2.	Dates of application, application rate, and total volume transferred (7020.2225 Subp. 5. D. (1) (a) & (b) & (c), NPDES/SDS Part 4.4.)		✓		
13.3.	Names of recipients (7020.2225 Subp. 5. D. (1) (c), NPDES/SDS Part 4.4.)		✓		
<i>Inspection requirement</i>		C	NC	NA	NI
13.4.	Adequate transferred manure land application records are being kept. (7020.2225 Subp. 5. D., 7020.2225 Subp. 5. A., 7020.2225 Subp. 5. C., NPDES/SDS Part 4.4.)		✓		

There were no written transferred manure records.

14. Nitrogen - non-transferred manure ownership land application requirements
(Include for sites with 100 AU or more when some manure ownership is retained)

Notes:

Checklist questions		C	NC	NA	NI
14.1.	Field IDs, Acres for each field and Crop history (7020.2225 Subp. 5. B. (1), NPDES/SDS Part 4.5.)	✓			
14.2.	Application method and rate applied per acre (7020.2225 Subp. 5. B. (2), NPDES/SDS Part 4.5.)	✓			
14.3.	Date(s) of manure application (7020.2225 Subp. 5. B. (4), NPDES/SDS Part 4.5.)	✓			
14.4.	Plant-available N per acre from commercial fertilizer and manure (including carry-over) (7020.2225 Subp. 5. B. (6), NPDES/SDS Part 4.5.)	✓			
<i>Inspection requirement</i>		C	NC	NA	NI
14.5.	Adequate retained manure land application records are being kept. (7020.2225 Subp. 5., NPDES/SDS Parts 4.5. & 9.1.6.2.)		✓		
14.6.	Nitrogen applied at agronomic rates (total available N is not more than recommended for crop grown - evaluated with worksheet to verify). (7020.2225 Subp. 3. A., NPDES/SDS Parts 4.5. & 4.5.6.)	✓			
14.7.	If winter application or broadcast with incorporation after 24 hrs, 300 ft setback observed for sensitive features and tile intakes (ask producer). (7020.2225 Subp. 3. B., 7020.2225 Subp. 6., 7020.2225 Subp. 7., 7020.2225 Subp. 8., NPDES/SDS Parts 4.5. & 4.5.11 & 4.5.12.)	✓			

There were written records for the past year, but not for previous years. Manure application records need to be kept on file in the future. Winter application occurred last year to due bird flu and barn clean out schedules-not a normal occurrence.

15. Phosphorus - land application requirements

(Optional - sites with 300 AU or more when some manure ownership is retained)

16. In-field land application inspection

17. Animal feedlot and manure storage area closure

18. Permit requirements

19. Summary of environmental upgrades

20. Key

C	Compliance – At the time of the inspection, the feedlot and/or owner meet the requirements of applicable state rules and statutes or permit conditions.
NC	Non-Compliance – At the time of the inspection, the feedlot and/or owner do not meet the requirements of applicable state rules and statutes or permit conditions.
NA	Not Applicable – The condition is not present at this feedlot.
NI	Not Inspected – The condition was not inspected.
Y	Yes – Does not indicate compliance or non-compliance.
N	No – Does not indicate compliance or non-compliance.
Checklist question	Checklist questions are used by the inspector to evaluate feedlot conditions.
Inspection requirement	Inspection requirements are statements that summarize the regulatory requirements of applicable state rules and statutes or permit conditions

Acronyms (used throughout the checklist)

AO Administrative Order
APO Administrative Penalty Order
AU Animal Unit
CAFO Concentrated Animal Feeding Operation
CSF Construction Short Form
LOW Letter of Warning
OLA Open Lot Agreement

MPCA Minnesota Pollution Control Agency
N Nitrogen
NPDES National Pollutant Discharge Elimination System
NOV Notice of Violation
P Phosphorus
SDS State Disposal System
STIP Stipulation agreement

Manure Storage, Handling, and Testing Information



Facility Name: Dan Alexander Farm NPDES or SDS Permit? Yes Permit Number: 100037
 Owner/Operator Name: Dan Alexander Date Last Revised: 6/12/2024 Registration Number: 127-128048

Version 9.01 Last Updated: 1/13/22

	Manure Source #1	Manure Source #2	Manure Source #3	Manure Source #4
Description of Manure Source <small>Group sources with similar nutrient content; if they have identical animal type, water usage, feed rations, and manure storage</small>	Turkey Litter			
Livestock Information				
Predominate Animal Type <small>(Contributing to Manure Source)</small>	Turkeys			
Average Animal Weight	30 lbs			
Animal Number	50,000			
Length of Time Livestock Spend In Facility	365 days/yr			
Additional Animal Type <small>(Contributing to Manure Source)</small>				
Average Animal Weight	30 lbs			
Animal Number				
Length of Time Livestock Spend In Facility	365 days/yr			
Storage Information				
Storage Type	Litter			
Capacity	1,000 tons			
Storage Length	2'			
Application Methods				
Commercial Applicator (Yes/No or Name)	Yes			
Spreader Type	Solids Spreader			
How Volume/Tonnage Determined per Load	Scales			
How Application Rate is Calibrated	Loads Applied per Field			
Manure Analysis - Existing facilities should use actual manure test results				
Sampling Frequency	Every 3 Years			
Sampling Methods	MPCA or U of MN Guidelines			
Date Last Analyzed	12/01/19			
Basis for N, P, & K Values Below				
Total N - (do not enter lab estimated availability)	35 lbs/ton			
Total P ₂ O ₅ - (do not enter lab estimated availability)	63 lbs/ton			
Total K ₂ O - (do not enter lab estimated availability)	47 lbs/ton			
Annual Generation - Existing facilities should use actual production values				
Total Manure Produced per Year (Estimated)	5,305 tons			
Total Manure Produced per Year (Actual)	1,000 tons			
Annual N Produced	35,000 lbs			
Annual P ₂ O ₅ Produced	63,000 lbs			
Annual K ₂ O Produced	47,000 lbs			

wq-f6-12

	Average Book Values	Average Book Values	Average Book Values
N	40		
P ₂ O ₅	50		
K ₂ O	30		

Nutrient Management Info for Methodology Portion of MMP

Nitrogen and Phosphorus Management



Even though no data entry or acknowledgement is required, this information is required as part of a complete MMP and must be followed.

Nitrogen Management - Nitrogen Management - Nitrogen Management

Based on the crop rotation, nutrient application rates will not exceed the nitrogen needs/removal of the crops as derived from the most recent MN Extension Service publications:
 Note: the most recent publications have been incorporated into this planner (as of September 2021).

Manure application rates will be calculated using the following factors:

- 1) Maximum Nitrogen needs for non-legumes and nitrogen removal for legumes will follow Tables A & C (included as part of planner)
- 2) Manure analysis test results (most recent or historical average)
- 3) Soil test results (where applicable)
- 4) First year nitrogen availability will be based on animal species and method of application as indicated in Table B (included as part of this planner)
- 5) If applicable, credits for previous crops and/or manure applications will be accounted for according to Tables A, B, & C (included as part of this planner)
- 6) If applicable, any fertilizer nitrogen applied will be accounted for in the calculations.

Any deviation from the maximum nitrogen applied will follow the standards allowed in Minn Rule 7020.2225, subp. 3 (A)(2) and the issued permit

Additional requirements for NPDES permitted sites to minimize nitrate leaching potential (alternatives may be approved by the MPCA when sufficient justification is provided with the MMP)

- 1) September manure applications - a cover crop will be planted
- 2) October manure applications - one of the following nitrogen BMPs will be employed for manure applications prior to Oct 15
 - A) Soil temps are less than 50°F at the start of manure application
 - C) Plant a cover crop
 - B) Split application with only 50% of N applied before Oct. 15
 - D) Use a nitrogen stabilizing agent/product at the recommended rate

Phosphorus Management - Phosphorus Management - Phosphorus Management

Phosphorus will be managed for all manure applications according to the following:

Manure application rates will be calculated using the following factors:

- 1) The calculations to determine crop P₂O₅ removal rate will be based on Table C (included as part of this planner)
- 2) For all animal species and all methods of application, the availability factor for phosphorus is 80 percent.
- 3) If applicable, any fertilizer P₂O₅ will be accounted for in the calculations.
- 4) When soil P test levels exceed 75 ppm Bray P1 (60 ppm Olsen) within 300 feet of an open tile intake, lake, stream, intermittent stream, drainage ditch without protective berms, or a public waters wetland, I will follow protocols listed in the issued permit.
- 5) When soil P test levels exceed 150 ppm Bray P1 (120 ppm Olsen) on any land, I will follow protocols listed in the issued permit.
- 6) Where winter-time manure application is approved, phosphorus management will follow rate restrictions listed in the issued permit.
- 7) In addition to items 1-6 I will manage Phosphorus according to one of the following options (either option is acceptable):
 - A) Minimum Phosphorus Management Based on Minnesota Rules
 - When the table below indicates soil test levels indicate phosphorus management is required, I will manage the rate and frequency of manure applications to not allow soil P build-up over any 6 year period, as required in the issued permit.
 - B) Crop Phosphorus Removal Rates (over the rotation)
 - All manure will be applied according to phosphorus based rates, so that the rate and frequency of P₂O₅ applications will not exceed the expected crop P₂O₅ removal over the course of the crop rotation.

Minimum P₂O₅ Requirements

Bray P-1 (ppm)	Less than 22	22-75	76-150	Greater than 150
Olsen (ppm)	Less than 17	17-60	61-120	Greater than 120
More than 300 feet from waters*	No Phosphorus management requirements	No Phosphorus management requirements	No Phosphorus management requirements	Follow NPDES/SDS permit requirements
Less than 300 feet waters*	No Phosphorus management requirements	Prevent long-term build-up of soil P over a 6-year period (except open tile intakes)	Follow NPDES/SDS permit requirements	Follow NPDES/SDS permit requirements

* waters include: open tile lakes, streams, intermittent streams, protected wetlands, or unbermed drainage ditches

Sensitive Features Management Worksheet



This worksheet identifies all allowable techniques that can be used to provide protection to sensitive features **as required** in Minnesota Rules and/or permit conditions. One of the following measures must be employed for the applicable sensitive feature. Any of the identified practices are acceptable.

Tile Intakes

- Option A - Inject or incorporate within 24 hours and prior to rainfall within 300 ft, observe a 25 ft non-manured setback, and avoid long term soil P build-up
- Option B - Inject or incorporate within 24 hours and prior to rainfall within 300 ft.
- Option C - 35 ft grassed buffer
- Option D - 100 ft setback with at least 16.5 ft as grassed buffer

Drainage Ditches

- Option A - Inject or incorporate within 24 hours and prior to rainfall within 300 ft, observe a 25 ft non-manured setback, and avoid long term soil P build-up
- Option B - 50 ft wide grassed buffer
- Option C - 100 ft setback with at least 16.5 ft as grassed buffer
- Option D - Protective Berm (prohibits runoff from entering the ditch)

Lakes, Rivers, and Streams

- Option A - Inject or incorporate within 24 hours and prior to rainfall within 300 ft, observe a 25 ft non-manured setback, and avoid long term soil P build-up
- Option B - 100 ft wide grassed buffer
- Option C - 100 ft setback with at least 16.5 ft as grassed buffer

Intermittent Streams and/or Public Waters Wetlands (over 10 acres)

- Option A - Inject or incorporate within 24 hours and prior to rainfall within 300 ft, observe a 25 ft non-manured setback, and avoid long term soil P build-up
- Option B - 50 ft wide grassed buffer
- Option C - 100 ft setback with at least 16.5 ft as grassed buffer

Wells, Mines, or Quarry

- Option A - 50 ft setback - minimum (100 ft if NPDES permitted)

Sinkholes

- Option A - Inject or incorporate within 24 hours and prior to rainfall upslope and within 300 ft and observe a 50 ft non-manured setback (100 ft non-manured setback for NPDES)
- Option B - Berm that prevents runoff from entering the sinkhole

Application of Manure During the Summer Months (June, July, and August) - This also includes September for NPDES permitted sites

- Option A - A cover crop will be planted on all fields that receive manure applications during June, July, and August

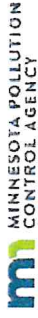
Other Conduits to Water

- Option A - Inject or incorporate within 24 hours and prior to rainfall within 300 ft, observe a 25 ft non-manured setback, and avoid long term soil P build-up
- Option B - 50 ft wide grassed buffer
- Option C - 100 ft setback with at least 16.5 ft as grassed buffer
- Option D - Protective Berm (prohibits runoff from entering the waters)

Early Fall Land Application - Unless otherwise required, this only applies to early fall manure application at NPDES or SDS permitted facilities

- Option A - Fall Application onto fields that are dominated by coarse-textured soils shall be delayed until soil temperatures in the upper six (6) inches, are less than 50 degrees Fahrenheit, unless otherwise first approved by the MPCA.

6 Year Soil Phosphorus Management Plan



When soil phosphorus levels are required to be maintained (or reduced) over a 6 year period, one of the following crop rotation scenarios will be employed for the applicable field or area near sensitive features. You must complete at least one rotation below or indicate that manure will not be applied within 300 feet of sensitive features (this option will only be visible when all soil test results are below 150 Bray or 120 Olsen).

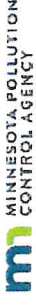
Manure will not be applied within 300 ft of open tile intakes, lakes, streams, intermittent streams, public water wetlands, or drainage ditches without protective berms.

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Scenario 8
Crop (Year 1)	Corn							
Yield	200 bu							
Manure Application Source (1-12) & Rate	1 1.4 tons							
2nd Manure Application								
Fertilizer P (total)	15.8 lbs							
Crop (Year 2)	Soybeans							
Yield	55 bu							
Manure Application Source (1-12) & Rate								
2nd Manure Application								
Fertilizer P (total)	lbs							
Crop (Year 3)	Corn							
Yield	200 bu							
Manure Application Source (1-12) & Rate	1 2 tons							
2nd Manure Application								
Fertilizer P (total)	15.8 lbs							
Crop (Year 4)	Soybeans							
Yield	55 bu							
Manure Application Source (1-12) & Rate								
2nd Manure Application								
Fertilizer P (total)	15.8 lbs							
Crop (Year 5)	Corn							
Yield	200 bu							
Manure Application Source (1-12) & Rate	1 2 tons							
2nd Manure Application								
Fertilizer P (total)	15.8 lbs							
Crop (Year 6)	Soybeans							
Yield	55 bu							
Manure Application Source (1-12) & Rate								
2nd Manure Application								
Fertilizer P (total)	lbs							

Results

P Applied over 6 Yrs	315.2 lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs
P Removed over 6 Yrs	339.3 lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs
Will Rotation Build Soil Phosphorus Levels?	No							

Nutrient Application Planning Worksheet (Fields 1-25)



MINNESOTA POLLUTION CONTROL AGENCY

Manure Source Summary

Source 1: Turkey Litter (35-63-47)	Source 5:	Source 9:
Source 2:	Source 6:	Source 10:
Source 3:	Source 7:	Source 11:
Source 4:	Source 8:	Source 12:

I will transfer ownership of some of the manure.

Field Information Summary	Crops Grown Summary		Nutrients Needed to Meet Yield Goal (lb/acre)			Manure Application Information (Nutrients for the 2025 Crop) Application Typically 9/1/2024 to 8/31/2025				Nitrogen (lb N/acre)		Phosphorus (lb P ₂ O ₅ /acre)						
	Field ID	Crop Grown to Utilize the Nutrients Applied 2025 Crop	Crop Most Recently Harvested 2024 Crop	Nitrogen Needs	Nitrogen (Removal)	Phosphorus (Needs)	Manure Source (1-12)	Method of Application and Incorporation NPDES/SDS permitted sites cannot apply liquid manure in the winter (unless emergency)	Acres Receiving Manure (reduce to split the field)	Application Rate (gals/tons per acre) Calculated Max Rate based on Nitrogen	Manure Application Rate Planned Rate max used if blank	(Available this year)	Total Fertilizer Application (lbs/acre) Starter	Total Fertilizer Application (lbs/acre) Supplemental	(Available this year)	Total Fertilizer Application (lbs/acre) Starter	Total Fertilizer Application (lbs/acre) Supplemental	P in Excess of Removal (negative for deficiency)
Sara Quarter	Corn	Soybeans	150	---	0	---	---	---	---	---	---	---	15.8	0	---	15.8	0	-52
Pauls Quarter	Soybeans	Corn	---	175	0	---	---	152	---	---	---	---	0	0	---	15.8	0	-29
Echo North	Soybeans	Corn	---	175	0	---	---	80	---	---	---	---	0	0	---	15.8	0	-29
Echo South 26	Soybeans	Corn	---	175	0	---	---	26	---	---	---	---	0	0	---	15.8	0	-29
Pauls Home Middle	Corn	Soybeans	150	---	0	---	---	---	---	---	---	---	4.7	106.6	---	15.8	0	-52
Pauls Home East 26	Soybeans	Corn	---	175	0	---	---	26	---	---	---	---	0	0	---	15.8	0	-29
Pauls Home West 60	Soybeans	Corn	---	193	0	---	#NAME?	60	#NAME?	---	---	###	4.7	106.6	###	15.8	0	-29
Echo South 42	Corn	Soybeans	150	---	0	---	---	---	---	---	---	---	4.7	106.6	---	15.8	0	-52

MMP for Transferred Manure Ownership



Please answer the following questions to verify that manure ownership has been transferred.

- 1) Will manure be applied to land that is owned, leased, or rented by the feedlot owner/operator or a member/partner of the feedlot ownership entity (Inc., LLP, LLLP, et. al.)?
 Yes No
- 2) Does the feedlot owner/operator, feedlot ownership member/partner, or employee under the direction of the feedlot ownership entity control the crop and nutrient planning decisions of the manure application sites, including planning for manure application rates, timing, and methods?
 Yes No

The answers to these questions indicate that you transfer ownership of manure.

You must complete your MMP for transferred manure outside of this program.

You must use the MPCA standardized form available at:

<https://www.pca.state.mn.us/sites/default/files/wq-f8-12.docx>

Animal Mortality Management Worksheet

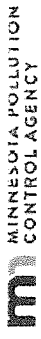


The Minnesota Board of Animal Health (BAH) regulates animal mortality management; however, discharge/emissions from an animal mortality management area is subject to discharge/emission standards administered by the MPCA.

The following best management practices (BMP)s should be employed to assist in compliance with both BAH and MPCA requirements.

<p><u>Rendering</u></p> <p><u>Carcass pick-up point BMPs</u></p> <ul style="list-style-type: none">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 than 45 degrees).
<p><u>Composting</u></p> <p><u>Mortality composting area BMPs</u></p> <ul style="list-style-type: none">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.
<p><u>Burial</u></p> <p><u>Mortality burial site BMPs</u></p> <ul style="list-style-type: none">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.
<p><u>Incineration</u></p> <p><u>Incineration BMPs</u></p> <ul style="list-style-type: none">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.
<p><u>Other Method</u></p> <p>The following operational practices will be implemented (describe the alternative method below)</p>

MMP NOTES



This worksheet will allow entry of notes related to the MMP. This can be used to explain a part of the plan, notes regarding fertilizer/pesticide applications, or any other item that is applicable.

Simply start typing in any of the cells below, the cell will auto adjust to accommodate the length of the text entered.

Misc. Notes for all Fields (Enter applicable notes for specific field ID's below)	
Sara Quarter	
Pauls Quarter	
Echo North	
Echo South 26	
Pauls Home Middle	
Pauls Home East 26	
Pauls Home West 60	
Echo South 42	

Barley - Barley - Barley - Barley - Barley - Barley - Barley - Barley - Barley - Barley - Barley - Barley - Barley - Barley - Barley - Barley

Nitrogen Recommendations

Crop Grown Last Year	Organic Matter	Expected Yield (bu/acre)						
		0-50	50-59	60-69	70-79	80-89	90-99	100+
Alfalfa 2+ year old stand	low	0	0	15	30	45	60	75
Alfalfa 1 year old stand	med/high	0	0	0	10	25	40	55
Soybeans	low	30	50	65	80	95	110	125
	med/high	0	30	45	60	75	90	105
	low	30	50	65	80	95	110	125
Edible beans, field peas	med/high	0	30	45	60	75	90	105
	low	40	60	75	90	105	120	135
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg. pasture, etc.	med/high	0	40	55	70	85	100	115
	low	0	20	35	50	65	80	95
	med/high	0	0	15	30	45	60	75
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	low	50	70	85	100	115	130	145
	med/high	30	50	65	80	95	110	125

Phosphorus Recommendations

Calculated Phosphorus Recommendations
 $P2O5 = [W - (X) \cdot (\text{Bray P ppm})] \cdot (\text{Expected Yield})$ $W = 0.785$ $X = 0.039$
 $P2O5 = [Y - (Z) \cdot (\text{Olsen P ppm})] \cdot (\text{Expected Yield})$ $Y = 0.785$ $Z = 0.05$

Potassium Recommendations

Calculated Potassium Recommendations
 $K2O = [A - (B) \cdot (K \text{ ppm})] \cdot (\text{Expected Yield})$ $A = 1.286$ $B = 0.009$

Second Year Legume Credits

Legume Crop	Credit
Alfalfa 2+ year old stand	35
Alfalfa 1 year old stand	20
Red Clover & birdsfoot trefoil	20

Oats - Oats - Oats - Oats - Oats - Oats - Oats - Oats - Oats - Oats - Oats - Oats - Oats - Oats - Oats - Oats

Nitrogen Recommendations

Crop Grown Last Year	Organic Matter	Expected Yield (bu/acre)						
		40-60	61-80	81-100	101-120	121+		
Alfalfa 2+ year old stand	low	0	0	0	0	0	0	
Alfalfa 1 year old stand	med/high	0	0	0	0	0	0	
Soybeans	low	0	20	40	60	80	80	
	med/high	0	0	30	50	70	70	
	low	0	20	40	60	80	80	
Edible beans, field peas	med/high	0	0	30	50	70	70	
	low	20	40	60	80	100	100	
	med/high	10	30	50	70	90	90	
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg. pasture, etc.	low	0	0	0	25	45	45	
	med/high	0	0	0	15	35	35	
	low	40	60	80	100	120	120	
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	med/high	30	50	70	90	110	110	

Phosphorus Recommendations

Calculated Phosphorus Recommendations
 $P2O5 = [W - (X) \cdot (\text{Bray P ppm})] \cdot (\text{Expected Yield})$ $W = 0.644$ $X = 0.032$
 $P2O5 = [Y - (Z) \cdot (\text{Olsen P ppm})] \cdot (\text{Expected Yield})$ $Y = 0.644$ $Z = 0.041$

Potassium Recommendations

Calculated Potassium Recommendations
 $K2O = [A - (B) \cdot (K \text{ ppm})] \cdot (\text{Expected Yield})$ $A = 1.277$ $B = 0.009$

Buckwheat - Buckwheat - Buckwheat - Buckwheat - Buckwheat - Buckwheat - Buckwheat - Buckwheat - Buckwheat - Buckwheat

Nitrogen Recommendations

Crop Grown Last Year	Organic Matter	Expected Yield (lb/acre)				
		1200-1450	1451-1700	1701-1950	1951-2200	
Alfalfa 2+ year old stand	low	0	0	0	0	0
Alfalfa 2+ year old stand	med/high	0	0	0	0	0
Alfalfa 1 year old stand	low	0	10	20	30	30
Alfalfa 1 year old stand	med/high	0	0	0	0	0
Soybeans	low	0	10	20	30	30
Soybeans	med/high	0	0	0	0	0
Edible beans, field peas	low	20	30	40	50	50
Edible beans, field peas	med/high	0	10	20	30	30
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg, pasture, etc.	low	0	0	0	0	0
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg, pasture, etc.	med/high	0	0	0	0	0
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	low	40	50	60	70	70
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	med/high	20	30	40	50	50

Phosphorus Recommendations

Calculated Phosphorus Recommendations
 $P2O5 = [W - (X) \cdot (\text{Bray P ppm})] \cdot (\text{Expected Yield})$
 $P2O5 = [Y - (Z) \cdot (\text{Olsen P ppm})] \cdot (\text{Expected Yield})$
 W= 0.028 X= 0.001
 Y= 0.028 Z= 0.002

Potassium Recommendations

Calculated Potassium Recommendations
 $K2O = [A - (B) \cdot (K \text{ ppm})] \cdot (\text{Expected Yield})$
 A= 0.036 B= 0.023

Canola - Canola - Canola - Canola - Canola - Canola - Canola - Canola - Canola - Canola - Canola - Canola - Canola - Canola - Canola - Canola

Nitrogen Recommendations

Crop Grown Last Year	Organic Matter	Expected Yield (cwt/acre)				
		10-15	16-20	21-25	25+	
Alfalfa 2+ year old stand	low	0	0	0	0	0
Alfalfa 2+ year old stand	med/high	0	0	0	0	0
Alfalfa 1 year old stand	low	0	10	20	30	30
Alfalfa 1 year old stand	med/high	0	0	0	0	0
Soybeans	low	0	10	20	30	30
Soybeans	med/high	0	0	0	0	0
Edible beans, field peas	low	20	30	40	50	50
Edible beans, field peas	med/high	0	10	20	30	30
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg, pasture, etc.	low	0	0	0	0	0
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg, pasture, etc.	med/high	0	0	0	0	0
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	low	40	50	60	70	70
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	med/high	20	30	40	50	50

Phosphorus Recommendations

Calculated Phosphorus Recommendations
 $P2O5 = [W - (X) \cdot (\text{Bray P ppm})] \cdot (\text{Expected Yield})$
 $P2O5 = [Y - (Z) \cdot (\text{Olsen P ppm})] \cdot (\text{Expected Yield})$
 W= 3.6 X= 0.17
 Y= 3.6 Z= 0.22

Potassium Recommendations

Calculated Potassium Recommendations
 $K2O = [A - (B) \cdot (K \text{ ppm})] \cdot (\text{Expected Yield})$
 A= 5.4 B= 0.034

Edible Beans - Edible Beans - Edible Beans - Edible Beans - Edible Beans - Edible Beans - Edible Beans - Edible Beans - Edible Beans

Nitrogen Recommendations

Crop Grown Last Year	Organic Matter	Expected Yield (lb/acre)				
		1401-1900	1901-2400	2401-2900	2901+	
Alfalfa 2+ year old stand	low	0	0	0	0	0
	med/high	0	0	0	0	0
	low	0	20	40	60	60
Alfalfa 1 year old stand	med/high	0	0	10	30	30
	low	60	80	100	120	120
	med/high	30	50	70	90	90
Soybeans	low	60	80	100	120	120
	med/high	30	50	70	90	90
	low	60	80	100	120	120
Edible beans, field peas	med/high	30	50	70	90	90
	low	60	80	100	120	120
	med/high	30	50	70	90	90
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg, pasture, etc.	low	0	0	25	45	45
	med/high	0	0	0	25	25
	low	60	80	100	120	120
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	med/high	30	50	70	90	90
	low	60	80	100	120	120
	med/high	30	50	70	90	90

Phosphorus Recommendations

Calculated Phosphorus Recommendations

$$P205 = [W - (X) * (\text{Bray P ppm})] * (\text{Expected Yield})$$

$$P205 = [Y - (Z) * (\text{Olsen P ppm})] * (\text{Expected Yield})$$

$$W = \frac{0.023}{0.023} \quad X = \frac{0.001}{0.001}$$

$$Y = \frac{0.023}{0.023} \quad Z = \frac{0.001}{0.001}$$

Potassium Recommendations

Calculated Potassium Recommendations

$$K2O = [A - (B) * (K \text{ ppm})] * (\text{Expected Yield})$$

$$A = \frac{0.035}{0.035} \quad B = \frac{0.002}{0.002}$$

Millet - Millet - Millet - Millet - Millet - Millet - Millet - Millet - Millet - Millet - Millet - Millet - Millet - Millet - Millet - Millet

Nitrogen Recommendations

Crop Grown Last Year	Organic Matter	Expected Yield (lb/acre)				
		1500-1900	1901-2300	2301-2700	2701-3000	3100+
Alfalfa 2+ year old stand	low	0	0	0	0	0
	med/high	0	0	0	0	0
	low	0	10	20	40	60
Alfalfa 1 year old stand	med/high	0	0	0	20	40
	low	0	10	20	40	60
	med/high	0	0	0	20	40
Soybeans	low	0	10	20	40	60
	med/high	0	0	0	20	40
	low	20	30	40	60	80
Edible beans, field peas	med/high	0	10	20	40	60
	low	0	0	0	20	40
	med/high	0	0	0	20	40
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg, pasture, etc.	low	0	0	0	0	25
	med/high	0	0	0	0	0
	low	40	50	60	80	100
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	med/high	20	30	40	60	80
	low	0	0	0	0	0
	med/high	20	30	40	60	80

Phosphorus Recommendations

Calculated Phosphorus Recommendations

$$P205 = [W - (X) * (\text{Bray P ppm})] * (\text{Expected Yield})$$

$$P205 = [Y - (Z) * (\text{Olsen P ppm})] * (\text{Expected Yield})$$

$$W = \frac{0.017}{0.017} \quad X = \frac{0.009}{0.009}$$

$$Y = \frac{0.017}{0.017} \quad Z = \frac{0.0011}{0.0011}$$

Potassium Recommendations

Calculated Potassium Recommendations

$$K2O = [A - (B) * (K \text{ ppm})] * (\text{Expected Yield})$$

$$A = \frac{0.03}{0.03} \quad B = \frac{2E-04}{2E-04}$$

Alfalfa - Alfalfa - Alfalfa - Alfalfa - Alfalfa - Alfalfa - Alfalfa - Alfalfa - Alfalfa

Phosphorus Recommendations

Calculated Phosphorus Recommendations
 $P2O5 = [W - (X) \cdot (\text{Bray P ppm})] \cdot (\text{Expected Yield})$
 $P2O5 = [Y - (Z) \cdot (\text{Olsen P ppm})] \cdot (\text{Expected Yield})$

W= 18.57 X= 0.93
 Y= 18.57 Z= 1.16

Potassium Recommendations

Calculated Potassium Recommendations
 $K2O = [A - (B) \cdot (K \text{ ppm})] \cdot (\text{Expected Yield})$

A= 55.7 B= 0.38

Grass/Legume - Grass/Legume - Grass/Legume - Grass/Legume

Phosphorus Recommendations

Calculated Phosphorus Recommendations
 $P2O5 = [W - (X) \cdot (\text{Bray P ppm})] \cdot (\text{Expected Yield})$
 $P2O5 = [Y - (Z) \cdot (\text{Olsen P ppm})] \cdot (\text{Expected Yield})$

W= 20 X= 1
 Y= 20 Z= 1.4

Potassium Recommendations

Calculated Potassium Recommendations
 $K2O = [A - (B) \cdot (K \text{ ppm})] \cdot (\text{Expected Yield})$

A= 53.28 B= 0.333

Sugar Beets - Sugar Beets - Sugar Beets - Sugar Beets

Phosphorus Recommendations (Broadcast)

	Soil Test P (ppm)				High	Very High
	Very Low	Low	Medium			
Expected Yield	0-5	6-10	11-15	16-20	21+	21+
Bray:	0-3	4-7	8-11	12-15	16+	
Olsen:	80	55	35	10	0	
	Soil Test K (ppm)					
Expected Yield	0-40	41-80	81-120	121-160	161+	
All	110	80	50	15	0	

Nitrogen Recommendations are set to a flat rate of 100 lb/acre

Soybeans - Soybeans - Soybeans - Soybeans - Soybeans

Phosphorus Recommendations

Calculated Phosphorus Recommendations
 $P2O5 = [W - (X) \cdot (\text{Bray P ppm})] \cdot (\text{Expected Yield})$
 $P2O5 = [Y - (Z) \cdot (\text{Olsen P ppm})] \cdot (\text{Expected Yield})$

W= 1.752 X= 0.084
 Y= 1.752 Z= 0.111

Potassium Recommendations

Calculated Potassium Recommendations
 $K2O = [A - (B) \cdot (K \text{ ppm})] \cdot (\text{Expected Yield})$

A= 2.2 B= 0.183

Grass/Hay - Grass/Hay - Grass/Hay - Grass/Hay - Grass/Hay

Phosphorus Recommendations

Calculated Phosphorus Recommendations
 $P2O5 = [W - (X) \cdot (\text{Bray P ppm})] \cdot (\text{Expected Yield})$
 $P2O5 = [Y - (Z) \cdot (\text{Olsen P ppm})] \cdot (\text{Expected Yield})$

W= 19.12 X= 0.732
 Y= 19.12 Z= 1.012

Potassium Recommendations

Calculated Potassium Recommendations
 $K2O = [A - (B) \cdot (K \text{ ppm})] \cdot (\text{Expected Yield})$

A= 40.43 B= 0.286

Clover/Trefoil - Clover/Trefoil - Clover/Trefoil - Clover/Trefoil

Phosphorus Recommendations

Calculated Phosphorus Recommendations
 $P2O5 = [W - (X) \cdot (\text{Bray P ppm})] \cdot (\text{Expected Yield})$
 $P2O5 = [Y - (Z) \cdot (\text{Olsen P ppm})] \cdot (\text{Expected Yield})$

W= 20 X= 1
 Y= 20 Z= 1.4

Potassium Recommendations

Calculated Potassium Recommendations
 $K2O = [A - (B) \cdot (K \text{ ppm})] \cdot (\text{Expected Yield})$

A= 53.28 B= 0.333

The Following Data is from University of MN Publication Nutrient management for commercial fruit and vegetable crops in Minnesota

SWEET CORN - SWEET CORN - SWEET CORN - SWEET CORN - SWEET CORN - SWEET CORN - SWEET CORN - SWEET CORN - SWEET CORN - SWEET CORN

Nitrogen Recommendations

Crop Grown Last Year	Organic Matter	Expected Yield (tons/acre)			
		<6	6-7	8-9	10+
Alfalfa 2+ year old stand	low	10	30	50	70
	med/high	0	0	20	40
Alfalfa 1 year old stand	low	70	90	110	130
	med/high	40	60	80	100
Soybeans	low	80	100	120	140
	med/high	50	70	90	110
Edible beans, field peas	low	80	100	120	140
	med/high	50	70	90	110
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg, pasture, etc.	low	70	90	110	130
	med/high	40	60	80	100
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	low	110	130	150	170
	med/high	80	100	120	140

Phosphorus Recommendations

Calculated Phosphorus Recommendations

$$P2O5 = [W - (X) \cdot (\text{Bray P ppm})] \cdot (\text{Expected Yield})$$

$$P2O5 = [Y - (Z) \cdot (\text{Olsen P ppm})] \cdot (\text{Expected Yield})$$

$$W = \frac{11}{11} \quad X = \frac{0.593}{0.7}$$

$$Y = \frac{11}{11} \quad Z = \frac{0.7}{0.7}$$

Potassium Recommendations

Calculated Potassium Recommendations

$$K2O = [A - (B) \cdot (K \text{ ppm})] \cdot (\text{Expected Yield})$$

$$A = \frac{22}{22} \quad B = \frac{0.13}{0.13}$$

PEAS - PEAS

Nitrogen Recommendations

Crop Grown Last Year	Organic Matter	Expected Yield (lbs/acre)			
		<1000	1000-1900	2000-3900	4000+
Alfalfa 2+ year old stand	low	0	0	0	0
	med/high	0	0	0	0
Alfalfa 1 year old stand	low	0	0	0	10
	med/high	0	0	0	0
Soybeans	low	0	0	10	20
	med/high	0	0	0	0
Edible beans, field peas	low	0	0	10	20
	med/high	0	0	0	0
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg, pasture, etc.	low	0	0	0	10
	med/high	0	0	0	0
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	low	0	10	20	40
	med/high	0	0	10	20

Phosphorus Recommendations

Calculated Phosphorus Recommendations

$$P2O5 = [W - (X) \cdot (\text{Bray P ppm})] \cdot (\text{Expected Yield})$$

$$P2O5 = [Y - (Z) \cdot (\text{Olsen P ppm})] \cdot (\text{Expected Yield})$$

$$W = \frac{0.017}{0.017} \quad X = \frac{9E-04}{0.001}$$

$$Y = \frac{0.017}{0.017} \quad Z = \frac{0.001}{0.001}$$

Potassium Recommendations

Calculated Potassium Recommendations

$$K2O = [A - (B) \cdot (K \text{ ppm})] \cdot (\text{Expected Yield})$$

$$A = \frac{0.03}{0.03} \quad B = \frac{2E-04}{2E-04}$$

POTATOES - POTATOES - POTATOES - POTATOES - POTATOES - POTATOES - POTATOES - POTATOES - POTATOES - POTATOES - POTATOES

Nitrogen Recommendations

Crop Grown Last Year	Organic Matter	Expected Yield (cwt/acre)							
		<200	200-249	250-299	300-349	350-399	400-449	450-499	500+
Alfalfa 2+ year old stand	low	0	0	25	50	75	100	125	150
	med/high	0	0	0	30	55	80	105	130
Alfalfa 1 year old stand	low	35	60	85	110	135	160	185	210
	med/high	15	40	65	90	115	140	165	190
Soybeans	low	55	80	105	130	155	180	205	230
	med/high	35	60	85	110	135	160	185	210
Edible beans, field peas	low	55	80	105	130	155	180	205	230
	med/high	35	60	85	110	135	160	185	210
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg, pasture, etc.	low	35	60	85	110	135	160	185	210
	med/high	15	40	65	90	115	140	165	190
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	low	75	100	125	150	175	200	225	250
	med/high	55	80	105	130	155	180	205	230

Phosphorus Recommendations

Calculated Phosphorus Recommendations

$$P2O5 = [W - (X) \cdot (\text{Bray P ppm})] \cdot (\text{Expected Yield}) \quad W = 0.5 \quad X = 0.024$$

$$P2O5 = [Y - (Z) \cdot (\text{Olsen P ppm})] \cdot (\text{Expected Yield}) \quad Y = 0.5 \quad Z = 0.034$$

Potassium Recommendations

Calculated Potassium Recommendations

$$K2O = [A - (B) \cdot (\text{K ppm})] \cdot (\text{Expected Yield}) \quad A = 0.85 \quad B = 0.006$$

The Following Data is derived from North Dakota State University Publication SF-882 (2010)

SORGHUM (forage) - SORGHUM (forage) - SORGHUM (forage) - SORGHUM (forage) - SORGHUM (forage) - SORGHUM (forage) - SORGHUM (forage)

Nitrogen Recommendations

Crop Grown Last Year	Organic Matter	Expected Yield (tons/acre)			
		<4	5-6	7-8	9+
Alfalfa 2+ year old stand	low	0	0	25	75
	med/high	0	0	25	75
Alfalfa 1 year old stand	low	0	25	75	125
	med/high	0	25	75	125
Soybeans	low	35	85	135	185
	med/high	35	85	135	185
Edible beans, field peas	low	35	85	135	185
	med/high	35	85	135	185
Group 1 Crops: Clover, fallow, grass/legume hay, grass/leg, pasture, etc.	low	35	85	135	185
	med/high	35	85	135	185
Group 2 Crops: Corn, wheat, oats, potatoes, sugar beets, grass, rye, etc.	low	75	125	175	225
	med/high	75	125	175	225

Phosphorus Recommendations

Calculated Phosphorus Recommendations

$$P2O5 = [W - (X) \cdot (\text{Bray P ppm})] \cdot (\text{Expected Yield}) \quad W = 11 \quad X = 0.533$$

$$P2O5 = [Y - (Z) \cdot (\text{Olsen P ppm})] \cdot (\text{Expected Yield}) \quad Y = 11 \quad Z = 0.7$$

Potassium Recommendations

Calculated Potassium Recommendations

$$K2O = [A - (B) \cdot (\text{K ppm})] \cdot (\text{Expected Yield}) \quad A = 43 \quad B = 0.3$$

Second Year Legume Credits

Legume Crop	Credit
Alfalfa 2+ year old stand	75
Alfalfa 1 year old stand	25
Red Clover	20

Table B - Nitrogen availability and loss as affected by method of manure application and animal species

Adapted From: Manure Planning and Record Keeping Guide, BU-6957, U of M Extension 2001

Year Available ¹	Broadcast Incorporation Timing ²				Injection		
	None to 96 hrs.	12 to 96 hrs.	<12 hrs.	Double Disks	Coulter	Sweep	Knife
	% of Total Nitrogen Available Per Year						
Beef							
Year 1	25	45	60	60	50	60	50
Year 2	25	25	25	25	25	25	25
Lost	40	20	5	5	10	5	10
Dairy, Horse, Sheep							
Year 1	20	40	55	55	50	55	50
Year 2	25	25	25	25	25	25	25
Lost	40	20	10	10	10	5	10
Swine							
Year 1	35	55	75	75	70	80	70
Year 2	15	15	15	15	15	15	15
Lost	50	30	10	10	15	5	15
Poultry							
Year 1	45	55	70	70	70	70	70
Year 2	25	25	25	25	25	25	25
Lost	30	20	5	5	5	5	5
Other (open lot runoff, process wastewater, feed pad runoff, etc)							
Year 1	45	55	75	75	70	80	70
Year 2	15	15	15	15	15	15	15

1. Third year available N can be computed by adding 1st and 2nd year and lost percentages and subtracting this sum from 100.

2. Timing categories refer to the length of time between manure application and incorporation.

Table C - Nutrient removal in the harvested portion of the crop.

Adapted From: USDA Plants Database (<http://plants.usda.gov/plants/index.html>)

Crop	Yield Units	Crop Nutrient Removal (lbs. per unit)		
		N	P ₂ O ₅	K ₂ O
Alfalfa	tons (air dry)	51	10.8	49
Alsike clover	tons (air dry)	41	11	54
Barley (grain) ¹	bushels	0.99	0.41	0.32
Barley (grain & straw) ¹	bushels	1.39	0.55	1.52
Birdsfoot trefoil	tons (air dry)	45	11	42
Buckwheat (grain) ¹	bushels	0.83	0.25	0.22
Buckwheat (grain & straw) ¹	bushels	14.86	1.95	46.67
Canola	cwt.	1.6	1.3	0.4
Corn (grain)	bushels	0.67	0.34	0.25
Corn silage	tons (as fed)	9.7	3.8	7.3
Edible beans	pounds	0.05	0.01	0.015
Grass hay or pasture	tons (air dry)	27.06	8.9	25.83
Grass/legume	tons (air dry)	40.17	11.2	25.11
Millet	pounds	1.4	0.4	0.4
Oats (grain) ¹	bushels	0.77	0.25	0.19
Oats (grain & straw) ¹	bushels	1.08	0.32	1.13
Peas	pounds		0.01	0.01
Potatoes	cwt.	0.3	0.14	0.65
Red clover	tons (air dry)	45	10.8	42
Rye (grain) ¹	bushels	1.4	0.44	0.31
Rye (grain & straw) ¹	bushels	2.2	0.59	1.81
Soybeans	bushels	3.5	0.82	1
Sugar beets	tons	3.7	0.73	7.3
Sunflowers	pounds	2.7	0.01	0.9
Sweet corn	tons		11	13.9
Wheat (grain) ¹	bushels	1.35	0.53	0.31
Wheat (grain & straw) ¹	bushels	2.05	0.64	1.51

1. Nutrient removal, used in calculations in this spreadsheet, is based on the average of grain only and grain and straw numbers from this table

Table D - Estimated nutrient content of liquid and solid manure

Adapted from the following sources:

Manure Management in Minnesota, WW-03553, U of M Extension 2012

Manure Characteristics, MWPS-18 Section 1, MidWest Plan Service 2004

Liquid Swine Manure Nutrients, ASL-R 1596, Iowa State University

Animal Type	Liquid Manure			Solid Manure		
	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O
	lbs/1,000 gallons			lbs/ton		
Beef						
Feeder Cattle High Forage	29	18	26	11	7	11
Feeder Cattle High Energy	29	18	26	11	7	11
Cow	20	16	24	7	4	7
Calf	27	18	24	9	4	8
Dairy						
Milk Cow	31	15	19	10	3	6
Dry Cow	31	15	19	10	3	6
Heifer	32	14	28	10	3	7
Calf	27	14	24	10	3	5
Swine						
Swine - Nursery	25	19	22	13	8	4
Swine - Wean/Finish ¹	42	34	24	14	6	4
Swine- Wean/Finish (wet/dry feed) ²	57	46	34	14	6	4
Swine - Grow/Finish ¹	58	44	40	16	9	5
Swine- Grow/Finish (wet/dry feed) ²	75	54	40	22	22	17
Swine - Gestating Sow	25	25	24	9	7	5
Swine - Lactating Sow	15	12	11	14	6	4
Swine - Boar	25	25	24	9	7	5
Poultry						
Layers	57	52	33	34	51	26
Broilers	63	40	29	46	53	36
Turkey	56	39	31	40	50	30
Horse						
				14	4	14
Sheep						
				18	11	26
Open Lot Runoff *	4	1	4			
Milkhouse Waste *	1	0.5	1			

* MPCA Estimated Values

1. Deep-pit system with nipple waters.

2. Dry feeders used in conjunction with cup or swinging waters have similar results as wet/dry feeders.

Table E. Manure production and characteristics, as excreted

Adapted From: *Manure Characteristics, MWPS-18 Section 1, MidWest Plan Service 2004*

Animal Type	Manure Production per 1,000 lbs. of Animal Weight		Excreted Nutrients in Manure per 1,000 lbs. of Animal Weight		
	Solid (tons/year)	Liquid (gallons/year)	N (lbs per year)	P ₂ O ₅ (lbs per year)	K ₂ O (lbs per year)
Beef cattle					
Calf	19.4	4592.1	162.5	73.0	129.5
Feeder (High forage diet)	9.0	2142.4	132.1	39.4	82.8
Feeder (High energy diet)	9.0	2142.4	132.1	39.4	82.8
Cow	16.8	3982.2	127.8	65.7	105.9
Dairy cattle					
Calf	14.6	3358.0	153.3	26.8	126.5
Heifer	11.0	2536.1	110.7	37.7	112.5
Milk cow	20.2	4875.9	263.1	135.3	147.3
Dry cow	9.3	2242.3	109.5	39.3	86.5
Swine					
Nursery	13.8	3367.1	282.9	118.6	164.3
Wean-Finish ¹	10.0	2411.4	225.4	84.6	116.1
Wean-Finish(wet/dry feed) ²	10.0	2411.4	225.4	84.6	116.1
Grow-Finish ¹	9.0	2172.5	211.0	76.1	104.0
Grow-Finish(wet/dry feed) ²	9.0	2172.5	211.0	76.1	104.0
Gestating sow	4.1	1000.5	58.0	36.5	46.0
Lactating sow	8.5	2026.6	163.4	108.7	128.6
Boar	3.8	903.0	51.5	42.0	42.0
Poultry					
Layer	9.1	2068.3	316.3	97.3	146.0
Broiler	17.3	4197.5	383.3	255.5	182.5
Turkey	7.7	1825.0	243.6	160.6	105.9
Horse	10.0	2420.0	87.6	38.3	52.9
Sheep	7.5	1825.0	146.0	73.0	146.0

1. Deep-pit system with nipple waters.

2. Dry feeders used in conjunction with cup or swinging waters have similar results as wet/dry feeders.

Table F. Summary of evaporative losses of solid manure for the storage types identified.*

Adapted From: MPCA Estimates

Animal Type	Daily Scrape and Haul, Stockpile, and Underfloor Dry Storage	Manure Pack	Litter
Dairy Milk Cow	0.76	0.71	
Dairy Dry Cow	0.60	0.56	
Dairy Heifer	0.41	0.38	
Dairy Calf	0.68	0.64	
Beef Feeder (High Forage)	0.68	0.64	
Beef Feeder (High Energy)	0.68	0.64	
Beef Cow	0.68	0.64	
Beef Calf	0.59	0.55	
Chickens - Layer	0.59	0.55	
Chickens - Broiler	0.42	0.39	
Turkeys	0.48	0.45	0.46

*These numbers are multiplied by the manure generation numbers in Table E to account for volume losses due to evaporation.

This page is an attempt to outline changes made from one version to the next

1/13/2022

FY1 - Version numbers are listed in the instructions (far right after title). Tracking changes here started with Version 5.31
Current version is 9.01

Issues	Significance	Fixed in Version
39)	Minor	9.01
38)	Moderate	9.0
37)	Moderate	8.14
36)	Moderate	8.13
35)	Moderate	8.12
34)	Moderate	8.11
33)	Moderate	8.1
32)	Major	Updated version 8.0
31)	Moderate	7.05
30)	Moderate	7.05
29)	Moderate	7.04
28)	Moderate	7.03
27)	Minor	7.02
26)	Minor	7.01
25)	Major New Program	New version 7.0
24)	Moderate	6.21

23)	Added animal mortality worksheet to comply with fed regulations. Will only appear for NPDES and SDS permits. Updated language through out from NPDES/SDS to NPDES & SDS to account for the separation of the permits. Fixed issue when attempting to save a file in the old Excel Format (.xls) from a version of excel whose default is (.xlsx).	Major	6.2
22)	Fixed error with resetting fields back to blank on manure application page and also issues with creating a dual application for the wrong field on the manure app page. Re-worked the individual row resets due to issues with buttons disappearing. Corrected display errors with Transferred Ownership Form choices.	Major	6.13
21)	Fixed error with adding a field after creating records in which data entered into the crop info worksheet would not display correctly if records existed without that field on the record form and fixed issue with manure sources 5-8 displaying.	Major	6.12
20)	Fixed Error that occurred when records were created.	Major	6.11
19)	Added initial question when opening the program to make it easier to import data, fixed error with record keeping forms always displaying zero for manure remaining, updated the transferred manure ownership forms to match hard copies, made the add-ins tab display on startup of the program, added help boxes on some sheets, added a notes page, created a helpful illustration of the correct way to save the program if the user attempts to save incorrectly, and replaced individual check boxes on the field info sheet with double-click check-mark cells instead, and corrected an error with load in of records data not correctly updating on the crop info worksheet.	Major	6.1
18)	Added over-app warning to fertilizer applications, fixed display issue with record creation, added clarifying years to columns on the crop info and manure application pages to eliminate confusion, fixed issues with yield units for alfalfa fair, and corrected error in dual manure app's carry-over N calc on Crop Info sheet (combine carry-over credits from both apps).	Major if using Dual Applications	6.07
17)	Fixed data loading error on records form as it was not displaying manure nutrients	Moderate	6.06
16)	Fixed data loading display error if a manure source was outdoor concrete pit/tank.	Moderate	6.05
15)	Fixed data loading display error on manure records sheets. Fixed Dual/Split data loading display error if first row was blank.	Minor	6.042
14)	Fixed Program Quirk with sheet displays when first row of sheet is blank - now checks entire sheet for entries Fixed Bug with user input of custom rates not saving and importing correctly Fixed Bug with Amount of manure applied and remaining on the land application of manure & records worksheets	Minor	6.04
13)	Fixed program error on manure application page when 1 ton/acre app rate is still over 20% of N Needs of crop	Moderate	6.03

	Fixed error with second crop year record creation & error in data loading when records are present		
	Fixed error with records form not recognizing other animal types and other waste streams		
12)	Fixed Bug with winter app page and import of liquid manure winter app import of data	Minor	6.02
11)	Fixed bug with Sweet Corn, Peas, & Potatoes not giving correct N Needs on Crop Info page Also fixed minor data import issues with checkboxes on Soil Erosion, Transferred Ownership, and Winter App	Moderate	6.01
10)	Created a new version of the program in response to changes in the CAFO reg's from EPA and other changes requested by users	Major New Program	New version 6.0

Redwood Gazette

PROOF OF PUBLICATION

RECEIVED

JUN 14 2024

REDWOOD COUNTY
ENVIRONMENTAL OFFICE

AFFIDAVIT OF PUBLICATION: #2369470
STATE OF MINNESOTA, COUNTY OF REDWOOD

The Redwood Falls Gazette has complied with all of the requirements to constitute a qualified newspaper under Minnesota law, including those requirements found in Minnesota Statutes §331A.02.

Mortgage Foreclosure Notices. Pursuant to Minnesota Statutes §580.033 relating to the publication of mortgage foreclosure notices. The newspapers' known office of issue is located in Brown, Chippewa, Lyon, Polk, Redwood, Watonwan & Yellow Medicine counties. The newspapers comply with the conditions in §580.033, subd. 1, clause (1) or (2), if the newspaper known office of issue is located in a county adjoining the county where the mortgaged premises or some part of the mortgaged premises described in the notice are located, a substantial portion of the newspaper's circulation is in the latter county.

The affixed notice appeared in said newspaper on the following issues:

06/13/2024


Sworn to and subscribed before on 06/13/2024.


Shalon Hartle, Authorized Agent


Notary, State of MN, County of Redwood
Commission expires January 31, 2025

Publication Cost: \$155.10
Order No: 2369470
PO #:

Please do not use this form for payment remittance.

 LEANNE JOY KAIFENBERG
Notary Public
State of Minnesota
My Commission Expires
January 31, 2025

NOTICE OF PUBLIC HEARING

An Animal Confinement Feedlot Conditional Use Permit Application has been filed by Daniel Alexander pursuant to Redwood County Code of Ordinances, Title XV, Sections 153.102 and 153.290, for the expansion of an existing turkey feedlot. The proposed feedlot expansion will include one total confinement brooder barn housing 10,000 turkeys under 5 pounds in weight (50 animal units), with clay floor and wood shaving litter manure storage. After the expansion, the feedlot will have a total of 20,000 turkeys, with 20,000 over 5 pounds in weight and 10,000 under 5 pound in weight (40 animal units), on the following described real property:

All that part of the Northwest Quarter of the Northwest Quarter (NW1/4NW1/4) of Section Twelve (12), Township One Hundred Twelve (112) North, Range Thirty-eight (38) West of the Fifth Principal Meridian, Redwood County, Minnesota, described as follows to-wit:

Beginning on the North line of said Section Twelve (12) a distance of 544.50 feet on an assumed bearing of South 90 00 East from the Northwest Corner of said Section Twelve (12); thence South 90 00 East along the North line of said Section Twelve (12) for 1300.5 feet; thence South 0 00 West for 528.00 feet; thence North 90 00 West for 1305.5 feet; thence North 0 00 West 528 feet to the point of beginning.

A public hearing thereon will be held before the Redwood County Planning Commission at the regularly scheduled Planning Commission meeting starting at 1:00 p.m. on Tuesday, the

25th day of June, 2024, 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) 437-4023, via email at Environmental@co.redwood.mn.us, or in writing at Redwood County Environmental Office, P.O. Box 130, Redwood Falls, MN 56283.

DATED: June 5, 2024

Jeanette Plade
Land Use and
Zoning Supervisor
Redwood County
Environmental Office

Published in Redwood
Falls Gazette June 10,
2024.

2069470

NOTICE OF PUBLIC HEARING

An Animal Confinement Feedlot Conditional Use Permit Application has been filed by Daniel Alexander pursuant to Redwood County Code of Ordinances, Title XV, Sections 153.142 and 153.290, for the expansion of an existing turkey feedlot. The proposed feedlot expansion will include one total confinement brooder barn housing 10,000 turkeys under 5 pounds in weight (50 animal units), with clay floor and wood shaving litter manure storage. After the expansion, the feedlot will have a total of 30,000 turkeys, with 20,000 over 5 pounds in weight and 10,000 under 5 pound in weight (410 animal units), on the following described real property:

All that part of the Northwest Quarter of the Northwest Quarter (NW¼NW¼) of Section Twelve (12), Township One Hundred Twelve (112) North, Range Thirty-eight (38) West of the Fifth Principal Meridian, Redwood County, Minnesota, described as follows to wit:

Beginning on the North line of said Section Twelve (12) a distance of 544.50 feet on an assumed bearing of South 90°00' East from the Northwest Corner of said Section Twelve (12); thence South 90°00' East along the North line of said Section Twelve (12) for 1303.5 feet; thence South 0°00' West for 528.00 feet; thence North 90°00' West for 1305.5 feet; thence North 0°00' West 528 feet to the point of beginning.

A public hearing thereon will be held before the Redwood County Planning Commission at the regularly scheduled Planning Commission meeting starting at 1:00 p.m. on Tuesday, the 25th day of June, 2024, 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, via email at Environmental@co.redwood.mn.us, or in writing at Redwood County Environmental Office, P.O. Box 130, Redwood Falls, MN 56283.

DATED: June 5, 2024

Affidavit of Publication

RECEIVED

State of Minnesota)

JUN 14 2024

) SS.

County of Renville)

REDWOOD COUNTY ENVIRONMENTAL OFFICE

Denise Bonsack, being first duly sworn, on oath states as follows:

1. I am the publisher of the Standard-Gazette & Messenger, or the publisher's designated agent. I have personal knowledge of the facts stated in this Affidavit, which is made pursuant to Minnesota Statutes §331A.07.

2. The newspaper has complied with all of the requirements to constitute a qualified newspaper under Minnesota law, including those requirements found in Minnesota Statutes §331A.02.

3. The dates of the month and the year and day of the week upon which the public notice attached/copied below was published in the newspaper are as follows:

Wed, Jun 13, 2024

4. The publisher's lowest classified rate paid by commercial users for comparable space, as determined pursuant to § 331A.06, is as follows:

\$7.50

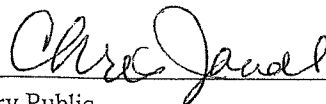
5. Mortgage Foreclosure Notices [Effective 7/1/15]. Pursuant to Minnesota Statutes §580.033 relating to the publication of mortgage foreclosure notices: The newspaper's known office of issue is located in Renville County. The newspaper complies with the conditions described in §580.033, subd. 1, clause (1) or (2). If the newspaper's known office of issue is located in a county adjoining the county where the mortgaged premises or some part of the mortgaged premises described in the notice are located, a substantial portion of the newspaper's circulation is in the latter county.

FURTHER YOUR AFFIANT SAITH NOT.




[Signature]

Subscribed and sworn to before me on this 12 day of June 2024.



Notary Public



TO: Whom It May Concern
FROM: Jeanette Pidde 
Land Use and Zoning Supervisor
Redwood County Environmental Office
DATE: June 14, 2024
RE: Notice of Public Hearing on Animal Confinement Feedlot Conditional Use Permit Application



Please find enclosed a *Notice of Public Hearing* regarding an *Animal Confinement Feedlot Conditional Use Permit Application* submitted by Daniel Alexander, pursuant to Redwood County Code of Ordinances, Title XV, Sections 153.142 and 153.290, for the expansion of an existing turkey feedlot. The proposed feedlot expansion will include one total confinement brooder barn housing 10,000 turkeys under 5 pounds in weight (50 animal units), with clay floor and wood shaving litter manure storage. After the expansion, the feedlot will have a total of 30,000 turkeys, with 20,000 over 5 pounds in weight and 10,000 under 5 pound in weight (410 animal units), on the following described real property:

All that part of the Northwest Quarter of the Northwest Quarter (NW $\frac{1}{4}$ NW $\frac{1}{4}$) of Section Twelve (12), Township One Hundred Twelve (112) North, Range Thirty-eight (38) West of the Fifth Principal Meridian, Redwood County, Minnesota, described as follows to wit:

Beginning on the North line of said Section Twelve (12) a distance of 544.50 feet on an assumed bearing of South 90°00' East from the Northwest Corner of said Section Twelve (12); thence South 90°00' East along the North line of said Section Twelve (12) for 1303.5 feet; thence South 0°00' West for 528.00 feet; thence North 90°00' West for 1305.5 feet; thence North 0°00' West 528 feet to the point of beginning.

A public hearing thereon will be held before the Redwood County Planning Commission at the regularly scheduled Planning Commission meeting starting at 1:00 p.m. on Tuesday, the 25th day of June, 2024, at the Board Room of the Redwood County Government Center located at 403 South Mill Street, Redwood Falls, MN 56283.

Pursuant to Redwood County Zoning Ordinance, all property owners of record within five hundred (500) feet of the incorporated areas and/or one-quarter (1/4) of a mile of the affected property or the ten (10) properties nearest to the affected property, whichever would provide notice to the greatest number of landowners in the unincorporated areas, the township in which the affected property is located, and all municipalities within two (2) miles of the property are required to be notified in writing of the time and place of the public hearing.

If you have any comments or questions regarding this matter, please contact the Redwood County Environmental Office by telephone at (507) 637-4023, via email at Environmental@co.redwood.mn.us, or by mail at *Redwood County Environmental Office, P.O. Box 130, Redwood Falls, MN 56283*, and/or attend the public hearing at the time and date set forth in the *Notice of Public Hearing*.

enclosure

cc: Daniel Alexander (w/encl.)

Redwood County Government Center - Environmental Department
P.O Box 130 Redwood Falls, MN 56283
(507) 637-4023 redwoodcounty-mn.us Environmental@co.redwood.mn.us



NOTICE OF PUBLIC HEARING

An *Animal Confinement Feedlot Conditional Use Permit Application* has been filed by Daniel Alexander pursuant to Redwood County Code of Ordinances, Title XV, Sections 153.142 and 153.290, for the expansion of an existing turkey feedlot. The proposed feedlot expansion will include one total confinement brooder barn housing 10,000 turkeys under 5 pounds in weight (50 animal units), with clay floor and wood shaving litter manure storage. After the expansion, the feedlot will have a total of 30,000 turkeys, with 20,000 over 5 pounds in weight and 10,000 under 5 pound in weight (410 animal units), on the following described real property:

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

DATED: June 5, 2024

Jeanette Pidde
Land Use and Zoning Supervisor
Redwood County Environmental Office

Redwood County Government Center - Environmental Department
P.O Box 130 Redwood Falls, MN 56283

(507) 637-4023 redwoodcounty-mn.us Environmental@co.redwood.mn.us



Parcel ID: 68-012-2040

Selected Parcel

Notification Area

Municipal Boundaries

Sections

Roads

Parcels

CUP Notification Area:
0.6 miles from selected parcel

0 1,250 2,500 Feet

3184	3610 720024040	ALEXANDER/PAUL D & KATHRYN M		20797 330 ST	BELVIEW	MN	56214
14592	18427 720123040	ALEXANDER/ROBERT B & SONYA L		21221 320 ST	BELVIEW	MN	56214
3181	3607 720024020	ANDERSON/KAREN M/REV TRUST	% KAREN M & JEROME A ANDERSON	6600 LYNDAL AVE S #903	RICHFIELD	MN	55423
2192	2549 720121040	DONNERCHAD & LEAH		32680 GARDEN AVE	BELVIEW	MN	56214
2307	2674 720121020	MAHOOD REVOCABLE TRUST	% SARA J ALEXANDER MAHOOD	PO BOX 503	SOLDOTNA	AK	99669
4069	4595 720021040	MANDELKOW/DALE W & JAN M/ETAL		20388 ST HWY 19	BELVIEW	MN	56214
3182	3608 720013020	PREUSS/DENNIS DEAN/TRUST ETAL		1140 610 ST	ECHO	MN	56237
2209	2566 720111040	SICKMAN/MARK H/CREDIT TRUST	% AARON W SICKMAN	13526 COUCHTOWN AVE	ROSEMOUNT	MN	55068
2328	2696 720111020	STOCKMAN/CAROLE A/REV TRUST	% JANE STOCKMAN	143 ORLIN AVE SE	MINNEAPOLIS	MN	55414
2146	2494 720114050	ZITZMANN/TIMOTHY GRANT/ VESTA TOWNSHIP DANIEL ALEXANDER	& RHONDA % BARBARA SCHMIDT	PO BOX 271 31826 DERBY AVE PO BOX 56	RENVILLE VESTA VESTA	MN MN MN	56284 56292 56292