ROBERT J. BRUNDAGE
EDWARD C. CLAUSEN
MARK W. COMLEY
JOSHUA L. HILL
KIMBERLY J.Z. HUBBARD
CATHLEEN A. MARTIN

NEWMAN COMLEY RUTH

RYAN J. MCDANIELS
STEPHEN G. NEWMAN
JOHN A. RUTH
NICOLE L. SUBLETT
ALICIA EMBLEY TURNER

August 5, 2016

Via Email Only

Chris Wieberg, Chief
Water Protection Program – Permits Section
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102-0176
chris.wieberg@dnr.mo.gov

RE: Trenton Farms Application

Dear Mr. Wieberg:

On August 3, 2016, I submitted a redacted version of Luke Minion's letter to the department dated July 13, 2016. Since submitting that redacted letter, Trenton Farms RE, LLC has decided to reduce the scope of the redactions. Accordingly, please find enclosed Mr. Minion's July 13 letter with fewer redactions than shown on the August 3 submission.

Sincerely,

By: Robert J Brundage

Robert J. Brundage
rbrundage@ncrpc.com

RJB:la
Enclosure
ec: Trenton Farms RE, LLC (via email w/encl.)
Gorden Wray (via email w/encl.)
Dawn Brooks, Records Custodian, MDNR (via email w/encl.)

PIPESTONE®

1300 South Highway 75
PO Box 188
Pipestone, MN 56164

July 13, 2016

Via Hand-Delivery

Mr. Greg Caldwell
Water Protection Program
Missouri Department of Natural Resources
1101 Riverside Dr.
Jefferson City, MO 65101

RE: In Re: Trenton Farms RE, LLC
Application for a Class IC CAFO Missouri State Operating Permit

Dear Mr. Caldwell:

As you are aware, on August 12, 2015, the Department of Natural Resources issued to Trenton Farms RE, LLC ("Trenton Farms") a Missouri State Operating Permit for a Class IC CAFO. The permit was appealed by Hickory Neighbors United. The Administrative Hearing Commission recommended the MDNR's decision to issue the permit be upheld. However, on February 24, 2016, the Missouri Clean Water Commission reversed the MDNR's decision and denied the application for a Missouri State Operating Permit. Trenton Farms has appealed that decision. In the event the appeal is unsuccessful, Trenton Farms has decided to re-apply for the permit and provide more information concerning the two items that were the basis for the Missouri Clean Water Commission's decision to deny the permit. If Trenton Farms ultimately prevails in its appeal and the original permit is upheld, Trenton Farms will likely withdrawal the enclosed application for a Missouri state operating permit.

Protection From Inundation From 100 Year Flood

The enclosed application includes a Flood Plain Certification for Trenton Farms' property. Also enclosed are engineering drawings and an engineering certification from Todd Van Maanen certifying that the proposed building sites are protected from inundation from the 100 year flood as a result of the site design.

Continuing Authority

Missouri Clean Water Commission regulation 10 CSR 20-6.010(3)(A) requires applicants for new operating permits "show, as part of their application, that a permitted organization exists which will serve as the continuing authority for the operation, maintenance and modernization of the facility for which the application is made." The regulation requires that the applicant provide "proof to the department and the continuing authority has submitted a statement indicating acceptance of the facility." As required by this regulation, I enclose a Certificate of Good Standing from the Missouri Secretary of State's Office that shows that Trenton Farms RE, LLC is a Missouri limited liability company

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Pipestone, MN 56164

that is in good standing. On behalf of Trenton Farms, I hereby make this statement indicating Trenton Farms' acceptance of the facility and pledge that Trenton Farms accepts responsibility to serve as the continuing authority for the operation, maintenance and modernization of the facility.

As stated in the Missouri Clean Water Commission's February 24, 2016, Final Decision, the Commission now interprets its continuing authority regulation to require "more than just a permanent organization." Unfortunately, the Final Decision provides no information or direction on what additional information is required in addition to proof that Trenton Farms is a permanent organization. Trenton Farms is aware of Leanne Tippett Mosby's May 26, 2016 memorandum to the Missouri Clean Water Commission. This memorandum says that the department will only request applicants to certify they are a permanent organization responsible for the operation, maintenance and modernization of the facility. It says the department would accept any supplementary information in support of this statement that the applicant may choose to submit. To date, we understand the Missouri Clean Water Commission has not responded to this memorandum and therefore, has apparently accepted the department's proposed course of action to implement the continuing authority regulation. Consequently, in light of the lack of clarity from the Clean Water Commission's Trenton Farms decision, Trenton Farms is relying upon Ms. Mosby's memorandum when it prepared the enclosed application for a Missouri state operating permit.

In an attempt to supplement my continuing authority certification statement made above, Trenton Farms explains below its corporate structure and its plans to finance and operate the Class IC CAFO. Trenton Farms understands this is the first time that any CAFO or industry has provided corporate and financial information to MDNR. This information is very sensitive and Trenton Farms requests it considered confidential business information (CBI).

1) Corporate Structure: Trenton Farms RE, LLC is a limited liability company organized in Missouri on March 25, 2015. According to its Articles of Organization, its duration is perpetual. The company is in good standing with the Missouri Secretary of State. PVC Management II, LLC is the sole member of Trenton Farms. PVC Management II, LLC is wholly owned by Pipestone Holdings, LLC, a Minnesota limited liability company. [redacted]

   On or about October 19, 2015, PVC Management II, LLC adopted and approved the Trenton Farms' Operating Agreement. PVC Management II, LLC has not yet made a capital contribution to Trenton Farms. PVC Management II, LLC will make capital contributions as described below after it receives from the MDNR a final Missouri State Operating Permit and all legal challenges have been exhausted.

   PVC Management II, LLC has designated me to be the corporate Manager of Trenton Farms. A separate employee will serve as the on-site farm manager. On March 25, 2015, I executed on behalf of Trenton Farms an *Assignment and Assumption Agreement* that assumed the rights to an option to purchase the property on which the Trenton Farms CAFO is proposed to be constructed.

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Pipestone, MN 56164

2) Construction Costs: Pipestone has more than 25 years' experience designing and constructing modern livestock production facilities. Pipestone System has designed and constructed over 50 facilities. The projected construction cost of the Trenton Farms' facility is estimated to be approximately $11 Million.

3) Funding of Construction. The Trenton Farms' construction costs will be funded through a combination of owner equity (contributed capital) and traditional debt financing (approximately 35% owner equity and 65% debt).

[redacted]

ii) Traditional debt will be secured from AgStar Financial for approximately $7 Million. [RB1]

[redacted]

5) Insurance. Trenton Farms will carry comprehensive general liability insurance and pollution insurance.

a) Trenton Farms' comprehensive general liability insurance will include "replacement cost" for livestock and facility from Nationwide Insurance (A+ rated).

[redacted]

c) Trenton Farms will also have pollution insurance coverage in the unlikely event of a manure spill or release that causes damage.

6) Financial Statement. Projected Financial Statements for the Project (Balance Sheet & Income Statement) can be submitted if the MDNR and Clean Water Commission agree they will be kept confidential.

7) Abandonment Commitment. At the time when Trenton Farms, or its successor or assigns, determines that the useful economic life of the facility has been depleted, it will undertake, at its cost, the removal, destruction and cleanup of the facility pursuant to applicable construction and demolition industry and engineering standards, as well as any applicable local, state and/or federal regulations. Nothing restricts or limits Trenton Farms' ability and right to maintain, fix, remodel, refurbish, reconstruct or otherwise improve the facility, assuming such activities are performed in compliance with all issued and/or effective permits, authorizations, laws, statutes, orders or regulations.

8) Emergency Plan. Although not required by law, I also enclose an *Emergency Plan* to guide a response in the unlikely event the farm experiences a spill or other environmental mishap.

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Pipestone, MN 56164

Should you require any additional information, please contact me at your earliest convenience.

Sincerely,

TRENTON FARMS RE, LLC

By: 

Luke Minion, Manager

Enclosures
c: Robert Brundage (w/encls.)

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

FORM W - CONCENTRATED ANIMAL FEEDING OPERATION (CAFO) OPERATING PERMIT APPLICATION

FOR OFFICE USE ONLY	
CHECK NUMBER:	
DATE RECEIVED	FEE SUBMITTED

Complete all applicable sections. Instructions for completing the form are located at the end of the form. Sign, date and return the form and all requested documents along with a check for the appropriate permit fee to the Missouri Department of Natural Resources. Make a copy of this completed form and keep it with your nutrient management plan.

PART 1 – PERMIT OWNERSHIP AND CONTACT INFORMATION

1.1 OPERATION NAME	CURRENT PERMIT NUMBER	COUNTY
Trenton Farms RE, LLC	MO-	Grundy
PHYSICAL ADDRESS	LEGAL DESCRIPTION	TELEPHONE NUMBER WITH AREA CODE
SW State Hwy W	Sec.: 19 Twn.: 60N Rng.: 24W	(507) 825-7032
CITY	STATE	ZIP CODE
Trenton	MO	64683
1.2 OWNER (PROVIDE LEGAL NAME)	EMAIL ADDRESS	
Trenton Farms RE, LLC		
MAILING ADDRESS		TELEPHONE NUMBER WITH AREA CODE
1300 S. Hwy 75		(507) 825-7032
CITY	STATE	ZIP CODE
Pipestone	MN	65164
1.3 CONTINUING AUTHORITY (IF DIFFERENT THAN THE OWNER)		
MAILING ADDRESS		TELEPHONE NUMBER WITH AREA CODE
CITY	STATE	ZIP CODE

PART 2 – PERMIT TYPE AND PERMIT ACTION

2.1 PERMIT TYPE

☐ NPDES Site Specific Permit
Request review of draft permit prior to public notice. ☐ Yes ☐ No

☐ NPDES General Permit (MOG01)

☑ State No-Discharge General Permit (MOGS1)

2.2 PERMIT ACTION*

☑ New Permit ☐ Renewal
☐ Modification ☐ Ownership Transfer

PREVIOUS OWNERS NAME

ADRESS

CITY STATE ZIP CODE

SIGNATURE DATE

*See instructions for additional requirements and documents for the request permit action.

PART 3 – DESIGN CAPACITY FOR MANURE STORAGE AND ANIMALS OF EACH CAFO FEATURE

3.1 STORAGE STRUCTURE TYPES, AMOUNT OF STORAGE, AND AMOUNT OF MANURE GENERATED PER YEAR.

List All Manure Storage Structures at each CAFO Feature		Dry Manure Handling System		Wet Manure Handling System			
CAFO Feature	Storage Structure Type(s)	Design Dry Process Waste (tons/yr.)	Days of Storage	Total Storage Capacity (gal)	Design Wastewater per Year (gal./yr.)	Days of Storage	Design Flow MGD
001	C - Gestation Barn			7,074,162	2,448,373	365+	
002	C - Farrowing Barn, drains into Gestation Barn				1,238,774	365+	
003	C - GDU			781,295	530,368	365+	
004							
005							

3.2 LIST EACH TYPE OF ANIMAL IN CONFINEMENT AND THE NUMBER OF EACH ANIMAL TYPE.

CAFO Feature	Animal Category #1	Animal Numbers	Animal Category #2	Animal Numbers	Animal Category #3	Animal Numbers
001	5 - Gestation Barn	4480				
002	5 - Farrowing Barn	936				
003	5 - GDU	960	4 - GDU	320		
004						
005						

PART 4 – OPERATIONAL INFORMATION

4.1 OPERATIONAL INFORMATION (SEE INSTRUCTIONS)
SIC Code(s) 0213 CAFO Class Size 1C

4.2 Is this an export-only operation? ☐ Yes ☑ No

Completing PARTS 5 - 11 will meet the requirements of a Nutrient Management Plan (NMP) for an export only operation.

PART 5 – MANURE STORAGE

5.1 Do all manure storage structures have adequate storage, and operated and maintained as no discharge? ☑ Yes ☐ No

PART 6 – ANIMAL MORTALITY

6.1 PEMANENT METHOD OF DISPOSING OF ROUTINE ANIMAL MORTALITIES.
☑ Composting ☐ Rendering ☐ Send to a Landfill ☐ Incineration ☐ Other (Describe)

6.2 DESCRIBE METHOD OF MORTALITY HANDLING AND STORAGE THROUGH ALL PHASES TO FINAL DISPOSAL. (EXAMPLE: MORTALITIES ARE COMPOSTED WITHIN 24 HOURS OF DEATH AND FINISHED COMPOST PRODUCT IS STORED UNDER ROOF UNTIL LAND APPLIED). ALSO DESCRIBE THE TYPE OF COMPOST STRUCTURE USED, IF APPLICABLE.

Mortalities are composted within 24 hours of death and finished compost product is stored under roof until land applied. See attached documents for composter design.

PART 7 – DIVERSION OF CLEAN WATER

7.1 Is clean stormwater diverted from the production area? ☑ Yes ☐ No

7.2 IF YES, DESCRIBE CONTROLS AND MEASURES USED TO DIVERT STORMWATER.

Production area is covered by roof and enclosed within confinment buildings.

7.3 IF NO, DESCRIBE HOW CONTAMINATED STORMWATER IS CONTAINED AND INCLUDE THE STORAGE CAPACITY OF THE CONTAINMENT IF NOT PREVIOUSLY PROVIDED.

PART 8 – PREVENT DIRECT CONTACT OF ANIMALS WITH SURFACE WATERS

8.1 Do the animals have access to waters of the state within the production area? ☐ Yes ☑ No

8.2 LIST MEASURES USED TO PREVENT CONFINED ANIMAL FORM HAVING DIRECT CONTACT WITH WATERS OF THE STATE.

Animals are confined.

PART 9 – CHEMICAL HANDLING

9.1 Check the appropriate boxed below to indicate method for handling and disposal of chemicals used by the operation:

☑ Chemicals are stored, handled, and disposed of according to manufacturer labels.
☑ Chemical storage and handling areas are protected from precipitation and runoff, and any spillage is contained within these areas.
☐ Emergency procedures and equipment are in place to contain and clean up chemical spills.
☐ Equipment wash areas are designed and constructed to prevent contamination of surface waters.
☐ No chemicals are stored or handled in the production area.

PART 10 – MANURE ANALYSIS TESTING

10.1 LIST EACH TYPE OF MANURE SOURCE. (i. e. MANURE, LITTER, COMPOST, WASTE WATER.)

Manure, compost, waste water

10.2 DESCRIBE PROCEDURES FOR ENSURING EACH MANURE SOURCE IS TESTED ANNUALLY.

Manure storage pits will be sampled annually, with samples analyzed for nutrients by a certified laboratory.

PART 11 – RECORD KEEPING

11.1 Are records of all inspections, manure transfers, discharges and land application maintained? ☑ Yes ☐ No

PART 12 – SIGNATURE

NAME	TITLE
Luke W. Minion	Chief Manager
SIGNATURE	DATE
	6.28.16

Part 13 - Engineer Certification

House Bill 28, which became effective Aug 28, 2013, contained provisions that changed construction permitting requirements. Construction permits are required for the construction of an earthen storage structure to hold, convey, contain, store, or treat domestic, agricultural, or industrial process wastewater. Construction of all other point source systems designed to hold, convey, contain, store, or treat domestic, agricultural, or industrial process waste must be designed by a professional engineer registered in Missouri in accordance with design regulations.

Operation Name Address City	Engineer Firm Address City State Zip Code
I, Project Engineer, certify that above described systems have been designed in accordance with Missouri CAFO design regulations in 10 CSR 20-8.300 PROJECT ENGINEER SIGNATURE	ENGINEER SEAL

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

FORM W - CONCENTRATED ANIMAL FEEDING OPERATION (CAFO) OPERATING PERMIT APPLICATION

FOR OFFICE USE ONLY	
CHECK NUMBER:	
DATE RECEIVED	FEE SUBMITTED

Complete all applicable sections. Instructions for completing the form are located at the end of the form. Sign, date and return the form and all requested documents along with a check for the appropriate permit fee to the Missouri Department of Natural Resources. Make a copy of this completed form and keep it with your nutrient management plan.

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Trenton Farms RE, LLC		
MAILING ADDRESS		TELEPHONE NUMBER WITH AREA CODE
1300 S. Hwy 75		(507) 825-7032
CITY	STATE	ZIP CODE
Pipestone	MN	65164
1.3 CONTINUING AUTHORITY (IF DIFFERENT THAN THE OWNER)		
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Request review of draft permit prior to public notice. ☐ Yes ☐ No

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ADRESS

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NAME	TITLE
SIGNATURE	DATE

Part 13 - Engineer Certification

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Operation Name Trenton Farms RE, LLC
Address SW State Hwy W
City Trenton MO 64683

Engineer Firm Stockwell Engineers, Inc
Address 25 Walnut, Yankton SD
City State Zip Code 57078

I, Project Engineer, certify that above described systems have been designed in accordance with Missouri CAFO design regulations in 10 CSR 20-8.300

PROJECT ENGINEER SIGNATURE

ENGINEER SEAL

STATE OF MISSOURI
TODD W. VAN MAANEN
NUMBER E-29685
REGISTERED PROFESSIONAL ENGINEER

MO 780-2112 (07-14)

STATE OF MISSOURI

Jason Kander
Secretary of State

CORPORATION DIVISION
CERTIFICATE OF GOOD STANDING

I, JASON KANDER, Secretary of State of the STATE OF MISSOURI, do hereby certify that the records in my office and in my care and custody reveal that

Trenton Farms RE, LLC
LC001440873

was created under the laws of this State on the 25th day of March, 2015, and is active, having fully complied with all requirements of this office.

IN TESTIMONY WHEREOF, I hereunto set my hand and cause to be affixed the GREAT SEAL of the State of Missouri. Done at the City of Jefferson, this 12th day of July, 2016.

Jason Kander
Secretary of State

Certification Number: CERT-07122016-0011

TRENTON FARMS RE, LLC
SWINE FACILITY

State HWY W
Trenton, MO 64683

GESTATION FACILITY MANURE PRODUCTIONS & STORAGE CALCULATIONS

FARROWING FACILITY MANURE PRODUCTION & STORAGE CALCULATIONS

GILT DEVELOPMENT FACILITY MANURE PRODUCTION & STORAGE CALCULATIONS

Prepared by

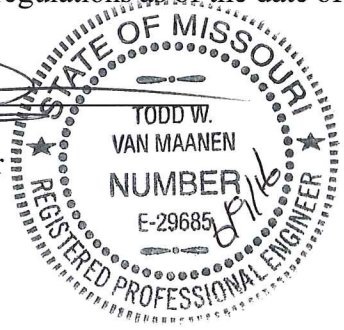
STOCKWELL

215 Walnut, Yankton, SD 57078

May 10, 2016

I hereby certify that I am a licensed professional in the State of Missouri. To the best of my knowledge, information and belief, the manure management and containment system is designed in general conformance with applicable laws, codes, and regulations as of the date of signing.

Todd Van Maanen, P.E.
Missouri Licensed Civil Engineer
License No. PE-29685



AWMS Computations For
Deep Pit Swine Production Operations - Gestation Barn

Producer:	Trenton Farms RE, LLC	County:	Grundy County, MO
Address:	State Highway W	Location:	SW 1/4, Section 19, T60N, R24W
	Trenton, MO 64683		
Phone:	641-682-0222		

Project No. Y15155 Date: 10-May-16

Manure Production For Animal Operations

Manure Characteristics, MWPS-18, Section 1, Second Edition
Table 6

Animal Type	Size, lb	Manure Production ft^3 / day	No. of Animals	Waste Volume ft^3 / day
Nursery Pig	25	0.04	0	0
Nursery Pig	40	0.05	0	0
Finishing	150	0.12	0	0
Finishing	200	0.16	0	0
Gestating	400	0.15	4,480	672
Gestating**	450	0.165	0	0
Gestating	500	0.18	0	0
Lactating	375	0.28	0	0
Lactating	500	0.37	0	0
Boar	300	0.10	0	0
Boar	400	0.13	0	0

**Production Data Interpolated from Table Values

Total Number of Swine	4,480	
Total Animal Waste Volume	672	ft^3 / day
Desired Storage Period for AWMS Facility	365	days
Total Waste Storage Volume Required	**245,300**	**ft^3**

Washwater Volume Requirements

Washwater Usage : gal. / animal /day	0.25	Factor of Safety	1.5
Washwater Volume per day		1,680	gallons
Washwater as percent of Waste Volume		33	percent
Washwater storage required		**82,000**	**ft^3**

Total Waste and Washwater Production (Farrowing):	**165,600**	**ft^3**
Total Waste and Washwater Production (Gestation):	**327,300**	**ft^3**
Total Waste and Washwater Produced	**492,900**	
Total Waste & Washwater Storage Available:	**945,678**	**ft^3**

AWMS Computations For
Deep Pit Swine Production Operations - Farrowing Barn

Producer:	Trenton Farms RE, LLC	County:	Grundy County, MO
Address:	State Highway W Trenton, MO 64683	Location:	SW 1/4, Section 19, T60N, R24W
Phone:	641-682-0222		

Project No. Y15155 Date: 10-May-16

Manure Production For Animal Operations

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Finishing	200	0.16	0	0
Gestating	300	0.11	0	0
Gestating	300	0.15	0	0
Lactating	375	0.28	0	0
Lactating**	450	0.334	936	313
Lactating	500	0.37	0	0
Boar	300	0.10	0	0
Boar	400	0.13	0	0

**Production Data Interpolated from Table Values

Total Number of Swine	936	
Total Animal Waste Volume	313	ft^3 / day
Desired Storage Period for AWMS Facility	365	days
Total Waste Storage Volume Required	**114,200**	**ft^3**

Washwater Volume Requirements

Washwater Usage : gal. / animal /day	0.75	Factor of Safety	1.5
Washwater Volume per day		1,053	gallons
Washwater as percent of Waste Volume		45	percent
Washwater storage required		**51,400**	**ft^3**

Total Waste and Washwater Storage Volume Required: 165,600 ft^3

Producer:	Trenton Farms RE, LLC	County:	Grundy County, MO
Address:	State Highway W	Location:	SW 1/4, Section 19, T60N, R24W
	Trenton, MO 64683		Gestation Barn

Project No: Y12129 Date: 26-Jun-12

Deep Pit Volumes

Total Interior Length	639.33	ft.
Total Interior Width	166.17	ft.
Total Wall Height	10.00	ft.
	0.00	ft.
Top of Wall to Bottom of Vent Opening	0.00	ft.
Freeboard	1.00	ft.
Total Air Circulation Space	1.00	ft.
Max. Depth of Waste	9.00	ft.
	956,137	ft^3

Column Volumes

Number		880	
Rectangular	Length	0.00	ft.
	Width	0.00	ft.
Circular	Diameter	1.00	ft.
Base Volume		0.00	ft^3
Max. Depth of Waste		9.00	ft.
Volume per Column at Max. Depth		7.07	ft^3
		6,220	ft^3

Pumpout Pits

Number	2	
Interior Length	8.50	ft.
Interior Width	8.50	ft.
Maximum Depth of Waste	9.00	ft.
	1,301	c.f.

Openings

Width	8.50	ft.
Thickness	0.83	ft.
Max. Depth of Waste	9.00	ft.
	126.99	ft^3

Divider Wall

Total Interior Length		639.33	ft.
Width		1.00	ft.
Openings	Length	4.00	ft.
	Height	2.00	ft.
	Number	11	
Max. Depth of Waste		9.00	ft.
Volume at Max. Depth		5,665.97	ft^3

Total Volume / Pit	945,678	ft^3
Total Number of Buildings	1	
Total Capacity	**945,678**	ft^3

AWMS Computations For GDU Barn

Producer: Trenton Farms RE, LLC
Address: State Highway W
Trenton, MO 64683
Phone: 641-682-0222

County: Grundy County, MO
Location: SW 1/4, Section 19, T60N, R24W

Project No. Y15155 Date: May 10, 2016

Manure Production For Animal Operations

Manure Characteristics, MWPS-18, Section 1, Second Edition
Table 6

Animal Type	Size, lb	Manure Production ft^3 / day	No. of Animals	Waste Volume ft^3 / day
Nursery Pig	25	0.04	160	6
Nursery Pig	40	0.05	160	8
Finishing	150	0.12	960	115
Finishing**	170	0.1360	0	0
Finishing	200	0.16	0	0
Gestating	400	0.15	0	0
Gestating	500	0.18	0	0
Lactating	500	0.37	0	0
Lactating	600	0.45	0	0
Boar	300	0.10	0	0
Boar	400	0.13	0	0

**Production Data Interpolated from Table Values

Total Number of Swine	1,280	
Total Animal Waste Volume	130	ft^3 / day
Desired Storage Period for AWMS Facility	365	days
Total Waste Storage Volume Required	**47,400**	**ft^3**

Washwater Volume Requirements

Washwater Usage : gal. / animal /day	0.25	Factor of Safety	1.5
Washwater Volume per day		480	gallons
Washwater as percent of Waste Volume		49	percent
Washwater storage required		**23,500**	**ft^3**

Total Waste and Washwater Storage Volume Required: 70,900 ft^3

Producer:	Trenton Farms RE, LLC	County:	Grundy County, MO
Address:	State Highway W	Location:	SW 1/4, Section 19, T60N, R24W
	Trenton, MO 64683		GDU Barn

Project No: Y15155 Date: 10-May-16

Approximate Deep Pit Volumes

Total Interior Length	129.17	ft.
Total Interior Width	91.33	ft.
Total Wall Height	10.00	ft.
	0.00	ft.
Top of Wall to Bottom of Vent Opening	0.00	ft.
Freeboard	1.00	ft.
Total Air Circulation Space	1.00	ft.
Max. Depth of Waste	9.00	ft.
	106,174	ft^3

Column Volumes

Number		108	
Rectangular	Length	0.00	ft.
	Width	0.00	ft.
Circular	Diameter	1.00	ft.
Base Volume		0.00	ft^3
Max. Depth of Waste		9.00	ft.
Volume per Column at Max. Depth		7.07	ft^3
		763	ft^3

Pumpout Pits

Number	4	
Interior Length	6.00	ft.
Interior Width	6.00	ft.
Maximum Depth of Waste	9.00	ft.
	1,296	c.f.

Openings

Width	6.00	ft.
Thickness	0.83	ft.
Max. Depth of Waste	9.00	ft.
	179.28	ft^3

Divider Walls

Number of Walls		3	
Length		91.33	ft.
Wall Thickness		1.00	ft.
Height of Wall		10.00	ft.
Max. Depth of Waste		9.00	ft.
		2,465.91	ft^3
Openings (per wall)			
	Number	1	
Rectangular	Width	4.00	ft.
	Height	2.00	ft.
Round	Diameter	0.00	ft.
	Thickness	1.00	ft.
		8.00	ft^3

Total Volume / Building	104,444	ft^3
Total Number of Buildings	1	
Total Capacity	104,444	ft^3

July 13, 2016

Attn: Greg Caldwell
Missouri Department of Natural Resources
Water Protection Program
P.O. Box 176
Jefferson City, MO 65102

RE: Trenton Farms RE, LLC, Grundy County, Missouri
Project No. Y15118

Dear Mr. Caldwell:

We continue to strive to provide the best designs possible for our project. With that said we have reviewed the compost calculations and further defined the animal sizing and number breakdowns. I would ask that you utilize this set of documents dated July 13, 2016 in lieu those originally submitted dated May 9, 2016.

Find enclosed the design submittal information for the Trenton Farms RE, LLC Composting Facility. This information is being submitted to your office for the review and approval of the actively managed composting system to be utilized by the aforementioned facility. For your ease of review, these requirements have been paraphrased and answered in the following order.

1) Responsible Party for entire project: Trenton Farms RE, LLC, Luke Minion, 1300 S HWY 75, PO Box 188, Pipestone, MN 56164
- Legal Description: SW 1/4, Section 19, T60N, R24W, Grundy County, Missouri
- Site Information: The Swine Production Operation includes 6,376 head breeding swine (which includes 960 head of development gilts in the GDU unit) and associated piglets, plus 360 head of nursey piglets in the GDU unit. The compost facility will be located northwest portion of the swine site. Enclosed is a Site Map of the Trenton Farms RE, LLC Composting facility.

2) Site Preparation: The composter should be built on an impervious weight-bearing pad that is large enough to allow equipment to maneuver, covered with a roof to prevent excessive moisture on composting

material and built of rot resistant material that is strong enough to with stand the force exerted by equipment. Included are a Site Layout Map of the facility and the Compost Building Details.

3) Type of Carcass: Swine

4) Disposition of Finished Compost: The finished compost will be primarily be recycled back into the as a starter bulking agent or utilized for land application in conjunction with their Missouri Department of Natural Resources approved Nutrient Management Plan.

5) Estimated Quantity: The average daily death loss is calculated at 616 pounds per day, which can also be translated as total death loss per year at 224,840 pounds. Please refer to the Compost Bin Sizing Spreadsheet that illustrates this data. *Note the formula has determined that 7 bins are required, but as a safety factor 9 bins will be constructed.*

6) Type of Composting Materials: The bulking agents that will be utilized are locally available wood chips and/or sawdust. At times shredded cornstalks will be introduced into the mixture at no greater than a 50/50 blend. Compost material generated from the operation shall also be utilized in the bulking mixture as a start agent. An estimated 833 cubic yards (341,424 pounds, assuming sawdust bulk density) of bulking material will be required annually. Please refer to the Compost Bin Sizing Spreadsheet for this data.

7) Actively Managed Composting Procedure: **Note that the University of Missouri Extension's current published composting procedure is for static pile system. The actively managed composting procedure was taken from Composting Animal Mortalities, Minnesota Department of Agriculture, May 2009.The procedure, computations and the composter building design were completed with the consultation of the University of Missouri's Extension Service.*

- Place at least 12 inches of bulking agent on the floor of the composting bin. This layer will insulate the composting material from the outside environment, provide carbon to fuel the composting process, and absorb liquids.
- Place the carcasses in a single layer on top of the bulking agent one foot from the wall of the bin and at least six inches apart. This allows air to

circulate around the carcasses and insulates them from the environment. Depending on the size of the bin and of the loader, one may not want to build a whole single layer first, because the loader may not be able to reach the back of the bin when more carcasses are added later. This can be avoided by building the pile from the back, building it up and forward simultaneously.

- Cover the carcasses with about 12 inches of bulking agent. Add water as needed to maintain the proper moisture level. Because it is difficult to add water evenly, consider adding it to the bulking agent before it goes on the pile. Caution: If the pile dries out (25% to 45% moisture) and if piles are too large, spontaneous combustion can occur, just as with hay or silage. Attention to moisture, temperature, and pile size is the best protection. An accessible water supply is a good safety precaution. If manure will be used, add it either beneath the bulking agent or incorporated with the bulking agent. The pile is now ready for the next layer.
- Record the species, class, and weight of the carcasses, and the amount and type of bulking agent and into the compost log.
- Place additional carcasses as they become available on the pile in layers following these same steps, allowing 6 to 12 inches of bulking agent between layers. More than one species can be composted in the same bin (if applicable). It may be necessary to use the loader bucket to dig a depression to hold the fresh carcass in place before covering it with bulking agent, especially if it is a large animal. Continue adding carcasses until the pile is close to the top of the bin. Cover the top of the pile with 12 inches of bulking agent to reduce odor and protect against pests. SD Animal Industry Board regulations require that flies, rodents, and vermin be controlled so as not to be a health hazard to human or animal populations.
- After the bin is full, start a second bin following these same steps. Leave the first bin to compost. This first bin has carcasses at various stages of decomposition from largely decomposed (first one in) to just beginning (last one in).
- Monitor the pile daily to make sure that all carcass parts stay completely covered by bulking agent. The pile will settle, so you may need to add additional bulking agent over the top.
- Check the temperature daily and record it in the compost log. The temperature should be taken at multiple locations in the pile, especially near the last animal that was added. Temperatures should be increasing and should soon be between 130° and 150° F.
- If it seems that the pile is not composting correctly because of the temperature or because there are odors, some troubleshooting will need to be done and make adjustments accordingly.
- Once the pile reaches at least 130°F, it should stay above that temperature for at least one week. Do not start counting the days until the area that was

added to the pile last reaches this temperature. When the temperature drops, the pile is ready to be turned.

- The typical primary composting time is approximately 45 days for carcasses weighing from 25 to 300 lbs. See the table of estimates for primary composting times by carcass weight.

Primary Composting Times

Primary Carcass Size (lb)	*Estimated Composting Days*
0-10	15
10-25	22
25-300	45

8) Plan for Turning the Pile and Finishing the Compost: **As taken from* Composting Animal Mortalities*, Minnesota Department of Agriculture, May 2009.*

- Layer the bottom of an empty bin with 12 inches of bulking agent.
- Use a front-end or skid loader to move the material from the primary bin to the secondary bin, one bucket at a time. This aerates the pile. Minimal flesh or soft bones should be present, but long bones, skulls, teeth, and pelvis, and some hide, feathers, and fleece may remain. There may be some odor while turning due to disturbance of the anaerobic zones. Look to see whether water needs to be added. If so, add it to the existing pile as needed before or while it is being turned, so that it gets evenly incorporated.
- Cover the fresh pile with another 12 inches of bulking agent to prevent odor and visits by scavenging animals.
- Record the date turned and bulking agent type and volume used in the compost log.
- Monitor and record the temperature of the turned pile daily. Since the composting materials are more consistent now, one doesn't need to be as careful about taking the temperature in multiple locations.
- Once the pile maintains a temperature in excess of 130° F for seven days and then drops, the compost may be finished.
- Secondary composting times will be similar to the number of days in the primary cycle.

- Inspect the pile. If flesh is no longer visible, the compost can be termed "finished." It should be dark, humus-like material with very little odor. At this stage, any bones should be so brittle that they can be easily crushed. It is required that the finished product contain no visible pieces of soft tissue. If there is still some flesh visible, you need to turn the pile again and let it go through another heat cycle. With larger animals such as cattle and sheep, more time is needed to completely compost their larger and denser bones. If the compost is finished other than the bones, remove them and place in a new pile for further decomposition.

9) Plan for Monitoring Temperature: A probe-type thermometer with a minimum 36-inch stainless steel stem will be used to monitor the temperature of the pile.
10) Plan for Moisture Testing and Monitoring: For optimum performance, the moisture content should be between 40% and 60%. Proper moisture judgment can be made by simply feeling the compost. The compost should be moist and leave the hand feeling moist, but should not be able to squeeze water out of it. A water hydrant or other water source will be installed next to the composting facility in the event that water needs to be added to the compost.

11) Plan for Monitoring and Inspection for Complete Decomposition Prior to Distribution: The finished product should be a dark, humus-like material with minimal odor. Any bones should be brittle and easily crushed. If the compost is finished other than the bones, they shall be removed and placed in a new pile for further decomposition. The finished compost should not contain any visible pieces of soft tissue. If soft tissue is present, the pile should be turned and allowed to go through another heat cycle.
12) Frequency of Activities: A logbook will be kept to record dates and weights of carcasses placed in the composter, temperature readings, moisture content, amounts of bulking agents used, dates when compost is turned and dates and amounts of finished compost.

13) Seasonal or Year Round: Year Round

14) Distance from Natural Surface Water, Wells, and Property Lines:
-Natural Surface water: An unnamed tributary of Hickory Creek is approximately 1,400 feet south of the proposed location of the compost building.
-Well: The compost building will be located at least 300 feet from any on site wells.

15) Records for Review Upon Request: Records for review will be available upon request at the swine operation main office.

This facility is taking the necessary steps to protect the environment and continue to provide needed livestock production in Grundy County and the State of Missouri.

We welcome your favorable review of the information. If you have any questions or need any additional information, please do not hesitate to contact us. Thank you.

Sincerely,
Stockwell Engineers, Inc.

Todd Van Maanen, PE
Project Engineer

AWMS Computations for Composting

Producer: **Trenton Farms RE, LLC**

County: **Grundy County, MO**
Location: **Section 19, T60N, R24W**

E/A Project No. 15118 Date: 13-Jul-16

Daily Mortalities

Carcass Size (lb)	Multiplier for Death Loss*	Loss per Day (lb)
0-10	3 ft^3/day	161
10-25	5 ft^3/day	0
25-300	10 ft^3/day	9
300-750	14 ft^3/day	446
750-1400	20 ft^3/day	0

Total Death Loss per Day: **616 lbs**

Primary bin volume required: **6817 ft^3**

*Information taken from Minnesota Department of Agriculture, *Composting Animal Mortalities* , pg. 19

Bins Required

Bin Sizes	Height	**8 ft**
	Width	**15 ft**
	Depth	**24 ft**

Number of Bins Required**: **7 Bins Required**

**Assuming equal number of primary and secondary bins, plus one storage bin

Composting Material Required

Total Death Loss per Day (lb)	**616 lb**
Total Death Loss per Year (lb)	**224,840 lb**

Total Composting Material Required***: **833 yd^3/yr**
341,424 lb/yr

***Assuming 100 ft^3 of sawdust of equivalent compost material per 1,000 lb of mortality & 410 lb/yd^3 of sawdust

Trenton Farms RE, LLC
Grundy County, Missouri
Composting Records

Date	Bin #	Outside Temperature (°F)	Compost Temperature (°F)	Mortality Added (lb)	Bulk Material Added (lb)	Turn Pile? (Y/N)	Primary or Secondary Composting (P/S)	Material Removed for Land Application (lb)	Material Removed for Recycling (lb)

Page _____

Emergency Response Plan

Farm Name: Trenton Farms RE, LLC

Owner/Operator: Trenton Farms RE, LLC Phone: TBD Cell: TBD

Owner/Operator: _____ Phone: _____ Cell: _____

Farm Address: TBD (911)

Farm Location: T 60 N, R 24 E ◉ W Section 19 County: Grundy

Driving Directions or Emergency Coordinates: Southwest of the intersection of Pine Lane and Highway W. Lat 39.995713, Lon -93.64725

In Case of Injury, Fire, or Rescue Emergency, Immediately Implement the Following:

1. Assess the condition of the victim, extent of the emergency (fire, rescue) and call for help.
2. Stabilize the victim, use on-site rescue equipment, evacuate buildings, or begin fire suppression as necessary.
3. Brief emergency responders upon arrival on current status of situation.

In Case of a Spill, Leak, or Failure at the Storage Facility, During Transport, or Land Application, Immediately Implement the Following:

1. Stop the source of the leak or spill. For example:
   - Turn off all pumps/valves and clamp hoses or park tractor on hoses to stop the flow of manure.
2. Assess the situation and make appropriate calls for people, equipment, and materials. See contacts below.
   - Notify DNR spill hotline: _____ (Spill reporting is mandatory by state law.)
   - Call sheriff's office if spilled on public roads or its right-of-ways for traffic control.
   - Clear the road and roadside of spilled material immediately.
3. Contain the spill and prevent spillage from entering surface waters, tile intakes, or waterways.
   - Use a skid loader or tractor with a blade to build dikes to contain or divert the spill or leak.
   - Insert sleeves around tile intakes (or plug/cap intakes) and block down slope culverts.
   - Use tillage implements to work up the ground ahead of the spill or use absorptive materials.
4. Begin cleanup.
   - Use pumps to recover liquids.
   - Land apply on approved cropland at appropriate rates.
5. Document your actions.

Emergency Contacts	Contact Person (or Company)	Phone Number
Fire/Rescue	Staff	911 or 660-359-5532
County Sheriff	Rodney Herring	911 or 660-359-7637
Farm Emergency Coordinator	TBD	TBD
DNR Hazardous Spill Line	Macon or Jefferson City after hrs	Macon 660-385-8000 Jeff City 573-634-2436
DNR Permit Contact/Warden	Permit only	573-751-1300
Veterinarian	Staff	641-682-2291
Equipment/Supplies	**Contact Person (or Company)**	**Phone Number**
On-Farm Equipment Operator	TBD	
Excavation Contractor	TBD	
Manure Hauler	TBD	
Septic Tank Pumping Truck	TBD	
Mortality Disposal Contractor	TBD	
Local Government Contacts	**Contact Person**	**Phone Number**
Town Chairman	Rick Hull	660-359-4040 x 5
LCD County Conservationist	Corey Walker	660-359-2006
NRCS District Conservationist	Scott McClure	660-359-2006

Be prepared to provide the following information:

- Your name and contact information
- Farm address, location and other pertinent identification information.
- Nature of emergency (employee injury, fire, discharge of manure or hazardous materials).
- Emergency equipment and personnel that are needed.
- Potential for manure or hazardous materials to reach surface waters or major field drains.
- Current status of containment efforts.
- Location of hazardous/flammable materials, fire suppression equipment, emergency cut off switches or valves.

Contact Names and Numbers

A list of contact names and numbers should be filed with the emergency action plan and a copy posted by the phone for emergencies.

Site Name

Trenton Farms RE, LLC

Owner/Operator

Name: Trenton Farms RE, LLC

Phone: TBD

Site Address (including e911 address)

TBD when 911 issued

Specific Directions to the Site

Southwest of the intersection of Pine Lane and Highway W

HUMAN INJURY

Explain that self-contained breathing apparatus may be required if someone has been overcome by gases.

Rescue Unit/Ambulance

Phone: 911 or 660-359-4422

Doctor or Physician

Name: Staff

Phone: 660-358-5750

Hospital or Medical Clinic

Name: Staff

Phone: 660-358-5700

Fire Department

Phone: 660-359-5552

County Sheriff

Name: Rodney Herring

Phone: 660-339-7637

County Health Official

Name: Dwayne Smith, Sanitarian

Phone: 660-359-4196

Poison Control Center

Phone: 314-772-8300

Others

Name: Grundy County EMA

Phone: 660-635-0706

Name: Grundy Electric

Phone: 660-359-2941

Print Form

Manure Spill Emergency Response Plan

What to do in Case of a Manure Spill

1. **Eliminate the source.**
   - Stop manure application or pumps.
   - Close valves.
   - Separate pipes, creating an air gap and stopping flow.
   - Transfer manure/liquid to another basin or lagoon.

2. **Contain the spill, if possible.**
   - Create a containment dam in the field, ditch or stream.
   - In a field, use tillage equipment to slow the flow
   - Check for tile flows.
   - Construct a temporary holding basin down slope.
   - Ensure that you do not damage the embankment while creating a temporary basis.
   - If possible, place soil over the point of seepage, ensuring that you do not drive over or compact the seepage point.

3. **Assess the extent of the spill and note any obvious damages.**
   - Did the spill reach any surface waters, well casings or other sensitive areas?
   - How much was released?
   - What time?
   - Did any damage occur (employee injury, fish kills, or property damage)?
   - Can the spill reach streams?

4. **Contact the appropriate agencies.**

5. **Clean up the spill and make repairs.**

6. **Prepare and submit summary.**

Farm Information		
Farm Name:	Trenton Farms RE, LLC	
Address:	TBD (911)	
City: Trenton	State: MO	Zip: 64683
Farm Owner: Trenton Farms RE, LLC		
Phone: TBD	Mobile Phone: TBD	
Directions to the farm (from crossroad or highway)		
Southwest of the intersection of Pine Lane and Highway W		

Emergency Phone Numbers	
County Sheriff Dispatch:	Dial 911
DNR 24-hour Spill Reporting Hotline	573-634-2436

County Land & Water Conservation Dept.	
County Conservationist	Scott McClure
Phone Number	660-359-2006
Department of Natural Resources	
Animal Waste Specialist	Macon office
Phone Number	660-385-8000
Conservation Warden	Scott Roy
Phone Number	660-359-5685

Refer to listing on back for: Earth Moving, Pumping Equipment, & Manure Hauling Contractors

Neighbor notification

Name	Phone Number
Rex Searcy	660-359-5332
Wendell Street	660-359-6807
Matt Gibson	816-550-8021

Manure Spill Emergency Response Plan

Earthmoving Contactors

Company Name	Address	Phone
To be determined		

Pumping Equipment

Company Name	Address	Phone
TBD		

Custom Manure Applicators

Company Name	Address	Phone
TBD		

This is a partial listing for informational purposes only. No endorsement is implied or intended.

pinnacle
Environmental Compliance
...for agriculture
620 Country Club Road Iowa Falls, Iowa 50126 Office: (641) 648-7300
Fax: (641) 648-7310

www.pinnacleiowa.com

July 13, 2016

Dear Landowners,

I am writing you on behalf of our client Trenton Farms RE, LLC who has hired Pinnacle to help prepare a permit application that has been submitted to the Missouri Department of Natural Resources. Trenton Farms RE, LLC would like to inform you of its intentions to build and operate a sow complex in Grundy County.

The site will consist of three buildings, all of which will have below building manure storage pits. The site's total capacity will be approximately 6,056 sows, 320 nursery pigs and 960 swine over 55 pounds. These animals will be housed in three barns located on about 20.5 acres adjacent to State Highway W. A site map is enclosed showing the approximate location of the barns. Trenton Farms RE, LLC will have a nutrient management plan filed with the Missouri Department of Natural Resources. Nutrients from the pits below the barns will be land applied on approximately 914 acres of crop land, pasture and hay ground in Grundy County at an application rate based on a manure sample pulled from the pits yearly, and the nutrient uptake of the crops.

If you have any questions or comments contact the Water Protection Program at the Missouri Department of Natural Resources. The Department of Natural Resources will accept comments 30 days from the date of this letter. The Department of Natural Resources contact information is:

Water Protection Program
Missouri Department of Natural Resources
1101 Riverside Drive
P.O. Box 176
Jefferson City, MO 65102-0176
(573) 751-1300

The site will be located in the Southwest Quarter of Section 19, Township 60-N, Range 24-W, Grundy County, Missouri.

The CAFO site owner's contact information is:

Trenton Farms RE, LLC
1300 S. Hwy 75

Pipestone, MN 56164
507-825-7028

If you require additional information please contact the corporate registered agent or the manager for Trenton Farms RE, LLC at:

Trenton Farms RE, LLC
Attn: Luke Minion, Manager
1300 S. Hwy
Pipestone, MN 56614
507-825-7028

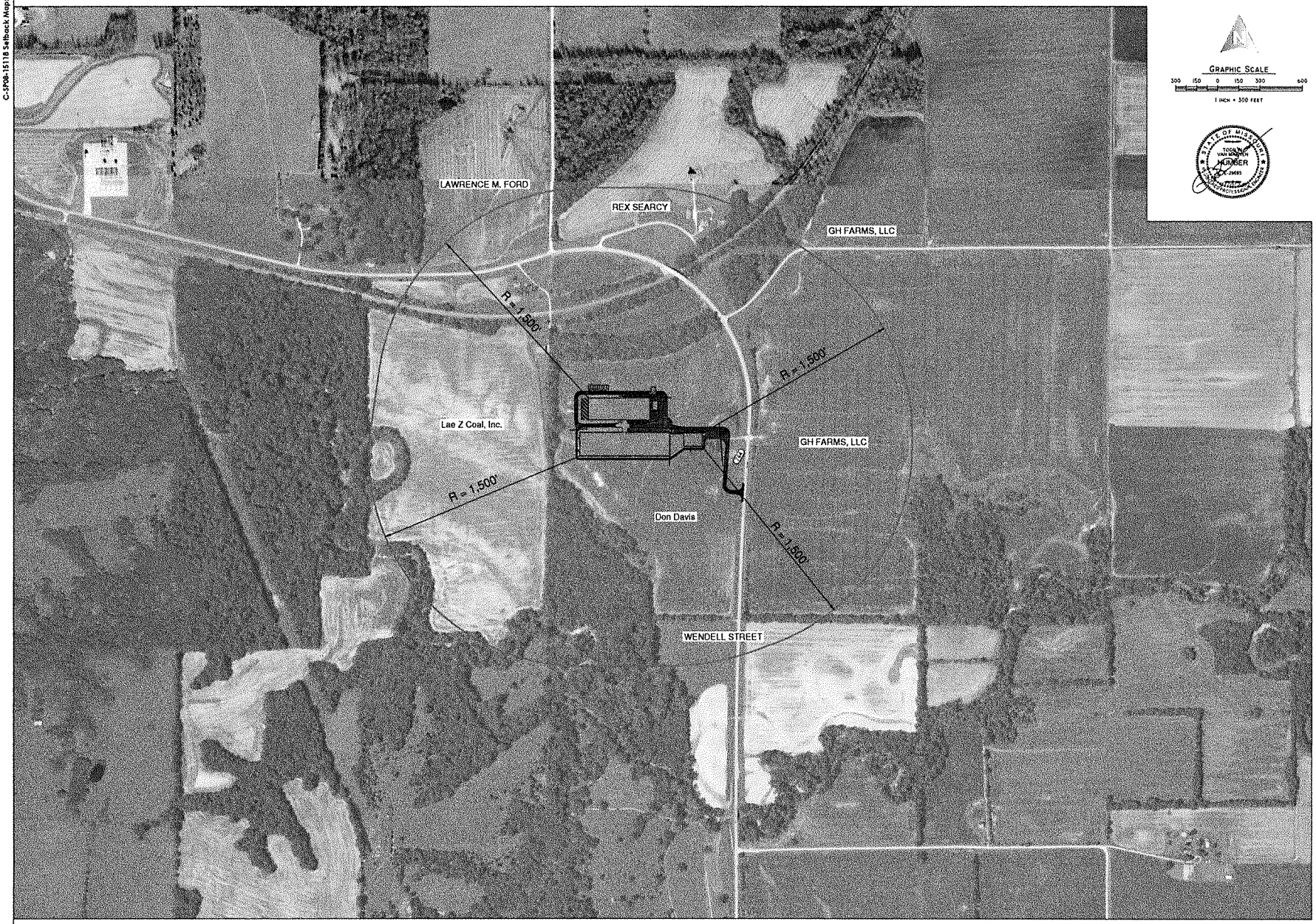
Registered Agents Inc.
117 South Lexington Street
Ste 100
Harrisonville, MO 64701
913-543-5165

Thank you,

The Pinnacle Group

John Everly

Enclosure - map
cc: Mo. Dept. of Natural Resources, Water Protection Program (w/encl.)
Grundy County Commission (w/encl.)



GRAPHIC SCALE

300 150 0 150 300 600

1 INCH = 300 FEET

STATE OF MISSOURI
TODD N. VAN BUSKIRK
NOTARY
NOTARIAL SEAL

STOCKWELL

STOCKWELL ENGINEERS, INC.
215 WALNUT STREET
YANKTON, SD 57078
PH: 605.665.8092
FAX: 605.665.0523

Trenton Family Farms RE, LLC

SW 1/4, Sec. 19, T60N, R24W, Grundy County, Missouri

REVISION SCHEDULE

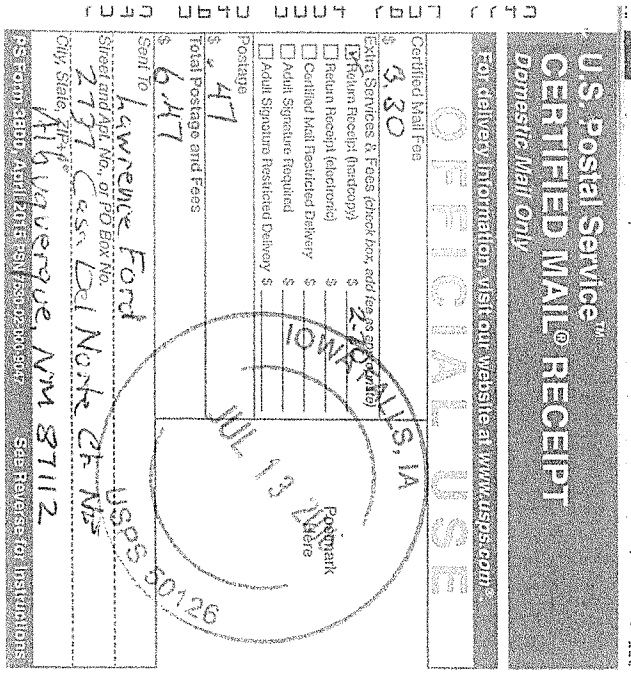
ISSUE/REVISION	DATE

SEI PROJECT #: Y15118

Landowner Notification Map

C 107

C-SP08-15118 Setback Maps.dwg



SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Lawrence Ford
2737 Casa Del Norte Ct. NE
Albuquerque, NM 87112

9590 9403 0467 5173 1881 26

2. Article Number *(Transfer from service label)*

7015 0640 0004 7609 7743

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X Mrs L.M. Ford ☐ Agent ☐ Addres

B. Received by *(Printed Name)* | C. Date of Deliv

Mrs L.M. Ford | 7-16-1

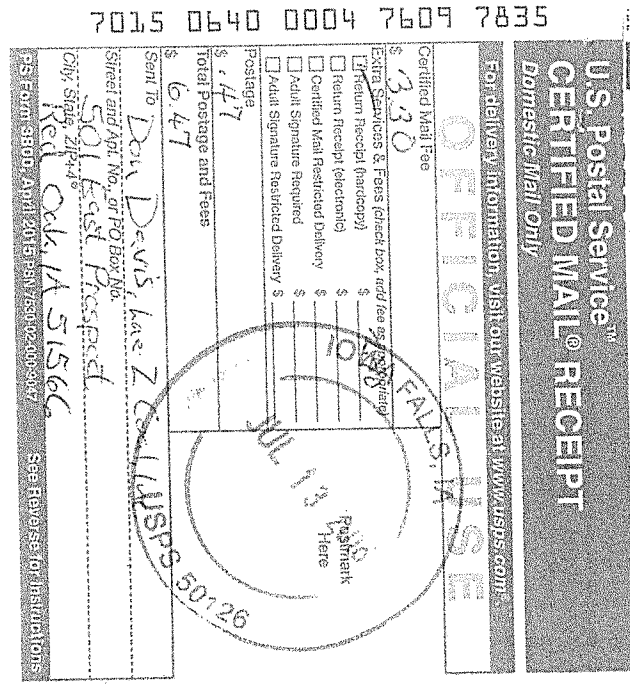
D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type

☐ Adult Signature
☐ Adult Signature Restricted Delivery
☑ Certified Mail®
☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
☐ Mail
Mail Restricted Delivery
00)

☐ Priority Mail Express®
☐ Registered Mail™
☐ Registered Mail Restr Delivery
☑ Return Receipt for Merchandise
☐ Signature Confirmatic
☐ Signature Confirmatic Restricted Delivery

PS Form 3811, April 2015 PSN 7530-02-000-9053 Domestic Return Rece



SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Dou Davis
501 East Prospect
Red Oak, IA 51566

9590 9403 0467 5173 1890 93

2. Article Number *(Transfer from service label)*

7015 0640 0004 7609 7835

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X ☐ Agent ☐ Addres

B. Received by *(Printed Name)* | C. Date of Deliv

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type

☐ Adult Signature
☐ Adult Signature Restricted Delivery
☑ Certified Mail®
☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
estricted Delivery

☐ Priority Mail Express®
☐ Registered Mail™
☐ Registered Mail Restr Delivery
☑ Return Receipt for Merchandise
☐ Signature Confirmatic
☐ Signature Confirmatic Restricted Delivery

PS Form 3811, April 2015 PSN 7530-02-000-9053 Domestic Return Rece

7015 0640 0004 7609 7811

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com®

Certified Mail Fee $3.30
Extra Services & Fees (check box, add fee as appropriate)
☐ Return Receipt (hardcopy) $
☐ Return Receipt (electronic) $
☐ Certified Mail Restricted Delivery $
☐ Adult Signature Required $
☐ Adult Signature Restricted Delivery $
Postage $.47
Total Postage and Fees $3.77
Sent To Grundy County Commissioners
Street and Apt. No., or PO Box No. 700 Main
City, State, ZIP+4® Trenton, MO 64683

OFFICIAL USE
JUL 13 2016
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USPS 50126

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
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1. Article Addressed to:

Grundy County Commissioners
700 Main
Trenton, MO 64683

9590 9403 0467 5173 1880 34

2. Article Number (Transfer from service label)
7015 0640 0004 7609 7811

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Betty Spickard ☐ Agent ☒ Addressee

B. Received by (Printed Name) Betty Spickard
C. Date of Delivery 7-15-16

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
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☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
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☐ Priority Mail Express®
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☐ Registered Mail Restricted Delivery
☑ Return Receipt for Merchandise
☐ Signature Confirmation
☐ Signature Confirmation Restricted Delivery

PS Form 3811, April 2015 PSN 7530-02-000-9053 Domestic Return Receipt

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Extra Services & Fees (check box, add fee as appropriate)
☐ Return Receipt (hardcopy) $
☐ Return Receipt (electronic) $
☐ Certified Mail Restricted Delivery $
☐ Adult Signature Required $
☐ Adult Signature Restricted Delivery $
Postage $.47
Total Postage and Fees $3.77
Sent To Wendell Street
Street and Apt. No., or PO Box No. 611 SW Highway W
City, State, ZIP+4® Trenton, MO 64683

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JUL 13 2016
Postmark Here
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SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Wendell Street
611 SW Highway W
Trenton, MO 64683

9590 9403 0467 5173 1891 09

2. Article Number (Transfer from service label)
7015 0640 0004 7609 7958

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Wendell Street ☐ Agent ☐ Addressee

B. Received by (Printed Name) Wendell Street
C. Date of Delivery 7-15-16

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Adult Signature
☐ Adult Signature Restricted Delivery
☑ Certified Mail®
☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
☐ Insured Mail
☐ Insured Mail Restricted Delivery (over $500)
☐ Priority Mail Express®
☐ Registered Mail™
☐ Registered Mail Restricted Delivery
☑ Return Receipt for Merchandise
☐ Signature Confirmation
☐ Signature Confirmation Restricted Delivery

PS Form 3811, April 2015 PSN 7530-02-000-9053 Domestic Return Receipt

7015 0640 0004 7609 8054

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Certified Mail Fee $3.30
Extra Services & Fees (check box, add fee as appropriate)
☐ Return Receipt (hardcopy) $
☐ Return Receipt (electronic) $
☐ Certified Mail Restricted Delivery $
☐ Adult Signature Required $
☐ Adult Signature Restricted Delivery $
Postage $.47
Total Postage and Fees $3.77
Sent To GH Farms, LLC
Street and Apt. No., or PO Box No. 220 Gar Field Ave.
City, State, ZIP+4® Chillicothe, MO 64601

OFFICIAL USE
JUL 13 2016
Postmark Here
USPS 50126

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

GH Farms, LLC
220 Gar Field Ave.
Chillicothe, MO 64601

9590 9403 0467 5173 1881 33

2. Article Number (Transfer from service label)
7015 0640 0004 7609 8054

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X ☐ Agent ☐ Addressee

B. Received by (Printed Name) Tim Humphreys
C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Adult Signature
☐ Adult Signature Restricted Delivery
☑ Certified Mail®
☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
☐ Insured Mail
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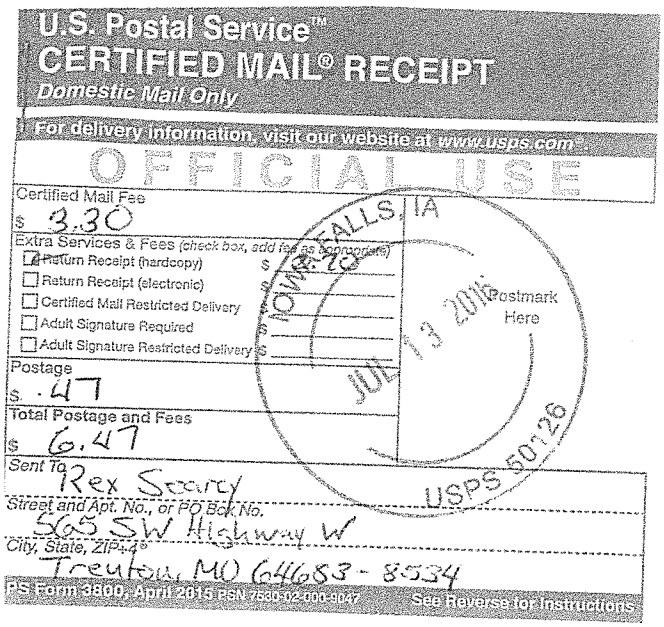
☑ Return Receipt for Merchandise
☐ Signature Confirmation
☐ Signature Confirmation Restricted Delivery

PS Form 3811, April 2015 PSN 7530-02-000-9053 Domestic Return Receipt



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Certified Mail Fee
$ 3.30

Extra Services & Fees (check box, add fee as appropriate)
- [x] Return Receipt (hardcopy) $ 2.80
- [ ] Return Receipt (electronic) $
- [ ] Certified Mail Restricted Delivery $
- [ ] Adult Signature Required $
- [ ] Adult Signature Restricted Delivery $

Postage
$ .47

Total Postage and Fees
$ 6.47

Sent To
Rex Searcy

Street and Apt. No., or PO Box No.
565 SW Highway W

City, State, ZIP+4®
Trenton, MO 64683-8534

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

DES MOINES, IA
JUL 13 2016
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Updated Delivery Day: **Friday, July 15, 2016**

Product & Tracking Information

Postal Product: | **Features:** Certified Mail™

DATE & TIME	STATUS OF ITEM	LOCATION
July 15, 2016 , 3:21 pm	Notice Left (No Authorized Recipient Available)	TRENTON, MO 64683

We attempted to deliver your item at 3:21 pm on July 15, 2016 in TRENTON, MO 64683 and a notice was left because an authorized recipient was not available. You may arrange redelivery by using the Schedule a Redelivery feature on this page or calling 800-ASK-USPS, or may pick up the item at the Post Office indicated on the notice. If this item is unclaimed by July 30, 2016 then it will be returned to sender.

July 15, 2016 , 8:17 am	Arrived at Unit	TRENTON, MO 64683
July 14, 2016 , 8:38 pm	Departed USPS Facility	KANSAS CITY, MO 64121
July 14, 2016 , 8:51 am	Arrived at USPS Facility	KANSAS CITY, MO 64121
July 14, 2016 , 8:05 am	Departed USPS Facility	DES MOINES, IA 50318
July 13, 2016 , 11:27 pm	Arrived at USPS Facility	DES MOINES, IA 50318

Available Actions

Schedule Redelivery

Text Updates

Email Updates

Track Another Package

Tracking (or receipt) number

Track It

Manage Incoming Packages

Track all your packages from a dashboard.
No tracking numbers necessary.

Sign up for My USPS ›

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- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Rex Searcy
565 SW Highway W
Trenton, MO 64683-8554

9590 9403 0467 5173 1881 19

2. Article Number *(Transfer from service label)*

7015 0640 0004 7609 7828

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X Rex Searcy ☐ Agent ☑ Addressee

B. Received by *(Printed Name)* REX SEARCY

C. Date of Delivery 8-1-16

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☑ No

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☑ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- ☐ Insured Mail
- ☐ Restricted Delivery
- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☐ Registered Mail Restricted Delivery
- ☑ Return Receipt for Merchandise
- ☐ Signature Confirmation
- ☐ Signature Confirmation Restricted Delivery

PS Form 3811, April 2015 PSN 7530-02-000-9053 Domestic Return Receipt

pinnacle
Environmental Compliance
...for agriculture
620 Country Club Road Iowa Falls, Iowa 50126 Office: (641) 648-7300 Fax: (641) 648-7310
www.pinnacleiowa.com

TRENTON FARMS RE, LLC PROJECT SUMMARY

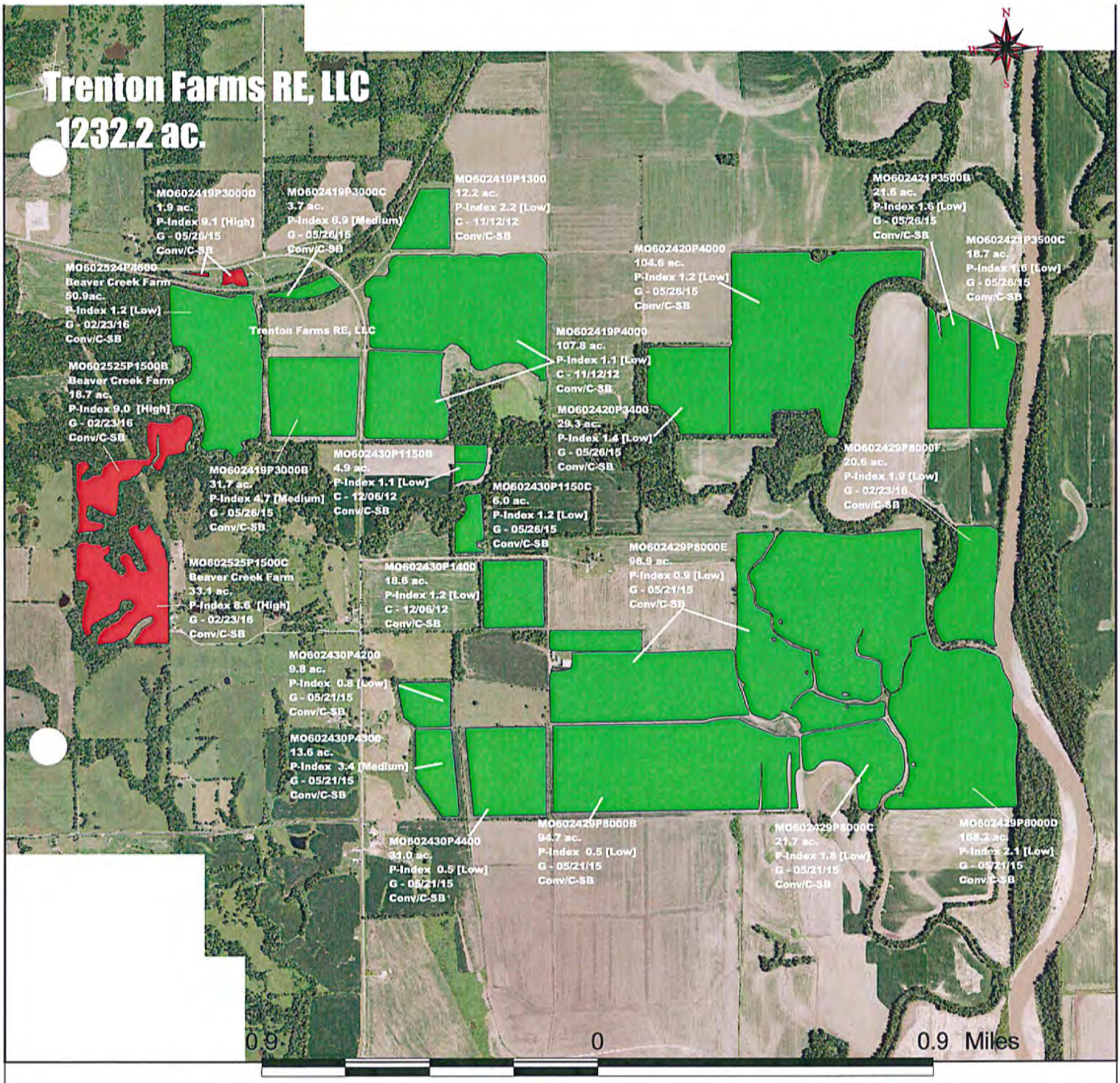
Trenton Farms RE, LLC, proposes to construct three hog confinement buildings in Grundy County, Section 19, Township 60 North Range 24 West. The site will consist of a gestation barn housing 4480 sows, a farrowing barn housing 936 sows and a Gilt Development Unit for 960 swine over 55 pounds and 320 nursery pigs. A composter will also be built on site. The site will have an animal unit capacity of 2282.4, making it a Class 1C Confined Animal Feeding Operation.

Manure will be stored in formed concrete structures below the Gestation Barn and GDU. Manure from the Farrowing Barn will drain into the Gestation Barn

Total storage capacity for the Gestation Barn will be 7,074,162 gallons, in excess of the Gestation Barn and Farrowing Barn's combined estimated annual manure production of 3,687,147 gallons. The GDU Barn will have 781,295 gallons of storage capacity, in excess of its estimated annual manure production of 530,368 gallons. The entire facility, therefore, has projected storage capacity in excess of 365 days.
Manure from Trenton Farms RE, LLC will be applied to fields listed in the site's Nutrient Management Plan at agronomic rates based on the crop uptake of nutrients and the nutrient analysis of the manure. Manure will be injected, not surface applied. Manure will be tested annually for nutrient content. Mortalities will be composted within 24 hours of death and stored under roof until the compost material can be land applied.

Fields listed in the nutrient management plan for land application of manure will be soil sampled every five years, using protocols prescribed by the Missouri Concentrated Animal Feeding Operation Nutrient Management Technical Standard. The soil samples will be analyzed by a certified laboratory and the results included in any nutrient management plan updates.

Enclosed is a nutrient management plan prepared by The Pinnacle Group on behalf of Trenton Farms RE, LLC.



Overview Map
Grundy County

Farm Name: Trenton Farms RE,LLC
Location: Grundy County, Missouri, United States
Client Name: Overview Map
Number of Fields: 34
Total Acres: 1232.2

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Iowa Falls, Iowa 50126
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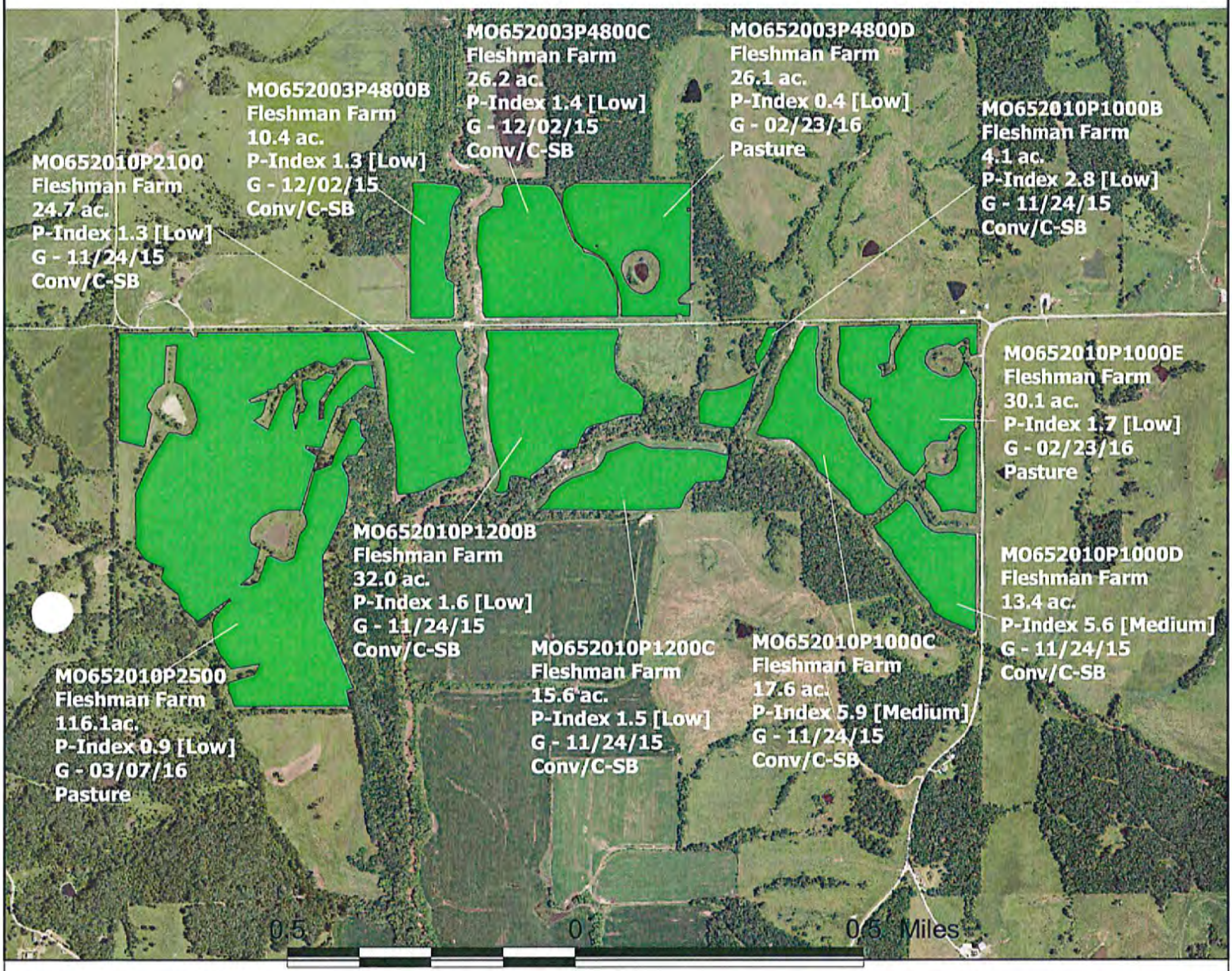
Fax: 641.648.7310
www.pinnacleiowa.com

Trenton Farms RE LLC; 15
Nitrogen Rate Ap (1178.5 ac.)
Phosphorus Rate (53.7ac.)

Trenton Farms RE, LLC
1232.2 ac.



Overview Map
Putnam County

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Iowa Falls, Iowa 50126
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Fax: 641.648.7310
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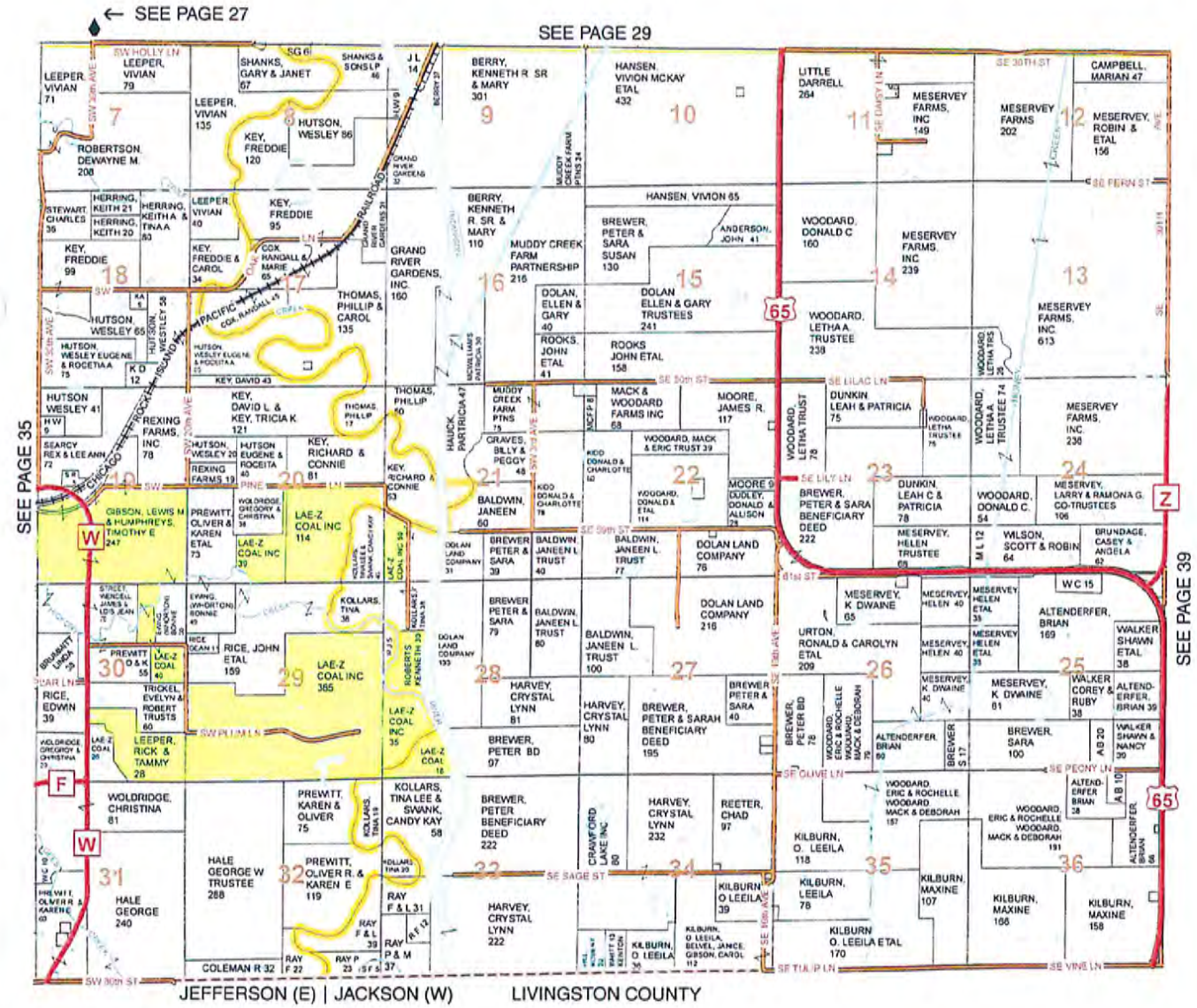
Farm Name: Trenton Farms RE, LLC
Location: Putnam County, Missouri, United States
Client Name: Overview Map
Number of Fields: 34
Total Acres: 1232.2

Trenton Farms RE LLC; 15
Nitrogen Rate Ap (1178.5 ac.)
Phosphorus Rate (53.7ac.)

Jackson (W) & Jefferson (E) — Township 60N - Range 24W



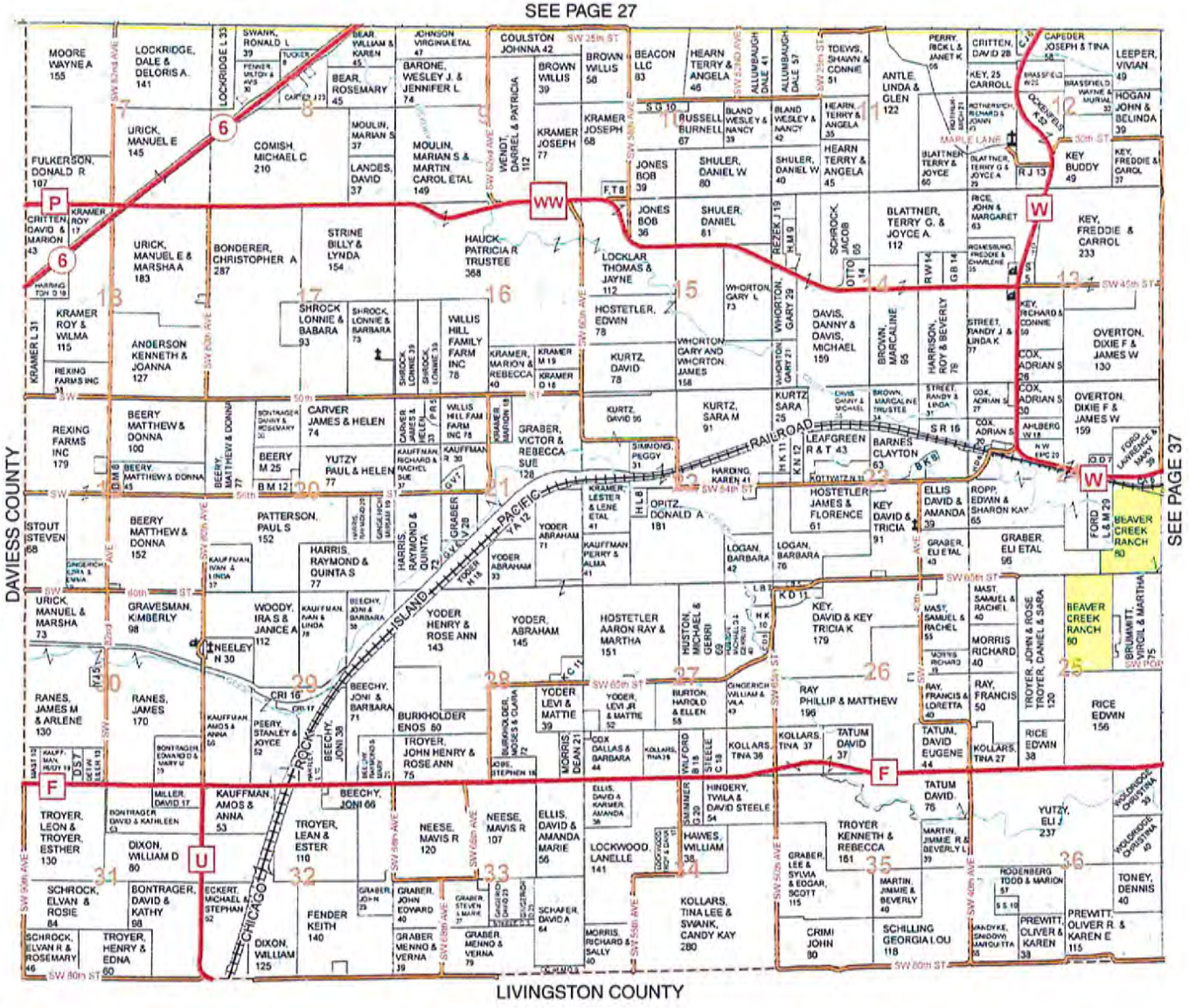
$5 to $7. Sales girls were paid $13 a month. One shop worked its bakers only 8 hours a day; others 10 to 11 hours. Brick, tiling - the manager was paid $75 a month. He took care of the office work. Brick setters were paid from $10 to $15 a week; clay miners, $10 to $12; brick pitchers, $10; brick graders, $12; helpers, $6; teamsters, $10; truckers, $10. The time was 10 hours a day. Canning-Managers and superintendents drew $54 each a month. Cappers were paid $9 a week and cooks and processors from $7 to $9; laborers, $5; and boy helpers, $3 to $4. Females, forewomen, $10 a week; peelers, $6 to $9; helpers, $3 to $4. Time, ten hours a day.

Source: History of Grundy County, News Publishing Company 1908

Jefferson (W)

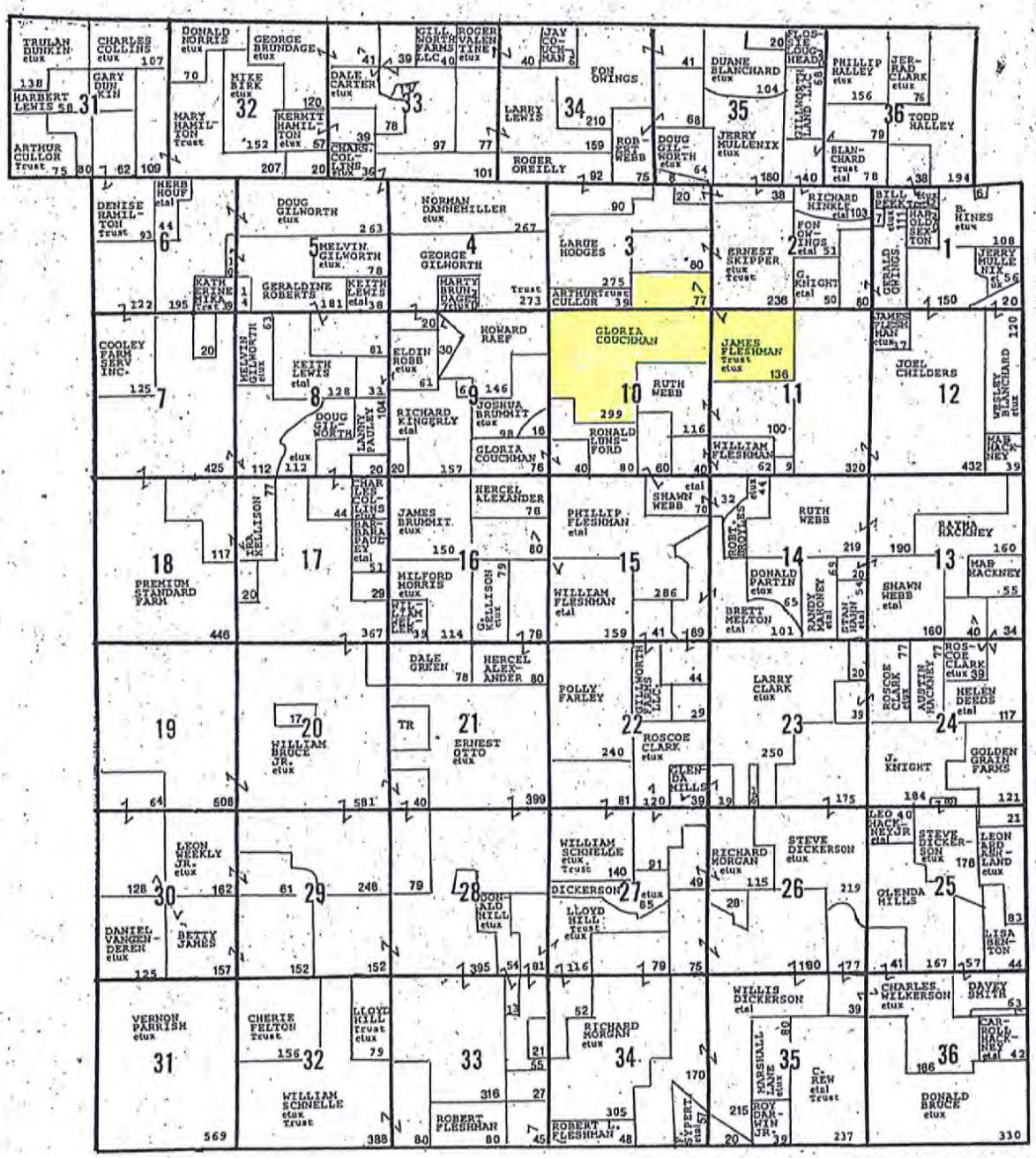
Township 60N - Range 25W

SEE PAGE 27



T-65-66-N JACKSON PLAT R-20-W

(Landowners)



Manure Management Plan Form
Animal Feeding Operation Information

Name of operation: Trenton Farms RE, LLC **Permit No.** N/A

Location of the operation: SW State Hwy W
(911 address)

Trenton (Town) MO (State) 64683 (Zip)

NW (1/4 1/4) 1/4 of the SW (1/4) 1/4 of Sec 19 (Section) T 60N (Tier & Range) R 24W (Township Name) Grundy (County)

Owner and contacts of the animal feeding operation:

Owner Trenton Farms RE, LLC Phone 507-825-7032
Address 1300 S. Hwy 75, Pipestone, MN 56164

Contact person (if different than owner) Brian Ritland Phone 641-648-7300
Address 620 Country Club Rd Iowa Falls, IA 50126
E-mail address (optional) britland@pinnacleiowa.com Cell phone (optional)

Contract company (if applicable) Phone
Address

Table 1. Information about livestock production and manure management system

1	2	3	4	5	6	7	8
Animal type/ Production phase[a]	Max # of animals confined	Manure Storage Structure [b]	N[c]	P_2O_5[c]	gal/space/dy[d]	Days/yr Facility occupied	Annual Manure Produced[e]
Gestation	4480	Below Building Pit	25	25	3.0	365	2,448,373
Farrow-Nursery	936	Below Building Pit	15	12	2.2	365	1,238,774
Grow/finish (wet/dry)	1280	GDU Below Building Pit	50	42	0.9	365	530,368
						Total Gallons	**4,217,515**

Animal Unit Capacity 2582.4

Source of Manure Nutrient Content Data

Tables, MWPS-18 *Manure Management Systems*

MO602419P1300; 15 (14.37 ac.)

Date: Mar 13, 2015
Field Name: MO602419P1300; 15
Location: Grundy Co., Missouri, U.S.
Farm Name: Trenton Farms RE LLC
Client Name: P-Index
Total Acres: 14.37
Field Boundary Start Location:
Latitude: 39.99883201
Longitude: -93.64171449

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(12.2ac.)Field Boundary
50 ft Property LIneRoad Buffer

MO602419P3000B; 15 (34.04 ac.)

Date: Jun 2, 2015
Field Name: MO602419P3000B; 15
Location: Grundy Co., Missouri, U.S.
Farm Name: Trenton Farms RE LLC
Client Name: P-Index
Total Acres: 34.04
Field Boundary Start Location:
Latitude: 39.99473320
Longitude: -93.64783230

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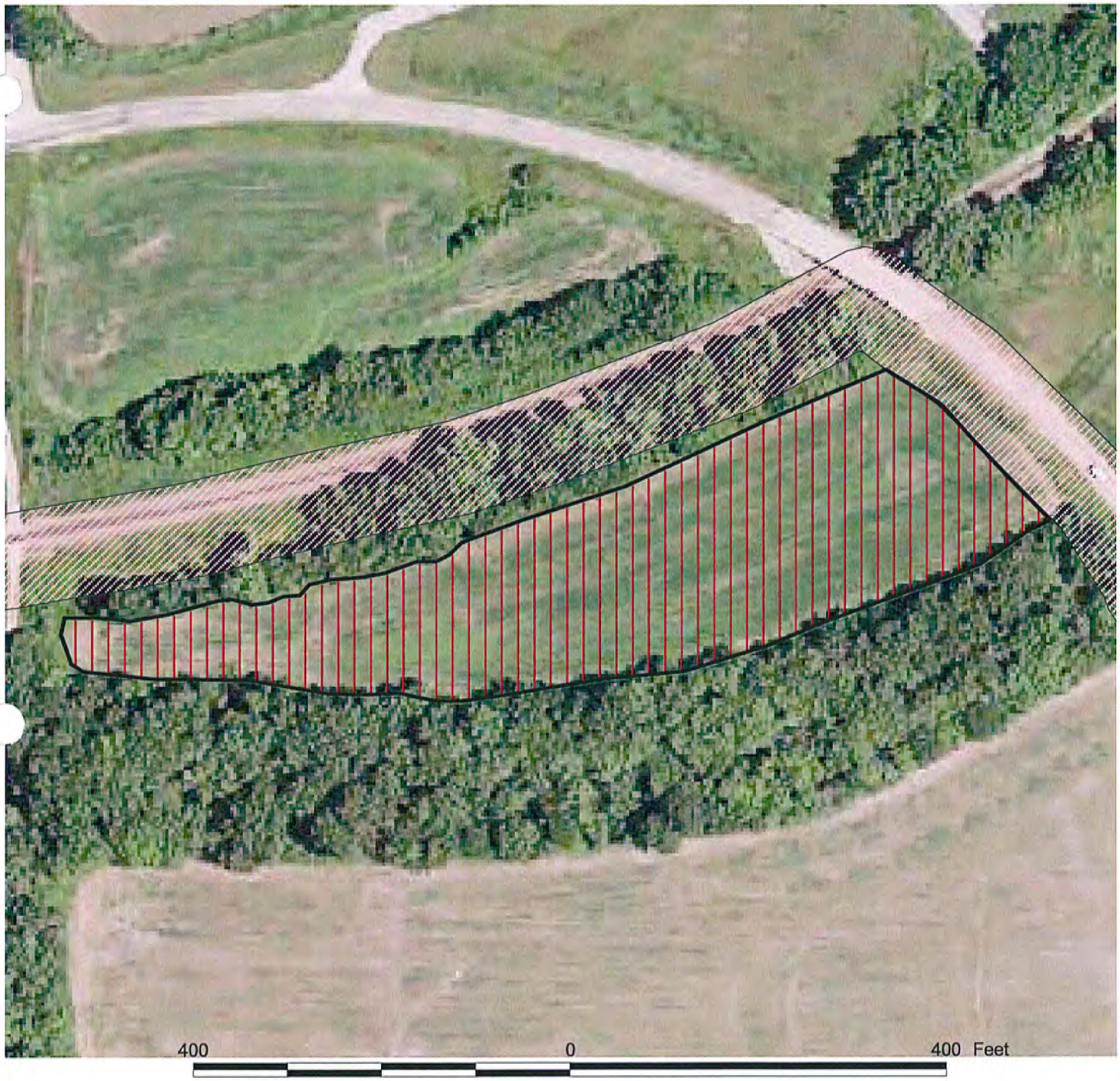
(31.7ac.)Field Boundary
100 ft Water Buffer
50 ft Property LIneRoad Buffer

MO602419P3000C; 15 (3.85 ac.)



Date: Jun 3, 2015
Field Name: MO602419P3000C; 15
Location: Grundy Co., Missouri, U.S.
Farm Name: Trenton Farms RE LLC
Client Name: P-Index
Total Acres: 3.85
Field Boundary Start Location:
Latitude: 39.99751968
Longitude: -93.64705688

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(3.7ac.)Field Boundary
100 ft Water Buffer
50 ft Property LIneRoad Buffer

MO602419P3000D; 15 (3.70 ac.)

Date: Jun 3, 2015
Field Name: MO602419P3000D; 15
Location: Grundy Co., Missouri, U.S.
Farm Name: Trenton Farms RE LLC
Client Name: P-Index
Total Acres: 3.70
Field Boundary Start Location:
Latitude: 39.99745562
Longitude: -93.65179010

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(1.9ac.)Field Boundary
50 ft Road Buffer
100 ft Water Buffer

MO602419P4000; 15 (107.78 ac.)

Date: Apr 20, 2016
Field Name: MO602419P4000; 15
Location: Grundy Co., Missouri, U.S.
Farm Name: Trenton Farms RE LLC
Client Name: P-Index
Total Acres: 107.78
Field Boundary Start Location:
Latitude: 39.99497472
Longitude: -93.64568934

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100 ft Water Buffer
(107.8ac.)Field Boundary
50 ft Property LIneRoad Buffer

MO602420P3400; 15 (30.89 ac.)

Date: Mar 27, 2015
Field Name: MO602420P3400; 15
Location: Grundy Co., Missouri, U.S.
Farm Name: Trenton Farms RE LLC
Client Name: P-Index
Total Acres: 30.89
Field Boundary Start Location:
Latitude: 39.99184468
Longitude: -93.62743864

pinnacle
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Iowa Falls, Iowa 50126
Office: 641.648.7300
Fax: 641.648.7310
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(29.3ac.)Field Boundary
50 ft Property LIneRoad Buffer
100 ft Water Buffer

MO602420P4000; 15 (108.82 ac.)

Date: Mar 27, 2015
Field Name: MO602420P4000; 15
Location: Grundy Co., Missouri, U.S.
Farm Name: Trenton Farms RE LLC
Client Name: P-Index
Total Acres: 108.82
Field Boundary Start Location:
Latitude: 39.99183956
Longitude: -93.62742110

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Fax: 641.648.7310
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(104.6ac.)Field Boundary
50 ft Property LIneRoad Buffer
100 ft Water Buffer

MO602421P3500B; 15 (25.17 ac.)

Date: Mar 27, 2015
Field Name: MO602421P3500B; 15
Location: Grundy Co., Missouri, U.S.
Farm Name: Trenton Farms RE LLC
Client Name: P-Index
Total Acres: 25.17
Field Boundary Start Location:
Latitude: 39.99199832
Longitude: -93.61531524

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(21.6ac.)Field Boundary
50 ft Property LIneRoad Buffer
100 ft Water Buffer

MO602421P3500C; 15 (19.83 ac.)

Date: Mar 27, 2015
Field Name: MO602421P3500C; 15
Location: Grundy Co., Missouri, U.S.
Farm Name: Trenton Farms RE LLC
Client Name: P-Index
Total Acres: 19.83
Field Boundary Start Location:
Latitude: 39.99200571
Longitude: -93.61522544

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Iowa Falls, Iowa 50126
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Fax: 641.648.7310
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(18.7ac.)Field Boundary
50 ft Property LIneRoad Buffer
100 ft Water Buffer

MO602429P8000B; 15 (98.70 ac.)

Date: Mar 27, 2015
Field Name: MO602429P8000B; 15
Location: Grundy Co., Missouri, U.S.
Farm Name: Trenton Farms RE LLC
Client Name: P-Index
Total Acres: 98.70
Field Boundary Start Location:
Latitude: 39.98054447
Longitude: -93.63628233

pinnacle
620 Country Club Road
Iowa Falls, Iowa 50126
Office: 641.648.7300
Fax: 641.648.7310
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(94.7ac.)Field Boundary
50 ft Property LIneRoad Buffer
100 ft Water Buffer

MO602429P8000C; 15 (24.07 ac.)

Date: Mar 27, 2015
Field Name: MO602429P8000C; 15
Location: Grundy Co., Missouri, U.S.
Farm Name: Trenton Farms RE LLC
Client Name: P-Index
Total Acres: 24.07
Field Boundary Start Location:
Latitude: 39.98016906
Longitude: -93.62372197

pinnacle
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Iowa Falls, Iowa 50126
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Fax: 641.648.7310
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(21.7ac.)Field Boundary
50 ft Property LIneRoad Buffer
100 ft Water Buffer

MO602429P8000D; 15 (186.07 ac.)

Date: Jun 3, 2015
Field Name: MO602429P8000D; 15
Location: Grundy Co., Missouri, U.S.
Farm Name: Trenton Farms RE LLC
Client Name: P-Index
Total Acres: 186.07
Field Boundary Start Location:
Latitude: 39.98454375
Longitude: -93.62518915

pinnacle
600 Country Club Road
Iowa Falls, Iowa 50126
Office: 641.648.7300
Fax: 641.648.7310
www.pinnacleiowa.com

(168.2ac.)Field Boundary
100 ft Water Buffer
50 ft Property LIneRoad Buffer

MO602429P8000E; 15 (111.42 ac.)

Date: Jun 3, 2015
Field Name: MO602429P8000E; 15
Location: Grundy Co., Missouri, U.S.
Farm Name: Trenton Farms RE LLC
Client Name: P-Index
Total Acres: 111.42
Field Boundary Start Location:
Latitude: 39.98346514
Longitude: -93.63180642

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Iowa Falls, Iowa 50126
Office: 641.648.7300
Fax: 641.648.7310
www.pinnacleiowa.com

(98.9ac.)Field Boundary
50 ft Property Line and Road Buffer
100 ft Water Buffer
100 ft Water Buffer

MO602430P1150B; 15 (5.97 ac.)

Date: Mar 27, 2015
Field Name: MO602430P1150B; 15
Location: Grundy Co., Missouri, U.S.
Farm Name: Trenton Farms RE LLC
Client Name: P-Index
Total Acres: 5.97
Field Boundary Start Location:
Latitude: 39.99137845
Longitude: -93.64136127

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Iowa Falls, Iowa 50126
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Fax: 641.648.7310
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(4.9ac.)Field Boundary
50 ft Property LIneRoad Buffer
100 ft Water Buffer

MO602430P1150C; 15 (6.92 ac.)

Date: Mar 27, 2015
Field Name: MO602430P1150C; 15
Location: Grundy Co., Missouri, U.S.
Farm Name: Trenton Farms RE LLC
Client Name: P-Index
Total Acres: 6.92
Field Boundary Start Location:
Latitude: 39.98712251
Longitude: -93.63980063

pinnacle
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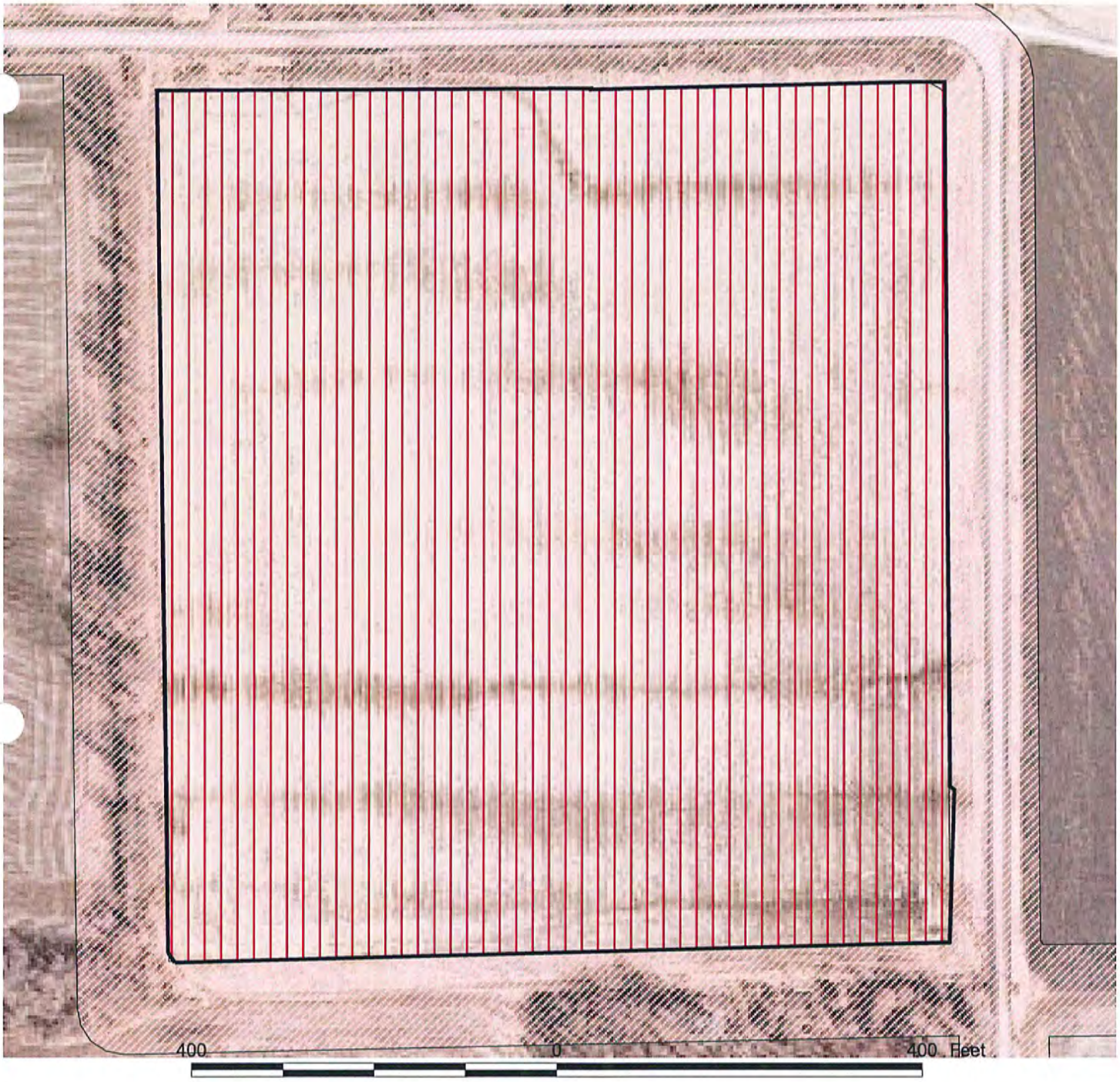
Iowa Falls, Iowa 50126
Office: 641.648.7300
Fax: 641.648.7310
www.pinnacleiowa.com

(6.0ac.)Field Boundary
50 ft Property LIneRoad Buffer
100 ft Water Buffer

MO602430P1400; 15 (21.02 ac.)



Date: Apr 20, 2016
Field Name: MO602430P1400; 15
Location: Grundy Co., Missouri, U.S.
Farm Name: Trenton Farms RE LLC
Client Name: P-Index
Total Acres: 21.02
Field Boundary Start Location:
Latitude: 39.98428175
Longitude: -93.63663616

pinnacle
620 Country Club Road
Iowa Falls, Iowa 50126
Office: 641.648.7300
Fax: 641.648.7310
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(18.6ac.)Field Boundary
50 ft Property LIneRoad Buffer
100 ft Water Buffer

MO602430P4200; 15 (11.30 ac.)

Date: Apr 20, 2016
Field Name: MO602430P4200; 15
Location: Grundy Co., Missouri, U.S.
Farm Name: Trenton Farms RE LLC
Client Name: P-Index
Total Acres: 11.30
Field Boundary Start Location:
Latitude: 39.98227690
Longitude: -93.64349101

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(9.8ac.)Field Boundary
50 ft Property Line and Road Buffer
100 ft Water Buffer

MO602430P4300; 15 (17.01 ac.)

Date: Apr 20, 2016
Field Name: MO602430P4300; 15
Location: Grundy Co., Missouri, U.S.
Farm Name: Trenton Farms RE LLC
Client Name: P-Index
Total Acres: 17.01
Field Boundary Start Location:
Latitude: 39.97714198
Longitude: -93.64070069

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(13.6ac.)Field Boundary
50 ft Property Line and Road Buffer
100 ft Water Buffer

MO602430P4400; 15 (35.57 ac.)

Date: Jun 3, 2015
Field Name: MO602430P4400; 15
Location: Grundy Co., Missouri, U.S.
Farm Name: Trenton Farms RE LLC
Client Name: P-Index
Total Acres: 35.57
Field Boundary Start Location:
Latitude: 39.97721737
Longitude: -93.63645133

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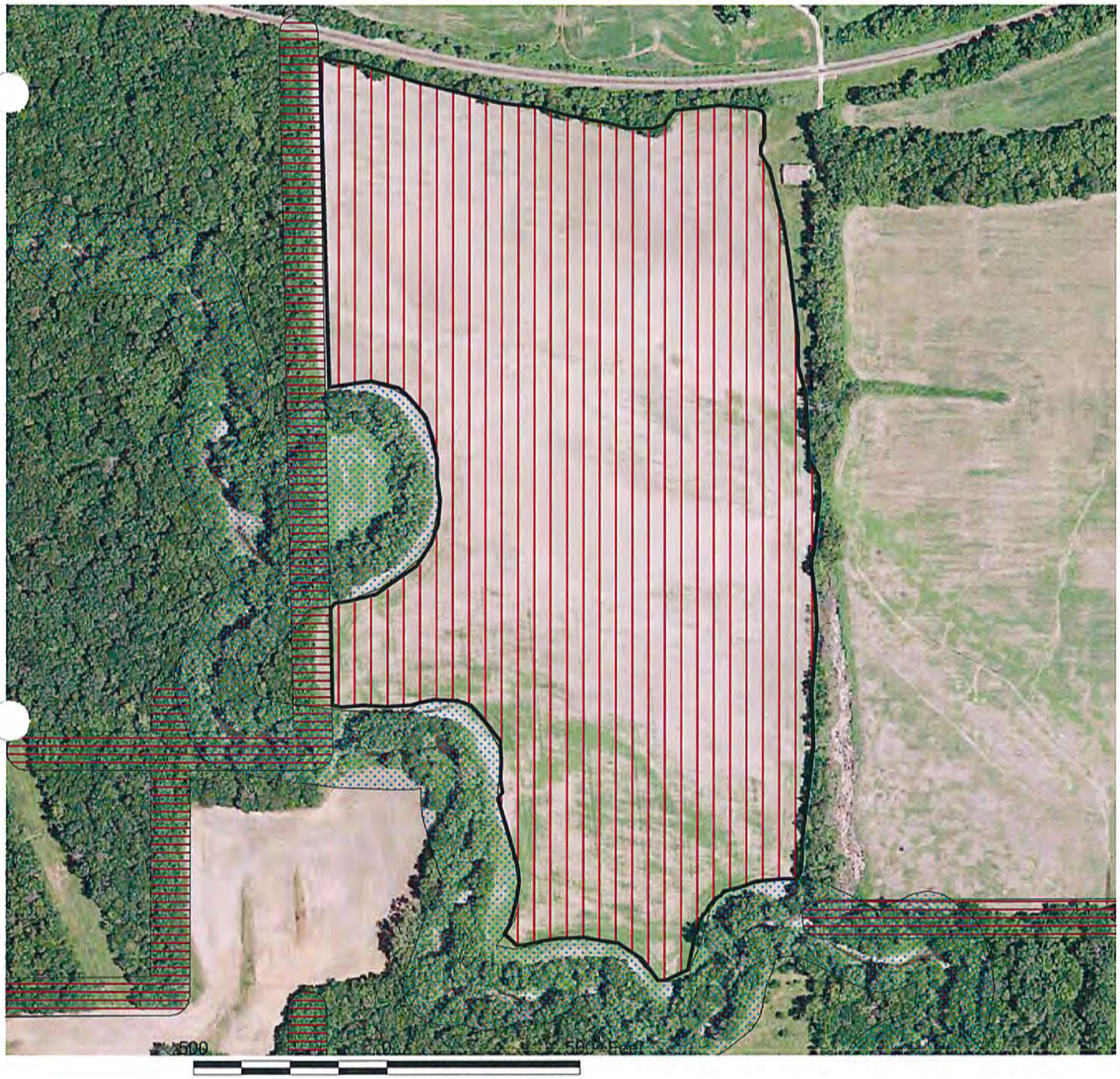
(31.0ac.)Field Boundary
1000 ft Residence Buffer
50 ft Property Line and Road Buffer
100 ft Water Buffer

MO602524P4600; 15 (53.71 ac.)



Date: Apr 1, 2016
Field Name: MO602524P4600; 15
Location: Grundy Co., Missouri, U.S.
Farm Name: Trenton Farms RE LLC
Client Name: P-Index
Total Acres: 53.71
Field Boundary Start Location:
Latitude: 39.99152588
Longitude: -93.65130007

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(50.9ac.)Field Boundary
100 ft Water Buffer
50 ft Property Line Buffer

MO602525P1500B; 15 (19.48 ac.)

Date: Apr 1, 2016
Field Name: MO602525P1500B; 15
Location: Grundy Co., Missouri, U.S.
Farm Name: Trenton Farms RE LLC
Client Name: P-Index
Total Acres: 19.48
Field Boundary Start Location:
Latitude: 39.98785666
Longitude: -93.66028945

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(18.7ac.)Field Boundary
100 ft Water Buffer
50 ft Property Line Buffer

MO602525P1500C; 15 (34.84 ac.)

Date: Apr 1, 2016
Field Name: MO602525P1500C; 15
Location: Grundy Co., Missouri, U.S.
Farm Name: Trenton Farms RE LLC
Client Name: P-Index
Total Acres: 34.84
Field Boundary Start Location:
Latitude: 39.98364549
Longitude: -93.65565309

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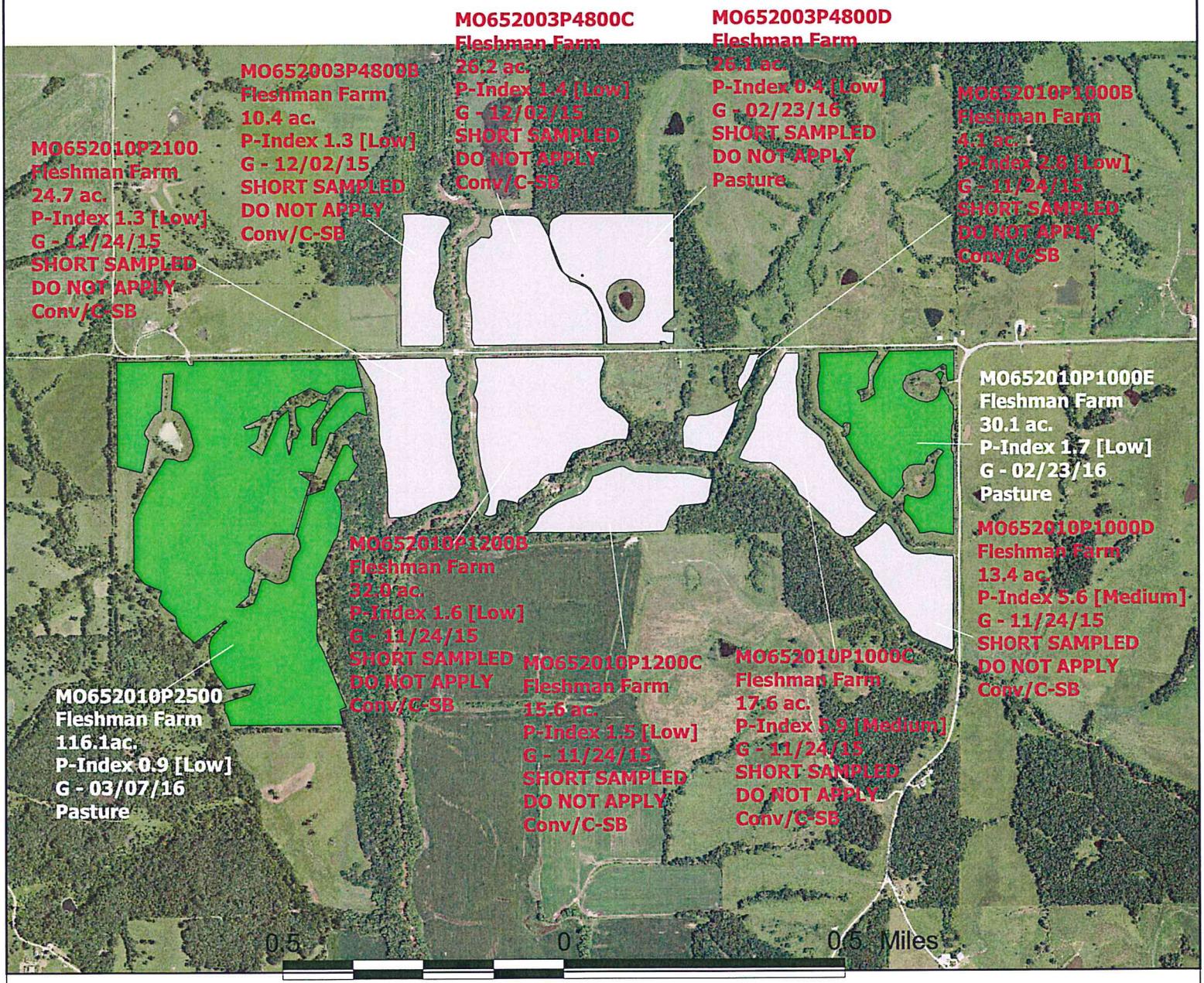
(33.1ac.)Field Boundary
50 ft Property Line Buffer

Trenton Farms RE, LLC
1232.2 ac.



Overview Map
Putnam County

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620 Country Club Road
Iowa Falls, Iowa 50126
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Fax: 641.648.7310
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Trenton Farms RE LLC; 15

- Nitrogen Rate Ap (1060.6 ac. - 82.6%)
- Phosphorus Rate (56.2 ac. - 4.4%)
- SHORT SAMPLED (163.9 ac. - 12.8%)

Farm Name: Trenton Farms RE, LLC
Location: Putnam County, Missouri, United States
Client Name: Overview Map
Number of Fields: 34
Total Acres: 1232.2

Missouri
Comprehensive Nutrient Management Plan
FARMER PLAN DOCUMENT

Operation Name: Trenton Farms RE, LLC

This plan is a summary of the key activities for one year of the nutrient management plan. The period of time covered by this plan is:
8/2017 - 7/2018

The objective of this document is to provide a concise list of the nutrient management activities on this operation for the year indicated. Activities covered by this plan include:

- Planned manure transfers and sales.
- Planned manure application dates and rates.
- Planned fertilizer application dates and rates.

Record keeping is an important part of nutrient management. Please use the space in this plan to record what actually occurred on each field.

Farm contact information: Trenton Farms RE, LLC
SW State Highway W
Trenton, MO 64683
507-825-7032 (office)

Whole Plan Period: August 2017 - July 2022

Contents

A. Manure Transfers - 8/2017 - 7/2018

Exports off the Farm: *(blank rows are for recording exports as they occur)*

Export Month	Export Year	Source of Manure	Target Export Amount	Units	Receiving Operation	Notes

Imports onto the Farm: *(blank rows are for recording imports as they occur)*

Import Month	Import Year	Source of Manure	Animal Type	Target Import Amount	Units	Notes

Internal Transfers of Manure: *(blank rows are for recording transfers as they occur)*

Transfer Month	Transfer Year	Source of Manure	Manure Destination	Target Transfer Amount	Units	Notes

B. Planned Manure Applications - 8/2017 - 7/2018

Month and Year	Field ID	Field SubID	Planned Crop(s)	Source	Application Equipment	Acres Covered	Application Rate	Units per acre	Total Applied
Oct 2017	MO602419P 1300		Corn grain	Gestation	Applicator	12.2	6,100	Gal	74,420
Oct 2017	MO602419P 3000B		Corn grain	GDU	Applicator	31.7	3,400	Gal	107,780
Oct 2017	MO602419P 4000		Corn grain	Gestation	Applicator	107.8	6,100	Gal	657,580
Oct 2017	MO602420P 3400		Corn grain	Gestation	Applicator	29.3	7,900	Gal	231,470
Oct 2017	MO602430P 1150B		Corn grain	Gestation	Applicator	4.9	6,100	Gal	29,890
Oct 2017	MO602430P 1150C		Corn grain	Gestation	Applicator	5.8	7,900	Gal	46,140
Oct 2017	MO602430P 1400		Corn grain	GDU	Applicator	18.6	2,600	Gal	48,360
Nov 2017	MO602430P 1150C		Corn grain	Gestation	Applicator	0.2	7,900	Gal	1,580
Mar 2018	MO602419P 3000C		Corn grain	GDU	Applicator	3.7	3,300	Gal	12,210
Mar 2018	MO602421P 3500B		Corn grain	GDU	Applicator	21.6	3,400	Gal	73,440
Mar 2018	MO602421P 3500C		Corn grain	GDU	Applicator	18.7	3,300	Gal	61,710
Mar 2018	MO602429P 8000B		Corn grain	Gestation	Applicator	94.7	8,200	Gal	776,540
Mar 2018	MO602430P 4400		Corn grain	Gestation	Applicator	31.0	7,600	Gal	235,600
Jul 2018	MO652003P 4800D		Cool season grass pasture	Gestation	Applicator	22.3	5,800	Gal	129,340

Manure Application Records - 8/2017 - 7/2018

App #	Date	Field ID	Field SubID	Manure Source	Application Equipment	Actual Rate	Actual Loads	Total Applied	Acres Covered
1									
2									
3									
4									
5									
6									
7									

Manure Application Records - 8/2017 - 7/2018 (continued)

App #	Applicator's Name	[1]Soil Condition	[2]Ground Cover	[3]Days to Incorporate	Air Temp	Wind Speed	Wind Direction	[4]Rain Before	[5]Rain After	[6]Weather
1										
2										
3										
4										
5										
6										
7										

1. Soil condition at time of operations: Dry, Firm, Wet, Muddy, Snow-Covered, Frozen.
2. Percent residue or ground cover at time of application.
3. Number of days to incorporate manure after application: Use "N1" for no incorporation.
4. Amount of rainfall during the 24 hours prior to application.
5. Amount of rainfall during the 24 hours after application.
6. Weather condition at time of application: Sunny, Partly Cloudy, Cloudy, Rain, Snow.

Manure Application Records - 8/2017 - 7/2018

App #	Date	Field ID	Field SubID	Manure Source	Application Equipment	Actual Rate	Actual Loads	Total Applied	Acres Covered
8									
9									
10									
11									
12									
13									
14									

Manure Application Records - 8/2017 - 7/2018 (continued)

App #	Applicator's Name	[1]Soil Condition	[2]Ground Cover	[3]Days to Incorporate	Air Temp	Wind Speed	Wind Direction	[4]Rain Before	[5]Rain After	[6]Weather
8										
9										
10										
11										
12										
13										
14										

1. Soil condition at time of operations: Dry, Firm, Wet, Muddy, Snow-Covered, Frozen.
2. Percent residue or ground cover at time of application.
3. Number of days to incorporate manure after application: Use "N1" for no incorporation.
4. Amount of rainfall during the 24 hours prior to application.
5. Amount of rainfall during the 24 hours after application.
6. Weather condition at time of application: Sunny, Partly Cloudy, Cloudy, Rain, Snow.

C. Planned Commercial Fertilizer Applications - 8/2017 - 7/2018

No planned commercial fertilizer applications for the period.

Commercial Fertilizer Application Records - 8/2017 - 7/2018

Month and Year	Field ID	Field SubID	Field Size (acres)	Planned Crop(s)	Fertilizer Analysis	Application Method	Material rate/acre	Total Material Applied	N (lbs/a)	P_2O_5 (lbs/a)	K_2O (lbs/a)

D. Recommended Manure Management Practices

Every time you apply manure you should review the following checklist to be sure conditions are favorable for manure applications. **These practices are required on permitted operations and operations that receive cost-share support through EQIP.**

- Know the proper manure source and application rate for each field.
- Keep good records, write down such things as operations performed, dates and times, actual rates, and weather conditions. This document provides record keeping forms.
- No surface application of manure if precipitation, likely to create runoff, is forecasted to occur within 24 hours of the planned application.
- No manure application on land with a slope greater than 20 percent.
- No surface application of manure to frozen, snow-covered or saturated soils.
- Manure applications shall comply with all manure application setbacks defined in the table below:

Manure application setback distances where manure should not be applied. For streams, lakes and wetlands the setback distance is measured from the defined edge of the water feature.

Setback Feature	Application Conditions	Setback Distance (feet)
Public or private drinking water well, drinking water lake or impoundment, or drinking water intake structure.	All applications	300
Other wells including un-plugged abandon wells	All applications	300
Public and privately owned lakes and impoundments not used as a water supply including impoundments with no outlet. Perennial streams, intermittent streams, canals, drainage ditches and wetlands. Tile line inlet (un-plugged during application).	Permanently vegetated setback	35
	Up-gradient, no or insufficient vegetated setback	100
	Down-gradient, no or insufficient vegetated setback	35
Losing streams, cave entrance, spring, or active sinkhole.	All applications	300
Non-owned occupied residence.	All applications	150
Public use area including non-owned businesses.	All applications	150
Public roads and property boundaries.	All applications	50

The following practices are recommended:

- Apply nutrients close to crop use to maximize nutrient uptake and reduce potential losses.
- Calibrate and maintain application equipment to apply accurate and uniform rates; all land application equipment should be calibrated at least annually.
- Avoid application when wind is blowing in the direction of neighbors or on weekends and holidays when people are more likely to be outdoors.

For liquid applications:

- Adjusting surface application rates to meet infiltration rate and water holding capacity of the soil.
- Irrigation systems should have automatic shut-off devices in case of pressure loss and/or an operator on-site at all times during operation to monitor application equipment.
- The perimeter of all fields receiving manure should be checked regularly during operation of land application equipment to confirm manure is not running off the field or entering waters of the state.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN

FIELD ID: MO602419P1300

Field Information

Total Acres:	14.4	Spreadable Acres:	12.2
Non-Spreadable Acres:	2.2	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	100	75	80

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2017			
Manure Source	Gestation			
Application Rate	6,100 gal/a			
Acres Covered	12.2			
Total Applied	74,420 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	101			
P_2O_5 (lbs/acre)	153			
K_2O (lbs/acre)	248			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602419P4000

Field Information

Total Acres:	112.2	Spreadable Acres:	107.8
Non-Spreadable Acres:	4.4	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	100	75	80

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2017			
Manure Source	Gestation			
Application Rate	6,100 gal/a			
Acres Covered	107.8			
Total Applied	657,580 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	101			
P_2O_5 (lbs/acre)	153			
K_2O (lbs/acre)	248			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602420P3400

Field Information

Total Acres:	30.9	Spreadable Acres:	29.3
Non-Spreadable Acres:	1.6	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	130	70	20

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2017			
Manure Source	Gestation			
Application Rate	7,900 gal/a			
Acres Covered	29.3			
Total Applied	231,470 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	130			
P_2O_5 (lbs/acre)	198			
K_2O (lbs/acre)	321			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602420P4000

Field Information

Total Acres:	108.8	Spreadable Acres:	104.6
Non-Spreadable Acres:	4.2	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	70	45

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602421P3500B

Field Information

Total Acres:	25.2	Spreadable Acres:	21.6
Non-Spreadable Acres:	3.6	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	130	80	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Mar 2018			
Manure Source	GDU			
Application Rate	3,400 gal/a			
Acres Covered	21.6			
Total Applied	73,440 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	131			
P_2O_5 (lbs/acre)	143			
K_2O (lbs/acre)	85			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602421P3500C

Field Information

Total Acres:	19.8	Spreadable Acres:	18.7
Non-Spreadable Acres:	1.1	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	125	0	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Mar 2018			
Manure Source	GDU			
Application Rate	3,300 gal/a			
Acres Covered	18.7			
Total Applied	61,710 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	127			
P_2O_5 (lbs/acre)	139			
K_2O (lbs/acre)	83			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602429P8000B

Field Information

Total Acres:	98.7	Spreadable Acres:	94.7
Non-Spreadable Acres:	4.0	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	135	115	30

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Mar 2018			
Manure Source	Gestation			
Application Rate	8,200 gal/a			
Acres Covered	94.7			
Total Applied	776,540 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	135			
P_2O_5 (lbs/acre)	205			
K_2O (lbs/acre)	333			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602429P8000C

Field Information

Total Acres:	24.1	Spreadable Acres:	21.7
Non-Spreadable Acres:	2.4	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	75	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN FIELD ID: MO602429P8000D

Field Information

Total Acres:	186.1	Spreadable Acres:	168.2
Non-Spreadable Acres:	17.9	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	40	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P1150B

Field Information

Total Acres:	6.0	Spreadable Acres:	4.9
Non-Spreadable Acres:	1.1	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	100	80	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2017			
Manure Source	Gestation			
Application Rate	6,100 gal/a			
Acres Covered	4.9			
Total Applied	29,890 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	101			
P_2O_5 (lbs/acre)	153			
K_2O (lbs/acre)	248			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P1150C

Field Information

Total Acres:	6.9	Spreadable Acres:	6.0
Non-Spreadable Acres:	0.9	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	130	75	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1	Application 2		
Application Time	Oct 2017	Nov 2017		
Manure Source	Gestation	Gestation		
Application Rate	7,900 gal/a	7,900 gal/a		
Acres Covered	5.8	0.2		
Total Applied	46,140 gal	1,580 gal		
Loads per Field	0.0	0.0		
Placement	Injected	Injected		
N (lbs/acres)	130	130		
P_2O_5 (lbs/acre)	198	198		
K_2O (lbs/acre)	321	321		

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P1400

Field Information

Total Acres:	21.0	Spreadable Acres:	18.6
Non-Spreadable Acres:	2.4	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	100	80	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2017			
Manure Source	GDU			
Application Rate	2,600 gal/a			
Acres Covered	18.6			
Total Applied	48,360 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	100			
P_2O_5 (lbs/acre)	109			
K_2O (lbs/acre)	65			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN

FIELD ID:

Field Information

Total Acres:	0.0	Spreadable Acres:	
Non-Spreadable Acres:		Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602419P3000B

Field Information

Total Acres:	34.0	Spreadable Acres:	31.7
Non-Spreadable Acres:	2.3	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	130	80	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2017			
Manure Source	GDU			
Application Rate	3,400 gal/a			
Acres Covered	31.7			
Total Applied	107,780 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	131			
P_2O_5 (lbs/acre)	143			
K_2O (lbs/acre)	85			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN FIELD ID: MO602419P3000C

Field Information

Total Acres:	3.9	Spreadable Acres:	3.7
Non-Spreadable Acres:	0.2	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	125	85	15

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Mar 2018			
Manure Source	GDU			
Application Rate	3,300 gal/a			
Acres Covered	3.7			
Total Applied	12,210 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	127			
P_2O_5 (lbs/acre)	139			
K_2O (lbs/acre)	83			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN FIELD ID: MO602419P3000D

Field Information

Total Acres:	3.7	Spreadable Acres:	1.9
Non-Spreadable Acres:	1.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_20
Corn grain	122.099998474121 bu	130	85	30

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602429P8000E

Field Information

Total Acres:	111.4	Spreadable Acres:	98.9
Non-Spreadable Acres:	12.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	85	35

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P4200

Field Information

Total Acres:	11.3	Spreadable Acres:	9.8
Non-Spreadable Acres:	1.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	55	30

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P4300

Field Information

Total Acres:	17.1	Spreadable Acres:	13.6
Non-Spreadable Acres:	3.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	55	45

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P4400

Field Information

Total Acres:	35.6	Spreadable Acres:	31.0
Non-Spreadable Acres:	4.6	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	125	115	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Mar 2018			
Manure Source	Gestation			
Application Rate	7,600 gal/a			
Acres Covered	31.0			
Total Applied	235,600 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	125			
P_2O_5 (lbs/acre)	190			
K_2O (lbs/acre)	309			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN

FIELD ID: MO602524P4600

Field Information

Total Acres:	53.7	Spreadable Acres:	50.9
Non-Spreadable Acres:	2.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	50	30

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602525P1500B

Field Information

Total Acres:	19.5	Spreadable Acres:	18.7
Non-Spreadable Acres:	0.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_20
Soybeans	43.7999992370605 bu	0	40	10

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602525P1500C

Field Information

Total Acres:	34.8	Spreadable Acres:	33.1
Non-Spreadable Acres:	1.7	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	50	35

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602429P8000F

Field Information

Total Acres:	23.1	Spreadable Acres:	20.6
Non-Spreadable Acres:	2.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	55	45

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652003P4800B

Field Information

Total Acres:	11.5	Spreadable Acres:	10.4
Non-Spreadable Acres:	1.1	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	45	40

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652003P4800C

Field Information

Total Acres:	28.6	Spreadable Acres:	26.2
Non-Spreadable Acres:	2.4	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	124.300003051758 bu	140	65	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652003P4800D

Field Information

Total Acres:	26.1	Spreadable Acres:	22.3
Non-Spreadable Acres:	3.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Cool season grass pasture	2.40000009536743 ton	95	40	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Jul 2018			
Manure Source	Gestation			
Application Rate	5,800 gal/a			
Acres Covered	22.3			
Total Applied	129,340 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	96			
P_2O_5 (lbs/acre)	145			
K_2O (lbs/acre)	235			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Cool season grass pasture - For cool season grass pasture and bluegrass pasture split nitrogen applications between late spring after first grazing and mid August, applying 60% before the season of greatest need.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1000B

Field Information

Total Acres:	5.8	Spreadable Acres:	4.1
Non-Spreadable Acres:	1.7	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	124.300003051758 bu	130	70	35

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1000C

Field Information

Total Acres:	23.5	Spreadable Acres:	17.6
Non-Spreadable Acres:	5.9	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	40.0999984741211 bu	0	50	55

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1000D

Field Information

Total Acres:	16.6	Spreadable Acres:	13.4
Non-Spreadable Acres:	3.2	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	40.0999984741211 bu	0	50	55

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1000E

Field Information

Total Acres:	37.1	Spreadable Acres:	30.1
Non-Spreadable Acres:	7.0	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Cool season grass pasture	2.40000009536743 ton	95	5	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Cool season grass pasture - For cool season grass pasture and bluegrass pasture split nitrogen applications between late spring after first grazing and mid August, applying 60% before the season of greatest need.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1200B

Field Information

Total Acres:	35.8	Spreadable Acres:	32.0
Non-Spreadable Acres:	3.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	124.300003051758 bu	130	35	15

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1200C

Field Information

Total Acres:	18.7	Spreadable Acres:	15.6
Non-Spreadable Acres:	3.1	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	40.0999984741211 bu	0	35	35

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P2100

Field Information

Total Acres:	24.7	Spreadable Acres:	22.2
Non-Spreadable Acres:	2.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	40.0999984741211 bu	0	30	60

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2017 - 7/2018 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P2500

Field Information

Total Acres:	121.7	Spreadable Acres:	116.1
Non-Spreadable Acres:	5.6	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Cool season grass pasture	2.40000009536743 ton	95	5	10

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Cool season grass pasture - For cool season grass pasture and bluegrass pasture split nitrogen applications between late spring after first grazing and mid August, applying 60% before the season of greatest need.

Summary Tables - 8/2017 - 7/2018

F. Manure Summary: 8/2017 - 7/2018

	Source 1	Source 2		
Source	Gestation	GDU		
Units	gals	gals		
Beginning of Year Inventory	0	0		
Inputs				
Production	3,984,872	530,368		
Imports - off farm	0	0		
Transfers - on farm	0	0		
Total Inputs	3,984,872	530,368		
Outputs				
Land Applied	2,182,560	303,500		
Exports - off farm	0	0		
Transfers - on farm	0	0		
Total Outputs	2,182,560	303,500		
End of Year Inventory	1,802,312	226,868		

G. Land Applied Nutrient Summary: 8/2017 - 7/2018

	Total Applied		PAN[1]	P_2O_5	K_2O
Manure Source	(tons or gals)		----------lbs----------		
Gestation	2,182,560	gals	36,004	54,635	88,660
GDU	303,500	gals	11,688	12,762	7,599
Manure Total			47,692	67,397	96,259
	Total Applied		**N**	**P_2O_5**	**K_2O**
Fertilizer Source	(lbs or gals)		----------lbs----------		
Fertilizer Total			0	0	0
Total			47,692	67,397	96,259

H. Lime Recommendations

These lime recommendations are one-time applications meant to be applied only once to adjust soil pH to its desired level. If you have already applied the recommended lime rate in a previous year of this plan please disregard these recommendations.

Lime Recommendations[1]

Field ID	Field SubID	Field Size	Test Year	NA[2]	pH	pH Rating	Mg (lbs/a)	Mg Rating	Lime Rec. lbs ENM/acre[3]	Mg Rec. lbs EMg/acre[4]
MO602419P1300		14.4	2012	6.9	5.8	Medium	302	High	1,780	0 [D]
MO602419P4000		112.2	2012	6.9	5.8	Medium	302	High	1,780	0 [D]
MO602420P3400		30.9	2015	6.5	5.9	Medium	1,306	High	1,565	0 [D]
MO602420P4000		108.8	2015	6.5	5.7	Medium	1,358	High	1,765	0 [D]
MO602421P3500B		25.2	2015	6.4	5.7	Medium	1,334	High	1,740	0 [D]
MO602421P3500C		19.8	2015	6.4	5.6	Medium	1,238	High	1,815	0 [D]
MO602429P8000B		98.7	2015	6.6	6.1	High	1,522	High	1,295	0 [D]
MO602429P8000C		24.1	2015	6.7	6.4	High	1,562	High	495	0 [D]
MO602429P8000D		186.1	2015	6.7	6.5	High	1,290	High	0	0
MO602430P1150B		6.0	2012	7.1	6.5	High	566	High	0	0
MO602430P1150C		6.9	2015	6.4	5.8	Medium	1,584	High	1,650	0 [D]
MO602430P1400		21.0	2012	7.1	6.5	High	566	High	0	0
		0.0	2012	6.6	5.7	**	652	**	**	**
MO602419P3000B		34.0	2015	6.4	5.8	Medium	1,502	High	1,650	0 [D]
MO602419P3000C		3.9	2015	6.3	5.6	Medium	1,574	High	1,790	0 [D]
MO602419P3000D		3.7	2015	6.3	5.5	Medium	1,370	High	1,850	0 [D]
MO602429P8000E		111.4	2015	6.7	6.3	High	1,506	High	840	0 [D]
MO602430P4200		11.3	2015		7.0	*	842	*	*	*

Field ID	Field SubID	Field Size	Test Year	NA[2]	pH	pH Rating	Mg (lbs/a)	Mg Rating	Lime Rec. lbs ENM/acre[3]	Mg Rec. lbs EMg/acre[4]
MO602430P4300		17.1	2015		7.0	*	835	*	*	*
MO602430P4400		35.6	2015	6.7	6.2	High	1,324	High	1,105	0 [D]
MO602524P4600		53.7	2016	6.7	6.6	High	888	High	0	0
MO602525P1500B		19.5	2016	6.5	5.8	Medium	1,018	High	1,675	0 [D]
MO602525P1500C		34.8	2016	6.6	6.1	High	1,158	High	1,295	0 [D]
MO602429P8000F		23.1	2016	6.7	6.3	High	1,192	High	840	0 [D]
MO652003P4800B		11.5	2015		7.8	*	318	*	*	*
MO652003P4800C		28.6	2015		7.8	*	318	*	*	*
MO652003P4800D		26.1	2016	6.7	6.3	High	852	High	0	0
MO652010P1000B		5.8	2015	6.7	6.0	Medium	664	High	1,480	0 [D]
MO652010P1000C		23.5	2015	6.7	6.0	Medium	664	High	1,480	0 [D]
MO652010P1000D		16.6	2015	6.7	6.0	Medium	664	High	1,480	0 [D]
MO652010P1000E		37.1	2016	6.7	6.5	High	940	High	0	0
MO652010P1200B		35.8	2015	6.7	6.2	High	774	High	1,105	0 [D]
MO652010P1200C		18.7	2015	6.7	6.1	High	720	High	1,315	0 [D]
MO652010P2100		24.7	2015	6.7	6.1	High	878	High	1,315	0 [D]
MO652010P2500		121.7	2016		7.1	*	389	*	*	*

[1]These lime recommendations assume you used the University of Missouri soil testing laboratory, or comparable lab.
[2]NA = Neutralizable Acidity, units in meq/100g soil.
[3]ENM = Effective Neutralizing Material.
[4]EMg = Effective Magnesium.

** - No recommendation: No crop has been selected for this field in order to calculate lime recommendation.
* - No recommendation: Some soil test data is missing for this field. Please run the Essential Data Detection Tool.

[D] To determine limestone needed in tons/acre, divide your ENM requirement by the guarantee of your limestone dealer.

I. Crop Record Keeping Table: 8/2017 - 7/2018

Field ID	Field SubID	Crop	Planting Date	Hybrid or Variety	Seeding Rate	Harvest date(s)	Yield/A
MO602419P 1300		Corn grain					
MO602419P 4000		Corn grain					
MO602420P 3400		Corn grain					
MO602420P 4000		Soybeans					
MO602421P 3500B		Corn grain					
MO602421P 3500C		Corn grain					
MO602429P 8000B		Corn grain					
MO602429P 8000C		Soybeans					
MO602429P 8000D		Soybeans					
MO602430P 1150B		Corn grain					
MO602430P 1150C		Corn grain					
MO602430P 1400		Corn grain					
MO602419P 3000B		Corn grain					
MO602419P 3000C		Corn grain					
MO602419P 3000D		Corn grain					
MO602429P		Soybeans					

Field ID	Field SubID	Crop	Planting Date	Hybrid or Variety	Seeding Rate	Harvest date(s)	Yield/A
8000E							
MO602430P 4200		Soybeans					
MO602430P 4300		Soybeans					
MO602430P 4400		Corn grain					
MO602524P 4600		Soybeans					
MO602525P 1500B		Soybeans					
MO602525P 1500C		Soybeans					
MO602429P 8000F		Soybeans					
MO652003P 4800B		Soybeans					
MO652003P 4800C		Corn grain					
MO652003P 4800D		Cool season grass pasture					
MO652010P 1000B		Corn grain					
MO652010P 1000C		Soybeans					
MO652010P 1000D		Soybeans					
MO652010P 1000E		Cool season grass pasture					
MO652010P 1200B		Corn grain					
MO652010P		Soybeans					

Field ID	Field SubID	Crop	Planting Date	Hybrid or Variety	Seeding Rate	Harvest date(s)	Yield/A
1200C							
MO652010P 2100		Soybeans					
MO652010P 2500		Cool season grass pasture					

Missouri
Comprehensive Nutrient Management Plan
FARMER PLAN DOCUMENT

Operation Name: Trenton Farms RE, LLC

This plan is a summary of the key activities for one year of the nutrient management plan. The period of time covered by this plan is:
8/2018 - 7/2019

The objective of this document is to provide a concise list of the nutrient management activities on this operation for the year indicated. Activities covered by this plan include:

- Planned manure transfers and sales.
- Planned manure application dates and rates.
- Planned fertilizer application dates and rates.

Record keeping is an important part of nutrient management. Please use the space in this plan to record what actually occurred on each field.

Farm contact information: Trenton Farms RE, LLC
SW State Highway W
Trenton, MO 64683
507-825-7032 (office)

Whole Plan Period: August 2017 - July 2022

Contents

A. Manure Transfers - 8/2018 - 7/2019

Exports off the Farm: *(blank rows are for recording exports as they occur)*

Export Month	Export Year	Source of Manure	Target Export Amount	Units	Receiving Operation	Notes

Imports onto the Farm: *(blank rows are for recording imports as they occur)*

Import Month	Import Year	Source of Manure	Animal Type	Target Import Amount	Units	Notes

Internal Transfers of Manure: *(blank rows are for recording transfers as they occur)*

Transfer Month	Transfer Year	Source of Manure	Manure Destination	Target Transfer Amount	Units	Notes

B. Planned Manure Applications - 8/2018 - 7/2019

Month and Year	Field ID	Field SubID	Planned Crop(s)	Source	Application Equipment	Acres Covered	Application Rate	Units per acre	Total Applied
Oct 2018	MO602420P 4000		Corn grain	GDU	Applicator	104.6	3,400	Gal	355,640
Oct 2018	MO602429P 8000C		Corn grain	Gestation	Applicator	21.7	7,900	Gal	171,430
Oct 2018	MO602429P 8000D		Corn grain	Gestation	Applicator	168.2	7,900	Gal	1,328,780
Oct 2018	MO602429P 8000E		Corn grain	Gestation	Applicator	98.9	7,900	Gal	781,310
Oct 2018	MO602430P 4200		Corn grain	GDU	Applicator	7.6	3,700	Gal	27,960
Oct 2018	MO602430P 4300		Corn grain	Gestation	Applicator	13.6	8,500	Gal	115,600
Oct 2018	MO602524P 4600		Corn grain	Gestation	Applicator	50.9	8,200	Gal	417,380
Oct 2018	MO602525P 1500B		Corn grain	Gestation	Applicator	7.2	3,800	Gal	27,240
Nov 2018	MO602430P 4200		Corn grain	GDU	Applicator	2.2	3,700	Gal	8,140
Nov 2018	MO602525P 1500B		Corn grain	Gestation	Applicator	11.5	3,800	Gal	43,700
Apr 2019	MO602429P 8000F		Corn grain	GDU	Applicator	20.6	3,500	Gal	72,100
Apr 2019	MO602525P 1500C		Corn grain	Gestation	Applicator	33.1	4,800	Gal	158,880
Jul 2019	MO652003P 4800D		Cool season grass pasture	Gestation	Applicator	22.3	4,700	Gal	104,810

Manure Application Records - 8/2018 - 7/2019

App #	Date	Field ID	Field SubID	Manure Source	Application Equipment	Actual Rate	Actual Loads	Total Applied	Acres Covered
1									
2									
3									
4									
5									
6									
7									

Manure Application Records - 8/2018 - 7/2019 (continued)

App #	Applicator's Name	[1]Soil Condition	[2]Ground Cover	[3]Days to Incorporate	Air Temp	Wind Speed	Wind Direction	[4]Rain Before	[5]Rain After	[6]Weather
1										
2										
3										
4										
5										
6										
7										

1. Soil condition at time of operations: Dry, Firm, Wet, Muddy, Snow-Covered, Frozen.
2. Percent residue or ground cover at time of application.
3. Number of days to incorporate manure after application: Use "N1" for no incorporation.
4. Amount of rainfall during the 24 hours prior to application.
5. Amount of rainfall during the 24 hours after application.
6. Weather condition at time of application: Sunny, Partly Cloudy, Cloudy, Rain, Snow.

Manure Application Records - 8/2018 - 7/2019

App #	Date	Field ID	Field SubID	Manure Source	Application Equipment	Actual Rate	Actual Loads	Total Applied	Acres Covered
8									
9									
10									
11									
12									
13									
14									

Manure Application Records - 8/2018 - 7/2019 (continued)

App #	Applicator's Name	[1]Soil Condition	[2]Ground Cover	[3]Days to Incorporate	Air Temp	Wind Speed	Wind Direction	[4]Rain Before	[5]Rain After	[6]Weather
8										
9										
10										
11										
12										
13										
14										

1. Soil condition at time of operations: Dry, Firm, Wet, Muddy, Snow-Covered, Frozen.
2. Percent residue or ground cover at time of application.
3. Number of days to incorporate manure after application: Use "N1" for no incorporation.
4. Amount of rainfall during the 24 hours prior to application.
5. Amount of rainfall during the 24 hours after application.
6. Weather condition at time of application: Sunny, Partly Cloudy, Cloudy, Rain, Snow.

C. Planned Commercial Fertilizer Applications - 8/2018 - 7/2019

No planned commercial fertilizer applications for the period.

Commercial Fertilizer Application Records - 8/2018 - 7/2019

Month and Year	Field ID	Field SubID	Field Size (acres)	Planned Crop(s)	Fertilizer Analysis	Application Method	Material rate/acre	Total Material Applied	N (lbs/a)	P_2O_5 (lbs/a)	K_2O (lbs/a)

D. Recommended Manure Management Practices

Every time you apply manure you should review the following checklist to be sure conditions are favorable for manure applications. **These practices are required on permitted operations and operations that receive cost-share support through EQIP.**

- Know the proper manure source and application rate for each field.
- Keep good records, write down such things as operations performed, dates and times, actual rates, and weather conditions. This document provides record keeping forms.
- No surface application of manure if precipitation, likely to create runoff, is forecasted to occur within 24 hours of the planned application.
- No manure application on land with a slope greater than 20 percent.
- No surface application of manure to frozen, snow-covered or saturated soils.
- Manure applications shall comply with all manure application setbacks defined in the table below:

Manure application setback distances where manure should not be applied. For streams, lakes and wetlands the setback distance is measured from the defined edge of the water feature.

Setback Feature	Application Conditions	Setback Distance (feet)
Public or private drinking water well, drinking water lake or impoundment, or drinking water intake structure.	All applications	300
Other wells including un-plugged abandon wells	All applications	300
Public and privately owned lakes and impoundments not used as a water supply including impoundments with no outlet. Perennial streams, intermittent streams, canals, drainage ditches and wetlands. Tile line inlet (un-plugged during application).	Permanently vegetated setback	35
	Up-gradient, no or insufficient vegetated setback	100
	Down-gradient, no or insufficient vegetated setback	35
Losing streams, cave entrance, spring, or active sinkhole.	All applications	300
Non-owned occupied residence.	All applications	150
Public use area including non-owned businesses.	All applications	150
Public roads and property boundaries.	All applications	50

The following practices are recommended:

- Apply nutrients close to crop use to maximize nutrient uptake and reduce potential losses.
- Calibrate and maintain application equipment to apply accurate and uniform rates; all land application equipment should be calibrated at least annually.
- Avoid application when wind is blowing in the direction of neighbors or on weekends and holidays when people are more likely to be outdoors.

For liquid applications:

- Adjusting surface application rates to meet infiltration rate and water holding capacity of the soil.
- Irrigation systems should have automatic shut-off devices in case of pressure loss and/or an operator on-site at all times during operation to monitor application equipment.
- The perimeter of all fields receiving manure should be checked regularly during operation of land application equipment to confirm manure is not running off the field or entering waters of the state.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN

FIELD ID: MO602419P1300

Field Information

Total Acres:	14.4	Spreadable Acres:	12.2
Non-Spreadable Acres:	2.2	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	60	105

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602419P4000

Field Information

Total Acres:	112.2	Spreadable Acres:	107.8
Non-Spreadable Acres:	4.4	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	60	105

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602420P3400

Field Information

Total Acres:	30.9	Spreadable Acres:	29.3
Non-Spreadable Acres:	1.6	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	50	40

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602420P4000

Field Information

Total Acres:	108.8	Spreadable Acres:	104.6
Non-Spreadable Acres:	4.2	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	130	85	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2018			
Manure Source	GDU			
Application Rate	3,400 gal/a			
Acres Covered	104.6			
Total Applied	355,640 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	131			
P_2O_5 (lbs/acre)	143			
K_2O (lbs/acre)	85			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN FIELD ID: MO602421P3500B

Field Information

Total Acres:	25.2	Spreadable Acres:	21.6
Non-Spreadable Acres:	3.6	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	60	40

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602421P3500C

Field Information

Total Acres:	19.8	Spreadable Acres:	18.7
Non-Spreadable Acres:	1.1	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	0	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602429P8000B

Field Information

Total Acres:	98.7	Spreadable Acres:	94.7
Non-Spreadable Acres:	4.0	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	100	55

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602429P8000C

Field Information

Total Acres:	24.1	Spreadable Acres:	21.7
Non-Spreadable Acres:	2.4	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	130	95	15

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2018			
Manure Source	Gestation			
Application Rate	7,900 gal/a			
Acres Covered	21.7			
Total Applied	171,430 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	130			
P_2O_5 (lbs/acre)	198			
K_2O (lbs/acre)	321			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN FIELD ID: MO602429P8000D

Field Information

Total Acres:	186.1	Spreadable Acres:	168.2
Non-Spreadable Acres:	17.9	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	130	55	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2018			
Manure Source	Gestation			
Application Rate	7,900 gal/a			
Acres Covered	168.2			
Total Applied	1,328,780 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	130			
P_2O_5 (lbs/acre)	198			
K_2O (lbs/acre)	321			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P1150B

Field Information

Total Acres:	6.0	Spreadable Acres:	4.9
Non-Spreadable Acres:	1.1	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	60	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P1150C

Field Information

Total Acres:	6.9	Spreadable Acres:	6.0
Non-Spreadable Acres:	0.9	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	55	40

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P1400

Field Information

Total Acres:	21.0	Spreadable Acres:	18.6
Non-Spreadable Acres:	2.4	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	60	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN

FIELD ID:

Field Information

Total Acres:	0.0	Spreadable Acres:	
Non-Spreadable Acres:		Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602419P3000B

Field Information

Total Acres:	34.0	Spreadable Acres:	31.7
Non-Spreadable Acres:	2.3	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	60	40

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602419P3000C

Field Information

Total Acres:	3.9	Spreadable Acres:	3.7
Non-Spreadable Acres:	0.2	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	65	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602419P3000D

Field Information

Total Acres:	3.7	Spreadable Acres:	1.9
Non-Spreadable Acres:	1.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	65	50

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602429P8000E

Field Information

Total Acres:	111.4	Spreadable Acres:	98.9
Non-Spreadable Acres:	12.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	130	105	20

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2018			
Manure Source	Gestation			
Application Rate	7,900 gal/a			
Acres Covered	98.9			
Total Applied	781,310 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	130			
P_2O_5 (lbs/acre)	198			
K_2O (lbs/acre)	321			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P4200

Field Information

Total Acres:	11.3	Spreadable Acres:	9.8
Non-Spreadable Acres:	1.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	140	75	20

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1	Application 2		
Application Time	Oct 2018	Nov 2018		
Manure Source	GDU	GDU		
Application Rate	3,700 gal/a	3,700 gal/a		
Acres Covered	7.6	2.2		
Total Applied	27,960 gal	8,140 gal		
Loads per Field	0.0	0.0		
Placement	Injected	Injected		
N (lbs/acres)	142	142		
P_2O_5 (lbs/acre)	155	155		
K_2O (lbs/acre)	93	93		

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P4300

Field Information

Total Acres:	17.1	Spreadable Acres:	13.6
Non-Spreadable Acres:	3.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	140	70	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2018			
Manure Source	Gestation			
Application Rate	8,500 gal/a			
Acres Covered	13.6			
Total Applied	115,600 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	140			
P_2O_5 (lbs/acre)	213			
K_2O (lbs/acre)	345			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P4400

Field Information

Total Acres:	35.6	Spreadable Acres:	31.0
Non-Spreadable Acres:	4.6	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	100	40

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602524P4600

Field Information

Total Acres:	53.7	Spreadable Acres:	50.9
Non-Spreadable Acres:	2.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	135	65	15

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2018			
Manure Source	Gestation			
Application Rate	8,200 gal/a			
Acres Covered	50.9			
Total Applied	417,380 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	135			
P_2O_5 (lbs/acre)	205			
K_2O (lbs/acre)	333			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN FIELD ID: MO602525P1500B

Field Information

Total Acres:	19.5	Spreadable Acres:	18.7
Non-Spreadable Acres:	0.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	125	55	5

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1	Application 2		
Application Time	Oct 2018	Nov 2018		
Manure Source	Gestation	Gestation		
Application Rate	3,800 gal/a	3,800 gal/a		
Acres Covered	7.2	11.5		
Total Applied	27,240 gal	43,700 gal		
Loads per Field	0.0	0.0		
Placement	Injected	Injected		
N (lbs/acres)	63	63		
P_2O_5 (lbs/acre)	95	95		
K_2O (lbs/acre)	154	154		

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602525P1500C

Field Information

Total Acres:	34.8	Spreadable Acres:	33.1
Non-Spreadable Acres:	1.7	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	135	70	20

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Apr 2019			
Manure Source	Gestation			
Application Rate	4,800 gal/a			
Acres Covered	33.1			
Total Applied	158,880 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	79			
P_2O_5 (lbs/acre)	120			
K_2O (lbs/acre)	195			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602429P8000F

Field Information

Total Acres:	23.1	Spreadable Acres:	20.6
Non-Spreadable Acres:	2.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	135	70	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Apr 2019			
Manure Source	GDU			
Application Rate	3,500 gal/a			
Acres Covered	20.6			
Total Applied	72,100 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	135			
P_2O_5 (lbs/acre)	147			
K_2O (lbs/acre)	88			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652003P4800B

Field Information

Total Acres:	11.5	Spreadable Acres:	10.4
Non-Spreadable Acres:	1.1	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	124.300003051758 bu	140	65	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652003P4800C

Field Information

Total Acres:	28.6	Spreadable Acres:	26.2
Non-Spreadable Acres:	2.4	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	40.0999984741211 bu	0	45	35

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN FIELD ID: MO652003P4800D

Field Information

Total Acres:	26.1	Spreadable Acres:	22.3
Non-Spreadable Acres:	3.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Cool season grass pasture	2.40000009536743 ton	95	40	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Jul 2019			
Manure Source	Gestation			
Application Rate	4,700 gal/a			
Acres Covered	22.3			
Total Applied	104,810 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	78			
P_2O_5 (lbs/acre)	118			
K_2O (lbs/acre)	191			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Cool season grass pasture - For cool season grass pasture and bluegrass pasture split nitrogen applications between late spring after first grazing and mid August, applying 60% before the season of greatest need.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1000B

Field Information

Total Acres:	5.8	Spreadable Acres:	4.1
Non-Spreadable Acres:	1.7	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	40.0999984741211 bu	0	50	55

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1000C

Field Information

Total Acres:	23.5	Spreadable Acres:	17.6
Non-Spreadable Acres:	5.9	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	124.300003051758 bu	130	70	35

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1000D

Field Information

Total Acres:	16.6	Spreadable Acres:	13.4
Non-Spreadable Acres:	3.2	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	124.300003051758 bu	130	70	35

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1000E

Field Information

Total Acres:	37.1	Spreadable Acres:	30.1
Non-Spreadable Acres:	7.0	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Cool season grass pasture	2.40000009536743 ton	95	5	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Cool season grass pasture - For cool season grass pasture and bluegrass pasture split nitrogen applications between late spring after first grazing and mid August, applying 60% before the season of greatest need.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1200B

Field Information

Total Acres:	35.8	Spreadable Acres:	32.0
Non-Spreadable Acres:	3.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	40.0999984741211 bu	0	20	20

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1200C

Field Information

Total Acres:	18.7	Spreadable Acres:	15.6
Non-Spreadable Acres:	3.1	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	124.300003051758 bu	130	60	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P2100

Field Information

Total Acres:	24.7	Spreadable Acres:	22.2
Non-Spreadable Acres:	2.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	124.300003051758 bu	135	55	40

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2018 - 7/2019 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P2500

Field Information

Total Acres:	121.7	Spreadable Acres:	116.1
Non-Spreadable Acres:	5.6	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Cool season grass pasture	2.40000009536743 ton	95	5	10

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Cool season grass pasture - For cool season grass pasture and bluegrass pasture split nitrogen applications between late spring after first grazing and mid August, applying 60% before the season of greatest need.

Summary Tables - 8/2018 - 7/2019

F. Manure Summary: 8/2018 - 7/2019

	Source 1	Source 2		
Source	Gestation	GDU		
Units	gals	gals		
Beginning of Year Inventory	1,802,312	226,868		
Inputs				
Production	3,984,872	530,368		
Imports - off farm	0	0		
Transfers - on farm	0	0		
Total Inputs	3,984,872	530,368		
Outputs				
Land Applied	3,149,130	463,840		
Exports - off farm	0	0		
Transfers - on farm	0	0		
Total Outputs	3,149,130	463,840		
End of Year Inventory	2,638,054	293,396		

G. Land Applied Nutrient Summary: 8/2018 - 7/2019

	Total Applied		PAN[1]	P_2O_5	K_2O
Manure Source	(tons or gals)		----------lbs----------		
Gestation	3,149,130	gals	51,853	78,895	127,940
GDU	463,840	gals	17,875	19,505	11,616
Manure Total			69,728	98,400	139,556
	Total Applied		**N**	**P_2O_5**	**K_2O**
Fertilizer Source	(lbs or gals)		----------lbs----------		
Fertilizer Total			0	0	0
Total			69,728	98,400	139,556

H. Lime Recommendations

These lime recommendations are one-time applications meant to be applied only once to adjust soil pH to its desired level. If you have already applied the recommended lime rate in a previous year of this plan please disregard these recommendations.

Lime Recommendations[1]

Field ID	Field SubID	Field Size	Test Year	NA[2]	pH	pH Rating	Mg (lbs/a)	Mg Rating	Lime Rec. lbs ENM/acre[3]	Mg Rec. lbs EMg/acre[4]
MO602419P1300		14.4	2012	6.9	5.8	Medium	302	High	1,780	0 [D]
MO602419P4000		112.2	2012	6.9	5.8	Medium	302	High	1,780	0 [D]
MO602420P3400		30.9	2015	6.5	5.9	Medium	1,306	High	1,565	0 [D]
MO602420P4000		108.8	2015	6.5	5.7	Medium	1,358	High	1,765	0 [D]
MO602421P3500B		25.2	2015	6.4	5.7	Medium	1,334	High	1,740	0 [D]
MO602421P3500C		19.8	2015	6.4	5.6	Medium	1,238	High	1,815	0 [D]
MO602429P8000B		98.7	2015	6.6	6.1	High	1,522	High	1,295	0 [D]
MO602429P8000C		24.1	2015	6.7	6.4	High	1,562	High	495	0 [D]
MO602429P8000D		186.1	2015	6.7	6.5	High	1,290	High	0	0
MO602430P1150B		6.0	2012	7.1	6.5	High	566	High	0	0
MO602430P1150C		6.9	2015	6.4	5.8	Medium	1,584	High	1,650	0 [D]
MO602430P1400		21.0	2012	7.1	6.5	High	566	High	0	0
		0.0	2012	6.6	5.7	**	652	**	**	**
MO602419P3000B		34.0	2015	6.4	5.8	Medium	1,502	High	1,650	0 [D]
MO602419P3000C		3.9	2015	6.3	5.6	Medium	1,574	High	1,790	0 [D]
MO602419P3000D		3.7	2015	6.3	5.5	Medium	1,370	High	1,850	0 [D]
MO602429P8000E		111.4	2015	6.7	6.3	High	1,506	High	840	0 [D]
MO602430P4200		11.3	2015		7.0	*	842	*	*	*

Field ID	Field SubID	Field Size	Test Year	NA[2]	pH	pH Rating	Mg (lbs/a)	Mg Rating	Lime Rec. lbs ENM/acre[3]	Mg Rec. lbs EMg/acre[4]
MO602430P4300		17.1	2015		7.0	*	835	*	*	*
MO602430P4400		35.6	2015	6.7	6.2	High	1,324	High	1,105	0 [D]
MO602524P4600		53.7	2016	6.7	6.6	High	888	High	0	0
MO602525P1500B		19.5	2016	6.5	5.8	Medium	1,018	High	1,675	0 [D]
MO602525P1500C		34.8	2016	6.6	6.1	High	1,158	High	1,295	0 [D]
MO602429P8000F		23.1	2016	6.7	6.3	High	1,192	High	840	0 [D]
MO652003P4800B		11.5	2015		7.8	*	318	*	*	*
MO652003P4800C		28.6	2015		7.8	*	318	*	*	*
MO652003P4800D		26.1	2016	6.7	6.3	High	852	High	0	0
MO652010P1000B		5.8	2015	6.7	6.0	Medium	664	High	1,480	0 [D]
MO652010P1000C		23.5	2015	6.7	6.0	Medium	664	High	1,480	0 [D]
MO652010P1000D		16.6	2015	6.7	6.0	Medium	664	High	1,480	0 [D]
MO652010P1000E		37.1	2016	6.7	6.5	High	940	High	0	0
MO652010P1200B		35.8	2015	6.7	6.2	High	774	High	1,105	0 [D]
MO652010P1200C		18.7	2015	6.7	6.1	High	720	High	1,315	0 [D]
MO652010P2100		24.7	2015	6.7	6.1	High	878	High	1,315	0 [D]
MO652010P2500		121.7	2016		7.1	*	389	*	*	*

[1]These lime recommendations assume you used the University of Missouri soil testing laboratory, or comparable lab.
[2]NA = Neutralizable Acidity, units in meq/100g soil.
[3]ENM = Effective Neutralizing Material.
[4]EMg = Effective Magnesium.

** - No recommendation: No crop has been selected for this field in order to calculate lime recommendation.
* - No recommendation: Some soil test data is missing for this field. Please run the Essential Data Detection Tool.

[D] To determine limestone needed in tons/acre, divide your ENM requirement by the guarantee of your limestone dealer.

I. Crop Record Keeping Table: 8/2018 - 7/2019

Field ID	Field SubID	Crop	Planting Date	Hybrid or Variety	Seeding Rate	Harvest date(s)	Yield/A
MO602419P 1300		Soybeans					
MO602419P 4000		Soybeans					
MO602420P 3400		Soybeans					
MO602420P 4000		Corn grain					
MO602421P 3500B		Soybeans					
MO602421P 3500C		Soybeans					
MO602429P 8000B		Soybeans					
MO602429P 8000C		Corn grain					
MO602429P 8000D		Corn grain					
MO602430P 1150B		Soybeans					
MO602430P 1150C		Soybeans					
MO602430P 1400		Soybeans					
MO602419P 3000B		Soybeans					
MO602419P 3000C		Soybeans					
MO602419P 3000D		Soybeans					
MO602429P		Corn grain					

Field ID	Field SubID	Crop	Planting Date	Hybrid or Variety	Seeding Rate	Harvest date(s)	Yield/A
8000E							
MO602430P 4200		Corn grain					
MO602430P 4300		Corn grain					
MO602430P 4400		Soybeans					
MO602524P 4600		Corn grain					
MO602525P 1500B		Corn grain					
MO602525P 1500C		Corn grain					
MO602429P 8000F		Corn grain					
MO652003P 4800B		Corn grain					
MO652003P 4800C		Soybeans					
MO652003P 4800D		Cool season grass pasture					
MO652010P 1000B		Soybeans					
MO652010P 1000C		Corn grain					
MO652010P 1000D		Corn grain					
MO652010P 1000E		Cool season grass pasture					
MO652010P 1200B		Soybeans					
MO652010P		Corn grain					

Field ID	Field SubID	Crop	Planting Date	Hybrid or Variety	Seeding Rate	Harvest date(s)	Yield/A
1200C							
MO652010P 2100		Corn grain					
MO652010P 2500		Cool season grass pasture					

Missouri
Comprehensive Nutrient Management Plan
FARMER PLAN DOCUMENT

Operation Name: Trenton Farms RE, LLC

This plan is a summary of the key activities for one year of the nutrient management plan. The period of time covered by this plan is:
8/2019 - 7/2020

The objective of this document is to provide a concise list of the nutrient management activities on this operation for the year indicated. Activities covered by this plan include:

- Planned manure transfers and sales.
- Planned manure application dates and rates.
- Planned fertilizer application dates and rates.

Record keeping is an important part of nutrient management. Please use the space in this plan to record what actually occurred on each field.

Farm contact information: Trenton Farms RE, LLC
SW State Highway W
Trenton, MO 64683
507-825-7032 (office)

Whole Plan Period: August 2017 - July 2022

Contents

A. Manure Transfers - 8/2019 - 7/2020

Exports off the Farm: *(blank rows are for recording exports as they occur)*

Export Month	Export Year	Source of Manure	Target Export Amount	Units	Receiving Operation	Notes

Imports onto the Farm: *(blank rows are for recording imports as they occur)*

Import Month	Import Year	Source of Manure	Animal Type	Target Import Amount	Units	Notes

Internal Transfers of Manure: *(blank rows are for recording transfers as they occur)*

Transfer Month	Transfer Year	Source of Manure	Manure Destination	Target Transfer Amount	Units	Notes

B. Planned Manure Applications - 8/2019 - 7/2020

Month and Year	Field ID	Field SubID	Planned Crop(s)	Source	Application Equipment	Acres Covered	Application Rate	Units per acre	Total Applied
Oct 2019	MO602419P 1300		Corn grain	Gestation	Applicator	12.2	6,100	Gal	74,420
Oct 2019	MO602419P 3000B		Corn grain	Gestation	Applicator	31.7	7,900	Gal	250,430
Oct 2019	MO602419P 4000		Corn grain	Gestation	Applicator	107.8	6,100	Gal	657,580
Oct 2019	MO602420P 3400		Corn grain	Gestation	Applicator	29.3	7,900	Gal	231,470
Oct 2019	MO602421P 3500B		Corn grain	GDU	Applicator	20.6	3,400	Gal	70,150
Oct 2019	MO602429P 8000B		Corn grain	GDU	Applicator	94.7	3,500	Gal	331,450
Oct 2019	MO602430P 1400		Corn grain	GDU	Applicator	18.6	2,600	Gal	48,360
Oct 2019	MO602430P 4400		Corn grain	Gestation	Applicator	31.0	7,600	Gal	235,600
Oct 2019	MO652003P 4800C		Corn grain	Gestation	Applicator	26.2	8,500	Gal	222,700
Oct 2019	MO652010P 1000B		Corn grain	Gestation	Applicator	4.1	7,900	Gal	32,390
Oct 2019	MO652010P 1200B		Corn grain	Gestation	Applicator	32.0	7,900	Gal	252,800
Nov 2019	MO602421P 3500B		Corn grain	GDU	Applicator	1.0	3,400	Gal	3,400
Nov 2019	MO602421P 3500C		Corn grain	Gestation	Applicator	18.7	7,600	Gal	142,120
Nov 2019	MO602430P 1150B		Corn grain	GDU	Applicator	4.9	2,600	Gal	12,740
Nov 2019	MO602430P 1150C		Corn grain	GDU	Applicator	6.0	3,400	Gal	20,400

Manure Application Records - 8/2019 - 7/2020

App #	Date	Field ID	Field SubID	Manure Source	Application Equipment	Actual Rate	Actual Loads	Total Applied	Acres Covered
1									
2									
3									
4									
5									
6									
7									

Manure Application Records - 8/2019 - 7/2020 (continued)

App #	Applicator's Name	[1]Soil Condition	[2]Ground Cover	[3]Days to Incorporate	Air Temp	Wind Speed	Wind Direction	[4]Rain Before	[5]Rain After	[6]Weather
1										
2										
3										
4										
5										
6										
7										

1. Soil condition at time of operations: Dry, Firm, Wet, Muddy, Snow-Covered, Frozen.
2. Percent residue or ground cover at time of application.
3. Number of days to incorporate manure after application: Use "N1" for no incorporation.
4. Amount of rainfall during the 24 hours prior to application.
5. Amount of rainfall during the 24 hours after application.
6. Weather condition at time of application: Sunny, Partly Cloudy, Cloudy, Rain, Snow.

Manure Application Records - 8/2019 - 7/2020

App #	Date	Field ID	Field SubID	Manure Source	Application Equipment	Actual Rate	Actual Loads	Total Applied	Acres Covered
8									
9									
10									
11									
12									
13									
14									

Manure Application Records - 8/2019 - 7/2020 (continued)

App #	Applicator's Name	[1]Soil Condition	[2]Ground Cover	[3]Days to Incorporate	Air Temp	Wind Speed	Wind Direction	[4]Rain Before	[5]Rain After	[6]Weather
8										
9										
10										
11										
12										
13										
14										

1. Soil condition at time of operations: Dry, Firm, Wet, Muddy, Snow-Covered, Frozen.
2. Percent residue or ground cover at time of application.
3. Number of days to incorporate manure after application: Use "N1" for no incorporation.
4. Amount of rainfall during the 24 hours prior to application.
5. Amount of rainfall during the 24 hours after application.
6. Weather condition at time of application: Sunny, Partly Cloudy, Cloudy, Rain, Snow.

Manure Application Records - 8/2019 - 7/2020

App #	Date	Field ID	Field SubID	Manure Source	Application Equipment	Actual Rate	Actual Loads	Total Applied	Acres Covered
15									
16									
17									
18									
19									
20									
21									

Manure Application Records - 8/2019 - 7/2020 (continued)

App #	Applicator's Name	[1]Soil Condition	[2]Ground Cover	[3]Days to Incorporate	Air Temp	Wind Speed	Wind Direction	[4]Rain Before	[5]Rain After	[6]Weather
15										
16										
17										
18										
19										
20										
21										

1. Soil condition at time of operations: Dry, Firm, Wet, Muddy, Snow-Covered, Frozen.
2. Percent residue or ground cover at time of application.
3. Number of days to incorporate manure after application: Use "N1" for no incorporation.
4. Amount of rainfall during the 24 hours prior to application.
5. Amount of rainfall during the 24 hours after application.
6. Weather condition at time of application: Sunny, Partly Cloudy, Cloudy, Rain, Snow.

C. Planned Commercial Fertilizer Applications - 8/2019 - 7/2020

No planned commercial fertilizer applications for the period.

Commercial Fertilizer Application Records - 8/2019 - 7/2020

Month and Year	Field ID	Field SubID	Field Size (acres)	Planned Crop(s)	Fertilizer Analysis	Application Method	Material rate/acre	Total Material Applied	N (lbs/a)	P_2O_5 (lbs/a)	K_2O (lbs/a)

D. Recommended Manure Management Practices

Every time you apply manure you should review the following checklist to be sure conditions are favorable for manure applications. **These practices are required on permitted operations and operations that receive cost-share support through EQIP.**

- Know the proper manure source and application rate for each field.
- Keep good records, write down such things as operations performed, dates and times, actual rates, and weather conditions. This document provides record keeping forms.
- No surface application of manure if precipitation, likely to create runoff, is forecasted to occur within 24 hours of the planned application.
- No manure application on land with a slope greater than 20 percent.
- No surface application of manure to frozen, snow-covered or saturated soils.
- Manure applications shall comply with all manure application setbacks defined in the table below:

Manure application setback distances where manure should not be applied. For streams, lakes and wetlands the setback distance is measured from the defined edge of the water feature.

Setback Feature	Application Conditions	Setback Distance (feet)
Public or private drinking water well, drinking water lake or impoundment, or drinking water intake structure.	All applications	300
Other wells including un-plugged abandon wells	All applications	300
Public and privately owned lakes and impoundments not used as a water supply including impoundments with no outlet. Perennial streams, intermittent streams, canals, drainage ditches and wetlands. Tile line inlet (un-plugged during application).	Permanently vegetated setback	35
	Up-gradient, no or insufficient vegetated setback	100
	Down-gradient, no or insufficient vegetated setback	35
Losing streams, cave entrance, spring, or active sinkhole.	All applications	300
Non-owned occupied residence.	All applications	150
Public use area including non-owned businesses.	All applications	150
Public roads and property boundaries.	All applications	50

The following practices are recommended:

- Apply nutrients close to crop use to maximize nutrient uptake and reduce potential losses.
- Calibrate and maintain application equipment to apply accurate and uniform rates; all land application equipment should be calibrated at least annually.
- Avoid application when wind is blowing in the direction of neighbors or on weekends and holidays when people are more likely to be outdoors.

For liquid applications:

- Adjusting surface application rates to meet infiltration rate and water holding capacity of the soil.
- Irrigation systems should have automatic shut-off devices in case of pressure loss and/or an operator on-site at all times during operation to monitor application equipment.
- The perimeter of all fields receiving manure should be checked regularly during operation of land application equipment to confirm manure is not running off the field or entering waters of the state.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN

FIELD ID: MO602419P1300

Field Information

Total Acres:	14.4	Spreadable Acres:	12.2
Non-Spreadable Acres:	2.2	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	100	75	80

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2019			
Manure Source	Gestation			
Application Rate	6,100 gal/a			
Acres Covered	12.2			
Total Applied	74,420 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	101			
P_2O_5 (lbs/acre)	153			
K_2O (lbs/acre)	248			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602419P4000

Field Information

Total Acres:	112.2	Spreadable Acres:	107.8
Non-Spreadable Acres:	4.4	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	100	75	80

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2019			
Manure Source	Gestation			
Application Rate	6,100 gal/a			
Acres Covered	107.8			
Total Applied	657,580 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	101			
P_2O_5 (lbs/acre)	153			
K_2O (lbs/acre)	248			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602420P3400

Field Information

Total Acres:	30.9	Spreadable Acres:	29.3
Non-Spreadable Acres:	1.6	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	130	70	20

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2019			
Manure Source	Gestation			
Application Rate	7,900 gal/a			
Acres Covered	29.3			
Total Applied	231,470 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	130			
P_2O_5 (lbs/acre)	198			
K_2O (lbs/acre)	321			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602420P4000

Field Information

Total Acres:	108.8	Spreadable Acres:	104.6
Non-Spreadable Acres:	4.2	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	70	45

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602421P3500B

Field Information

Total Acres:	25.2	Spreadable Acres:	21.6
Non-Spreadable Acres:	3.6	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	130	80	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1	Application 2		
Application Time	Oct 2019	Nov 2019		
Manure Source	GDU	GDU		
Application Rate	3,400 gal/a	3,400 gal/a		
Acres Covered	20.6	1.0		
Total Applied	70,150 gal	3,400 gal		
Loads per Field	0.0	0.0		
Placement	Injected	Injected		
N (lbs/acres)	131	131		
P_2O_5 (lbs/acre)	143	143		
K_2O (lbs/acre)	85	85		

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602421P3500C

Field Information

Total Acres:	19.8	Spreadable Acres:	18.7
Non-Spreadable Acres:	1.1	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	125	0	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Nov 2019			
Manure Source	Gestation			
Application Rate	7,600 gal/a			
Acres Covered	18.7			
Total Applied	142,120 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	125			
P_2O_5 (lbs/acre)	190			
K_2O (lbs/acre)	309			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN FIELD ID: MO602429P8000B

Field Information

Total Acres:	98.7	Spreadable Acres:	94.7
Non-Spreadable Acres:	4.0	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	135	115	30

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2019			
Manure Source	GDU			
Application Rate	3,500 gal/a			
Acres Covered	94.7			
Total Applied	331,450 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	135			
P_2O_5 (lbs/acre)	147			
K_2O (lbs/acre)	88			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602429P8000C

Field Information

Total Acres:	24.1	Spreadable Acres:	21.7
Non-Spreadable Acres:	2.4	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	75	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602429P8000D

Field Information

Total Acres:	186.1	Spreadable Acres:	168.2
Non-Spreadable Acres:	17.9	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	40	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P1150B

Field Information

Total Acres:	6.0	Spreadable Acres:	4.9
Non-Spreadable Acres:	1.1	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	100	80	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Nov 2019			
Manure Source	GDU			
Application Rate	2,600 gal/a			
Acres Covered	4.9			
Total Applied	12,740 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	100			
P_2O_5 (lbs/acre)	109			
K_2O (lbs/acre)	65			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P1150C

Field Information

Total Acres:	6.9	Spreadable Acres:	6.0
Non-Spreadable Acres:	0.9	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	130	75	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Nov 2019			
Manure Source	GDU			
Application Rate	3,400 gal/a			
Acres Covered	6.0			
Total Applied	20,400 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	131			
P_2O_5 (lbs/acre)	143			
K_2O (lbs/acre)	85			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P1400

Field Information

Total Acres:	21.0	Spreadable Acres:	18.6
Non-Spreadable Acres:	2.4	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	100	80	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2019			
Manure Source	GDU			
Application Rate	2,600 gal/a			
Acres Covered	18.6			
Total Applied	48,360 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	100			
P_2O_5 (lbs/acre)	109			
K_2O (lbs/acre)	65			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN

FIELD ID:

Field Information

Total Acres:	0.0	Spreadable Acres:	
Non-Spreadable Acres:		Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602419P3000B

Field Information

Total Acres:	34.0	Spreadable Acres:	31.7
Non-Spreadable Acres:	2.3	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	130	80	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2019			
Manure Source	Gestation			
Application Rate	7,900 gal/a			
Acres Covered	31.7			
Total Applied	250,430 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	130			
P_2O_5 (lbs/acre)	198			
K_2O (lbs/acre)	321			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602419P3000C

Field Information

Total Acres:	3.9	Spreadable Acres:	3.7
Non-Spreadable Acres:	0.2	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	125	85	15

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602419P3000D

Field Information

Total Acres:	3.7	Spreadable Acres:	1.9
Non-Spreadable Acres:	1.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	130	85	30

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602429P8000E

Field Information

Total Acres:	111.4	Spreadable Acres:	98.9
Non-Spreadable Acres:	12.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	85	35

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P4200

Field Information

Total Acres:	11.3	Spreadable Acres:	9.8
Non-Spreadable Acres:	1.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	55	30

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P4300

Field Information

Total Acres:	17.1	Spreadable Acres:	13.6
Non-Spreadable Acres:	3.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	55	45

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P4400

Field Information

Total Acres:	35.6	Spreadable Acres:	31.0
Non-Spreadable Acres:	4.6	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	125	115	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2019			
Manure Source	Gestation			
Application Rate	7,600 gal/a			
Acres Covered	31.0			
Total Applied	235,600 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	125			
P_2O_5 (lbs/acre)	190			
K_2O (lbs/acre)	309			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602524P4600

Field Information

Total Acres:	53.7	Spreadable Acres:	50.9
Non-Spreadable Acres:	2.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	50	30

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602525P1500B

Field Information

Total Acres:	19.5	Spreadable Acres:	18.7
Non-Spreadable Acres:	0.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	40	10

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602525P1500C

Field Information

Total Acres:	34.8	Spreadable Acres:	33.1
Non-Spreadable Acres:	1.7	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	50	35

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602429P8000F

Field Information

Total Acres:	23.1	Spreadable Acres:	20.6
Non-Spreadable Acres:	2.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	55	45

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652003P4800B

Field Information

Total Acres:	11.5	Spreadable Acres:	10.4
Non-Spreadable Acres:	1.1	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	40.0999984741211 bu	0	45	35

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652003P4800C

Field Information

Total Acres:	28.6	Spreadable Acres:	26.2
Non-Spreadable Acres:	2.4	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	124.300003051758 bu	140	65	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2019			
Manure Source	Gestation			
Application Rate	8,500 gal/a			
Acres Covered	26.2			
Total Applied	222,700 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	140			
P_2O_5 (lbs/acre)	213			
K_2O (lbs/acre)	345			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652003P4800D

Field Information

Total Acres:	26.1	Spreadable Acres:	22.3
Non-Spreadable Acres:	3.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Cool season grass pasture	2.40000009536743 ton	95	40	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Cool season grass pasture - For cool season grass pasture and bluegrass pasture split nitrogen applications between late spring after first grazing and mid August, applying 60% before the season of greatest need.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1000B

Field Information

Total Acres:	5.8	Spreadable Acres:	4.1
Non-Spreadable Acres:	1.7	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	124.300003051758 bu	130	70	35

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2019			
Manure Source	Gestation			
Application Rate	7,900 gal/a			
Acres Covered	4.1			
Total Applied	32,390 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	130			
P_2O_5 (lbs/acre)	198			
K_2O (lbs/acre)	321			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1000C

Field Information

Total Acres:	23.5	Spreadable Acres:	17.6
Non-Spreadable Acres:	5.9	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	40.0999984741211 bu	0	50	55

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN FIELD ID: MO652010P1000D

Field Information

Total Acres:	16.6	Spreadable Acres:	13.4
Non-Spreadable Acres:	3.2	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	40.0999984741211 bu	0	50	55

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1000E

Field Information

Total Acres:	37.1	Spreadable Acres:	30.1
Non-Spreadable Acres:	7.0	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Cool season grass pasture	2.40000009536743 ton	95	5	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Cool season grass pasture - For cool season grass pasture and bluegrass pasture split nitrogen applications between late spring after first grazing and mid August, applying 60% before the season of greatest need.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1200B

Field Information

Total Acres:	35.8	Spreadable Acres:	32.0
Non-Spreadable Acres:	3.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	124.300003051758 bu	130	35	15

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2019			
Manure Source	Gestation			
Application Rate	7,900 gal/a			
Acres Covered	32.0			
Total Applied	252,800 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	130			
P_2O_5 (lbs/acre)	198			
K_2O (lbs/acre)	321			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1200C

Field Information

Total Acres:	18.7	Spreadable Acres:	15.6
Non-Spreadable Acres:	3.1	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	40.0999984741211 bu	0	35	35

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P2100

Field Information

Total Acres:	24.7	Spreadable Acres:	22.2
Non-Spreadable Acres:	2.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	40.0999984741211 bu	0	30	60

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2019 - 7/2020 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P2500

Field Information

Total Acres:	121.7	Spreadable Acres:	116.1
Non-Spreadable Acres:	5.6	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Cool season grass pasture	2.40000009536743 ton	95	5	10

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Cool season grass pasture - For cool season grass pasture and bluegrass pasture split nitrogen applications between late spring after first grazing and mid August, applying 60% before the season of greatest need.

Summary Tables - 8/2019 - 7/2020

F. Manure Summary: 8/2019 - 7/2020

	Source 1	Source 2		
Source	Gestation	GDU		
Units	gals	gals		
Beginning of Year Inventory	2,638,054	293,396		
Inputs				
Production	3,984,872	530,368		
Imports - off farm	0	0		
Transfers - on farm	0	0		
Total Inputs	3,984,872	530,368		
Outputs				
Land Applied	2,099,510	486,500		
Exports - off farm	0	0		
Transfers - on farm	0	0		
Total Outputs	2,099,510	486,500		
End of Year Inventory	4,523,416	337,264		

G. Land Applied Nutrient Summary: 8/2019 - 7/2020

	Total Applied		PAN[1]	P_2O_5	K_2O
Manure Source	(tons or gals)		----------lbs----------		
Gestation	2,099,510	gals	34,624	52,610	85,325
GDU	486,500	gals	18,750	20,429	12,208
Manure Total			53,374	73,039	97,533
	Total Applied		**N**	**P_2O_5**	**K_2O**
Fertilizer Source	(lbs or gals)		----------lbs----------		
Fertilizer Total			0	0	0
Total			53,374	73,039	97,533

H. Lime Recommendations

These lime recommendations are one-time applications meant to be applied only once to adjust soil pH to its desired level. If you have already applied the recommended lime rate in a previous year of this plan please disregard these recommendations.

Lime Recommendations[1]

Field ID	Field SubID	Field Size	Test Year	NA[2]	pH	pH Rating	Mg (lbs/a)	Mg Rating	Lime Rec. lbs ENM/acre[3]	Mg Rec. lbs EMg/acre[4]
MO602419P1300		14.4	2012	6.9	5.8	Medium	302	High	1,780	0 [D]
MO602419P4000		112.2	2012	6.9	5.8	Medium	302	High	1,780	0 [D]
MO602420P3400		30.9	2015	6.5	5.9	Medium	1,306	High	1,565	0 [D]
MO602420P4000		108.8	2015	6.5	5.7	Medium	1,358	High	1,765	0 [D]
MO602421P3500B		25.2	2015	6.4	5.7	Medium	1,334	High	1,740	0 [D]
MO602421P3500C		19.8	2015	6.4	5.6	Medium	1,238	High	1,815	0 [D]
MO602429P8000B		98.7	2015	6.6	6.1	High	1,522	High	1,295	0 [D]
MO602429P8000C		24.1	2015	6.7	6.4	High	1,562	High	495	0 [D]
MO602429P8000D		186.1	2015	6.7	6.5	High	1,290	High	0	0
MO602430P1150B		6.0	2012	7.1	6.5	High	566	High	0	0
MO602430P1150C		6.9	2015	6.4	5.8	Medium	1,584	High	1,650	0 [D]
MO602430P1400		21.0	2012	7.1	6.5	High	566	High	0	0
		0.0	2012	6.6	5.7	**	652	**	**	**
MO602419P3000B		34.0	2015	6.4	5.8	Medium	1,502	High	1,650	0 [D]
MO602419P3000C		3.9	2015	6.3	5.6	Medium	1,574	High	1,790	0 [D]
MO602419P3000D		3.7	2015	6.3	5.5	Medium	1,370	High	1,850	0 [D]
MO602429P8000E		111.4	2015	6.7	6.3	High	1,506	High	840	0 [D]
MO602430P4200		11.3	2015		7.0	*	842	*	*	*

Field ID	Field SubID	Field Size	Test Year	NA[2]	pH	pH Rating	Mg (lbs/a)	Mg Rating	Lime Rec. lbs ENM/acre[3]	Mg Rec. lbs EMg/acre[4]
MO602430P4300		17.1	2015		7.0	*	835	*	*	*
MO602430P4400		35.6	2015	6.7	6.2	High	1,324	High	1,105	0 [D]
MO602524P4600		53.7	2016	6.7	6.6	High	888	High	0	0
MO602525P1500B		19.5	2016	6.5	5.8	Medium	1,018	High	1,675	0 [D]
MO602525P1500C		34.8	2016	6.6	6.1	High	1,158	High	1,295	0 [D]
MO602429P8000F		23.1	2016	6.7	6.3	High	1,192	High	840	0 [D]
MO652003P4800B		11.5	2015		7.8	*	318	*	*	*
MO652003P4800C		28.6	2015		7.8	*	318	*	*	*
MO652003P4800D		26.1	2016	6.7	6.3	High	852	High	0	0
MO652010P1000B		5.8	2015	6.7	6.0	Medium	664	High	1,480	0 [D]
MO652010P1000C		23.5	2015	6.7	6.0	Medium	664	High	1,480	0 [D]
MO652010P1000D		16.6	2015	6.7	6.0	Medium	664	High	1,480	0 [D]
MO652010P1000E		37.1	2016	6.7	6.5	High	940	High	0	0
MO652010P1200B		35.8	2015	6.7	6.2	High	774	High	1,105	0 [D]
MO652010P1200C		18.7	2015	6.7	6.1	High	720	High	1,315	0 [D]
MO652010P2100		24.7	2015	6.7	6.1	High	878	High	1,315	0 [D]
MO652010P2500		121.7	2016		7.1	*	389	*	*	*

[1]These lime recommendations assume you used the University of Missouri soil testing laboratory, or comparable lab.
[2]NA = Neutralizable Acidity, units in meq/100g soil.
[3]ENM = Effective Neutralizing Material.
[4]EMg = Effective Magnesium.

** - No recommendation: No crop has been selected for this field in order to calculate lime recommendation.
* - No recommendation: Some soil test data is missing for this field. Please run the Essential Data Detection Tool.

[D] To determine limestone needed in tons/acre, divide your ENM requirement by the guarantee of your limestone dealer.

I. Crop Record Keeping Table: 8/2019 - 7/2020

Field ID	Field SubID	Crop	Planting Date	Hybrid or Variety	Seeding Rate	Harvest date(s)	Yield/A
MO602419P 1300		Corn grain					
MO602419P 4000		Corn grain					
MO602420P 3400		Corn grain					
MO602420P 4000		Soybeans					
MO602421P 3500B		Corn grain					
MO602421P 3500C		Corn grain					
MO602429P 8000B		Corn grain					
MO602429P 8000C		Soybeans					
MO602429P 8000D		Soybeans					
MO602430P 1150B		Corn grain					
MO602430P 1150C		Corn grain					
MO602430P 1400		Corn grain					
MO602419P 3000B		Corn grain					
MO602419P 3000C		Corn grain					
MO602419P 3000D		Corn grain					
MO602429P		Soybeans					

Field ID	Field SubID	Crop	Planting Date	Hybrid or Variety	Seeding Rate	Harvest date(s)	Yield/A
8000E							
MO602430P 4200		Soybeans					
MO602430P 4300		Soybeans					
MO602430P 4400		Corn grain					
MO602524P 4600		Soybeans					
MO602525P 1500B		Soybeans					
MO602525P 1500C		Soybeans					
MO602429P 8000F		Soybeans					
MO652003P 4800B		Soybeans					
MO652003P 4800C		Corn grain					
MO652003P 4800D		Cool season grass pasture					
MO652010P 1000B		Corn grain					
MO652010P 1000C		Soybeans					
MO652010P 1000D		Soybeans					
MO652010P 1000E		Cool season grass pasture					
MO652010P 1200B		Corn grain					
MO652010P		Soybeans					

Field ID	Field SubID	Crop	Planting Date	Hybrid or Variety	Seeding Rate	Harvest date(s)	Yield/A
1200C							
MO652010P 2100		Soybeans					
MO652010P 2500		Cool season grass pasture					

Missouri
Comprehensive Nutrient Management Plan
FARMER PLAN DOCUMENT

Operation Name: Trenton Farms RE, LLC

This plan is a summary of the key activities for one year of the nutrient management plan. The period of time covered by this plan is:
8/2020 - 7/2021

The objective of this document is to provide a concise list of the nutrient management activities on this operation for the year indicated. Activities covered by this plan include:

- Planned manure transfers and sales.
- Planned manure application dates and rates.
- Planned fertilizer application dates and rates.

Record keeping is an important part of nutrient management. Please use the space in this plan to record what actually occurred on each field.

Farm contact information: Trenton Farms RE, LLC
SW State Highway W
Trenton, MO 64683
507-825-7032 (office)

Whole Plan Period: August 2017 - July 2022

Contents

A. Manure Transfers - 8/2020 - 7/2021

Exports off the Farm: *(blank rows are for recording exports as they occur)*

Export Month	Export Year	Source of Manure	Target Export Amount	Units	Receiving Operation	Notes

Imports onto the Farm: *(blank rows are for recording imports as they occur)*

Import Month	Import Year	Source of Manure	Animal Type	Target Import Amount	Units	Notes

Internal Transfers of Manure: *(blank rows are for recording transfers as they occur)*

Transfer Month	Transfer Year	Source of Manure	Manure Destination	Target Transfer Amount	Units	Notes

B. Planned Manure Applications - 8/2020 - 7/2021

Month and Year	Field ID	Field SubID	Planned Crop(s)	Source	Application Equipment	Acres Covered	Application Rate	Units per acre	Total Applied
Aug 2020	MO652003P 4800D		Cool season grass pasture	Gestation	Applicator	22.3	5,800	Gal	129,340
Oct 2020	MO602420P 4000		Corn grain	GDU	Applicator	104.6	3,400	Gal	355,640
Oct 2020	MO602429P 8000C		Corn grain	GDU	Applicator	21.7	3,400	Gal	73,780
Oct 2020	MO602429P 8000D		Corn grain	Gestation	Applicator	168.2	7,900	Gal	1,328,780
Oct 2020	MO602429P 8000E		Corn grain	Gestation	Applicator	98.9	7,900	Gal	781,310
Oct 2020	MO602429P 8000F		Corn grain	Gestation	Applicator	20.6	8,200	Gal	168,920
Oct 2020	MO602430P 4200		Corn grain	GDU	Applicator	9.8	3,700	Gal	36,260
Oct 2020	MO602430P 4300		Corn grain	Gestation	Applicator	13.6	8,500	Gal	115,600
Oct 2020	MO602524P 4600		Corn grain	Gestation	Applicator	50.9	8,200	Gal	417,380
Oct 2020	MO602525P 1500B		Corn grain	Gestation	Applicator	18.7	3,800	Gal	71,060
Oct 2020	MO602525P 1500C		Corn grain	Gestation	Applicator	33.1	4,800	Gal	158,880
Oct 2020	MO652003P 4800B		Corn grain	Gestation	Applicator	10.4	8,500	Gal	88,400

Manure Application Records - 8/2020 - 7/2021

App #	Date	Field ID	Field SubID	Manure Source	Application Equipment	Actual Rate	Actual Loads	Total Applied	Acres Covered
1									
2									
3									
4									
5									
6									
7									

Manure Application Records - 8/2020 - 7/2021 (continued)

App #	Applicator's Name	[1]Soil Condition	[2]Ground Cover	[3]Days to Incorporate	Air Temp	Wind Speed	Wind Direction	[4]Rain Before	[5]Rain After	[6]Weather
1										
2										
3										
4										
5										
6										
7										

1. Soil condition at time of operations: Dry, Firm, Wet, Muddy, Snow-Covered, Frozen.
2. Percent residue or ground cover at time of application.
3. Number of days to incorporate manure after application: Use "N1" for no incorporation.
4. Amount of rainfall during the 24 hours prior to application.
5. Amount of rainfall during the 24 hours after application.
6. Weather condition at time of application: Sunny, Partly Cloudy, Cloudy, Rain, Snow.

Manure Application Records - 8/2020 - 7/2021

App #	Date	Field ID	Field SubID	Manure Source	Application Equipment	Actual Rate	Actual Loads	Total Applied	Acres Covered
8									
9									
10									
11									
12									
13									
14									

Manure Application Records - 8/2020 - 7/2021 (continued)

App #	Applicator's Name	[1]Soil Condition	[2]Ground Cover	[3]Days to Incorporate	Air Temp	Wind Speed	Wind Direction	[4]Rain Before	[5]Rain After	[6]Weather
8										
9										
10										
11										
12										
13										
14										

1. Soil condition at time of operations: Dry, Firm, Wet, Muddy, Snow-Covered, Frozen.
2. Percent residue or ground cover at time of application.
3. Number of days to incorporate manure after application: Use "N1" for no incorporation.
4. Amount of rainfall during the 24 hours prior to application.
5. Amount of rainfall during the 24 hours after application.
6. Weather condition at time of application: Sunny, Partly Cloudy, Cloudy, Rain, Snow.

C. Planned Commercial Fertilizer Applications - 8/2020 - 7/2021

No planned commercial fertilizer applications for the period.

Commercial Fertilizer Application Records - 8/2020 - 7/2021

Month and Year	Field ID	Field SubID	Field Size (acres)	Planned Crop(s)	Fertilizer Analysis	Application Method	Material rate/acre	Total Material Applied	N (lbs/a)	P_2O_5 (lbs/a)	K_2O (lbs/a)

D. Recommended Manure Management Practices

Every time you apply manure you should review the following checklist to be sure conditions are favorable for manure applications. **These practices are required on permitted operations and operations that receive cost-share support through EQIP.**

- Know the proper manure source and application rate for each field.
- Keep good records, write down such things as operations performed, dates and times, actual rates, and weather conditions. This document provides record keeping forms.
- No surface application of manure if precipitation, likely to create runoff, is forecasted to occur within 24 hours of the planned application.
- No manure application on land with a slope greater than 20 percent.
- No surface application of manure to frozen, snow-covered or saturated soils.
- Manure applications shall comply with all manure application setbacks defined in the table below:

Manure application setback distances where manure should not be applied. For streams, lakes and wetlands the setback distance is measured from the defined edge of the water feature.

Setback Feature	Application Conditions	Setback Distance (feet)
Public or private drinking water well, drinking water lake or impoundment, or drinking water intake structure.	All applications	300
Other wells including un-plugged abandon wells	All applications	300
Public and privately owned lakes and impoundments not used as a water supply including impoundments with no outlet. Perennial streams, intermittent streams, canals, drainage ditches and wetlands. Tile line inlet (un-plugged during application).	Permanently vegetated setback	35
	Up-gradient, no or insufficient vegetated setback	100
	Down-gradient, no or insufficient vegetated setback	35
Losing streams, cave entrance, spring, or active sinkhole.	All applications	300
Non-owned occupied residence.	All applications	150
Public use area including non-owned businesses.	All applications	150
Public roads and property boundaries.	All applications	50

The following practices are recommended:

- Apply nutrients close to crop use to maximize nutrient uptake and reduce potential losses.
- Calibrate and maintain application equipment to apply accurate and uniform rates; all land application equipment should be calibrated at least annually.
- Avoid application when wind is blowing in the direction of neighbors or on weekends and holidays when people are more likely to be outdoors.

For liquid applications:

- Adjusting surface application rates to meet infiltration rate and water holding capacity of the soil.
- Irrigation systems should have automatic shut-off devices in case of pressure loss and/or an operator on-site at all times during operation to monitor application equipment.
- The perimeter of all fields receiving manure should be checked regularly during operation of land application equipment to confirm manure is not running off the field or entering waters of the state.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN

FIELD ID: MO602419P1300

Field Information

Total Acres:	14.4	Spreadable Acres:	12.2
Non-Spreadable Acres:	2.2	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	60	105

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602419P4000

Field Information

Total Acres:	112.2	Spreadable Acres:	107.8
Non-Spreadable Acres:	4.4	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	60	105

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602420P3400

Field Information

Total Acres:	30.9	Spreadable Acres:	29.3
Non-Spreadable Acres:	1.6	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	50	40

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602420P4000

Field Information

Total Acres:	108.8	Spreadable Acres:	104.6
Non-Spreadable Acres:	4.2	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	130	85	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2020			
Manure Source	GDU			
Application Rate	3,400 gal/a			
Acres Covered	104.6			
Total Applied	355,640 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	131			
P_2O_5 (lbs/acre)	143			
K_2O (lbs/acre)	85			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602421P3500B

Field Information

Total Acres:	25.2	Spreadable Acres:	21.6
Non-Spreadable Acres:	3.6	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	60	40

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602421P3500C

Field Information

Total Acres:	19.8	Spreadable Acres:	18.7
Non-Spreadable Acres:	1.1	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	0	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602429P8000B

Field Information

Total Acres:	98.7	Spreadable Acres:	94.7
Non-Spreadable Acres:	4.0	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	100	55

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602429P8000C

Field Information

Total Acres:	24.1	Spreadable Acres:	21.7
Non-Spreadable Acres:	2.4	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	130	95	15

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2020			
Manure Source	GDU			
Application Rate	3,400 gal/a			
Acres Covered	21.7			
Total Applied	73,780 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	131			
P_2O_5 (lbs/acre)	143			
K_2O (lbs/acre)	85			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN FIELD ID: MO602429P8000D

Field Information

Total Acres:	186.1	Spreadable Acres:	168.2
Non-Spreadable Acres:	17.9	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	130	55	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2020			
Manure Source	Gestation			
Application Rate	7,900 gal/a			
Acres Covered	168.2			
Total Applied	1,328,780 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	130			
P_2O_5 (lbs/acre)	198			
K_2O (lbs/acre)	321			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P1150B

Field Information

Total Acres:	6.0	Spreadable Acres:	4.9
Non-Spreadable Acres:	1.1	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	60	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P1150C

Field Information

Total Acres:	6.9	Spreadable Acres:	6.0
Non-Spreadable Acres:	0.9	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	55	40

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P1400

Field Information

Total Acres:	21.0	Spreadable Acres:	18.6
Non-Spreadable Acres:	2.4	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	60	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN

FIELD ID:

Field Information

Total Acres:	0.0	Spreadable Acres:	
Non-Spreadable Acres:		Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602419P3000B

Field Information

Total Acres:	34.0	Spreadable Acres:	31.7
Non-Spreadable Acres:	2.3	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	60	40

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602419P3000C

Field Information

Total Acres:	3.9	Spreadable Acres:	3.7
Non-Spreadable Acres:	0.2	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	65	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602419P3000D

Field Information

Total Acres:	3.7	Spreadable Acres:	1.9
Non-Spreadable Acres:	1.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	65	50

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602429P8000E

Field Information

Total Acres:	111.4	Spreadable Acres:	98.9
Non-Spreadable Acres:	12.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	130	105	20

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2020			
Manure Source	Gestation			
Application Rate	7,900 gal/a			
Acres Covered	98.9			
Total Applied	781,310 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	130			
P_2O_5 (lbs/acre)	198			
K_2O (lbs/acre)	321			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P4200

Field Information

Total Acres:	11.3	Spreadable Acres:	9.8
Non-Spreadable Acres:	1.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	140	75	20

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2020			
Manure Source	GDU			
Application Rate	3,700 gal/a			
Acres Covered	9.8			
Total Applied	36,260 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	142			
P_2O_5 (lbs/acre)	155			
K_2O (lbs/acre)	93			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P4300

Field Information

Total Acres:	17.1	Spreadable Acres:	13.6
Non-Spreadable Acres:	3.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	140	70	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2020			
Manure Source	Gestation			
Application Rate	8,500 gal/a			
Acres Covered	13.6			
Total Applied	115,600 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	140			
P_2O_5 (lbs/acre)	213			
K_2O (lbs/acre)	345			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P4400

Field Information

Total Acres:	35.6	Spreadable Acres:	31.0
Non-Spreadable Acres:	4.6	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	100	40

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602524P4600

Field Information

Total Acres:	53.7	Spreadable Acres:	50.9
Non-Spreadable Acres:	2.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	135	65	15

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2020			
Manure Source	Gestation			
Application Rate	8,200 gal/a			
Acres Covered	50.9			
Total Applied	417,380 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	135			
P_2O_5 (lbs/acre)	205			
K_2O (lbs/acre)	333			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602525P1500B

Field Information

Total Acres:	19.5	Spreadable Acres:	18.7
Non-Spreadable Acres:	0.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	125	55	5

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2020			
Manure Source	Gestation			
Application Rate	3,800 gal/a			
Acres Covered	18.7			
Total Applied	71,060 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	63			
P_2O_5 (lbs/acre)	95			
K_2O (lbs/acre)	154			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602525P1500C

Field Information

Total Acres:	34.8	Spreadable Acres:	33.1
Non-Spreadable Acres:	1.7	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	135	70	20

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2020			
Manure Source	Gestation			
Application Rate	4,800 gal/a			
Acres Covered	33.1			
Total Applied	158,880 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	79			
P_2O_5 (lbs/acre)	120			
K_2O (lbs/acre)	195			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602429P8000F

Field Information

Total Acres:	23.1	Spreadable Acres:	20.6
Non-Spreadable Acres:	2.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	135	70	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2020			
Manure Source	Gestation			
Application Rate	8,200 gal/a			
Acres Covered	20.6			
Total Applied	168,920 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	135			
P_2O_5 (lbs/acre)	205			
K_2O (lbs/acre)	333			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652003P4800B

Field Information

Total Acres:	11.5	Spreadable Acres:	10.4
Non-Spreadable Acres:	1.1	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	124.300003051758 bu	140	65	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2020			
Manure Source	Gestation			
Application Rate	8,500 gal/a			
Acres Covered	10.4			
Total Applied	88,400 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	140			
P_2O_5 (lbs/acre)	213			
K_2O (lbs/acre)	345			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652003P4800C

Field Information

Total Acres:	28.6	Spreadable Acres:	26.2
Non-Spreadable Acres:	2.4	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	40.0999984741211 bu	0	45	35

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652003P4800D

Field Information

Total Acres:	26.1	Spreadable Acres:	22.3
Non-Spreadable Acres:	3.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Cool season grass pasture	2.40000009536743 ton	95	40	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Aug 2020			
Manure Source	Gestation			
Application Rate	5,800 gal/a			
Acres Covered	22.3			
Total Applied	129,340 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	96			
P_2O_5 (lbs/acre)	145			
K_2O (lbs/acre)	235			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Cool season grass pasture - For cool season grass pasture and bluegrass pasture split nitrogen applications between late spring after first grazing and mid August, applying 60% before the season of greatest need.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1000B

Field Information

Total Acres:	5.8	Spreadable Acres:	4.1
Non-Spreadable Acres:	1.7	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	40.0999984741211 bu	0	50	55

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1000C

Field Information

Total Acres:	23.5	Spreadable Acres:	17.6
Non-Spreadable Acres:	5.9	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	124.300003051758 bu	130	70	35

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1000D

Field Information

Total Acres:	16.6	Spreadable Acres:	13.4
Non-Spreadable Acres:	3.2	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	124.300003051758 bu	130	70	35

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1000E

Field Information

Total Acres:	37.1	Spreadable Acres:	30.1
Non-Spreadable Acres:	7.0	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Cool season grass pasture	2.40000009536743 ton	95	5	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Cool season grass pasture - For cool season grass pasture and bluegrass pasture split nitrogen applications between late spring after first grazing and mid August, applying 60% before the season of greatest need.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1200B

Field Information

Total Acres:	35.8	Spreadable Acres:	32.0
Non-Spreadable Acres:	3.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	40.0999984741211 bu	0	20	20

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1200C

Field Information

Total Acres:	18.7	Spreadable Acres:	15.6
Non-Spreadable Acres:	3.1	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	124.300003051758 bu	130	60	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P2100

Field Information

Total Acres:	24.7	Spreadable Acres:	22.2
Non-Spreadable Acres:	2.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	124.300003051758 bu	135	55	40

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2020 - 7/2021 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P2500

Field Information

Total Acres:	121.7	Spreadable Acres:	116.1
Non-Spreadable Acres:	5.6	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Cool season grass pasture	2.40000009536743 ton	95	5	10

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Cool season grass pasture - For cool season grass pasture and bluegrass pasture split nitrogen applications between late spring after first grazing and mid August, applying 60% before the season of greatest need.

Summary Tables - 8/2020 - 7/2021

F. Manure Summary: 8/2020 - 7/2021

	Source 1	Source 2		
Source	Gestation	GDU		
Units	gals	gals		
Beginning of Year Inventory	4,523,416	337,264		
Inputs				
Production	3,984,872	530,368		
Imports - off farm	0	0		
Transfers - on farm	0	0		
Total Inputs	3,984,872	530,368		
Outputs				
Land Applied	3,259,670	465,680		
Exports - off farm	0	0		
Transfers - on farm	0	0		
Total Outputs	3,259,670	465,680		
End of Year Inventory	5,248,618	401,952		

G. Land Applied Nutrient Summary: 8/2020 - 7/2021

	Total Applied		PAN[1]	P_2O_5	K_2O
Manure Source	(tons or gals)		----------lbs----------		
Gestation	3,259,670	gals	53,670	81,638	132,403
GDU	465,680	gals	17,938	19,580	11,647
Manure Total			71,608	101,218	144,050
	Total Applied		**N**	**P_2O_5**	**K_2O**
Fertilizer Source	(lbs or gals)		----------lbs----------		
Fertilizer Total			0	0	0
Total			71,608	101,218	144,050

H. Lime Recommendations

These lime recommendations are one-time applications meant to be applied only once to adjust soil pH to its desired level. If you have already applied the recommended lime rate in a previous year of this plan please disregard these recommendations.

Lime Recommendations[1]

Field ID	Field SubID	Field Size	Test Year	NA[2]	pH	pH Rating	Mg (lbs/a)	Mg Rating	Lime Rec. lbs ENM/acre[3]	Mg Rec. lbs EMg/acre[4]
MO602419P1300		14.4	2012	6.9	5.8	Medium	302	High	1,780	0 [D]
MO602419P4000		112.2	2012	6.9	5.8	Medium	302	High	1,780	0 [D]
MO602420P3400		30.9	2015	6.5	5.9	Medium	1,306	High	1,565	0 [D]
MO602420P4000		108.8	2015	6.5	5.7	Medium	1,358	High	1,765	0 [D]
MO602421P3500B		25.2	2015	6.4	5.7	Medium	1,334	High	1,740	0 [D]
MO602421P3500C		19.8	2015	6.4	5.6	Medium	1,238	High	1,815	0 [D]
MO602429P8000B		98.7	2015	6.6	6.1	High	1,522	High	1,295	0 [D]
MO602429P8000C		24.1	2015	6.7	6.4	High	1,562	High	495	0 [D]
MO602429P8000D		186.1	2015	6.7	6.5	High	1,290	High	0	0
MO602430P1150B		6.0	2012	7.1	6.5	High	566	High	0	0
MO602430P1150C		6.9	2015	6.4	5.8	Medium	1,584	High	1,650	0 [D]
MO602430P1400		21.0	2012	7.1	6.5	High	566	High	0	0
		0.0	2012	6.6	5.7	**	652	**	**	**
MO602419P3000B		34.0	2015	6.4	5.8	Medium	1,502	High	1,650	0 [D]
MO602419P3000C		3.9	2015	6.3	5.6	Medium	1,574	High	1,790	0 [D]
MO602419P3000D		3.7	2015	6.3	5.5	Medium	1,370	High	1,850	0 [D]
MO602429P8000E		111.4	2015	6.7	6.3	High	1,506	High	840	0 [D]
MO602430P4200		11.3	2015		7.0	*	842	*	*	*

Field ID	Field SubID	Field Size	Test Year	NA[2]	pH	pH Rating	Mg (lbs/a)	Mg Rating	Lime Rec. lbs ENM/acre[3]	Mg Rec. lbs EMg/acre[4]
MO602430P4300		17.1	2015		7.0	*	835	*	*	*
MO602430P4400		35.6	2015	6.7	6.2	High	1,324	High	1,105	0 [D]
MO602524P4600		53.7	2016	6.7	6.6	High	888	High	0	0
MO602525P1500B		19.5	2016	6.5	5.8	Medium	1,018	High	1,675	0 [D]
MO602525P1500C		34.8	2016	6.6	6.1	High	1,158	High	1,295	0 [D]
MO602429P8000F		23.1	2016	6.7	6.3	High	1,192	High	840	0 [D]
MO652003P4800B		11.5	2015		7.8	*	318	*	*	*
MO652003P4800C		28.6	2015		7.8	*	318	*	*	*
MO652003P4800D		26.1	2016	6.7	6.3	High	852	High	0	0
MO652010P1000B		5.8	2015	6.7	6.0	Medium	664	High	1,480	0 [D]
MO652010P1000C		23.5	2015	6.7	6.0	Medium	664	High	1,480	0 [D]
MO652010P1000D		16.6	2015	6.7	6.0	Medium	664	High	1,480	0 [D]
MO652010P1000E		37.1	2016	6.7	6.5	High	940	High	0	0
MO652010P1200B		35.8	2015	6.7	6.2	High	774	High	1,105	0 [D]
MO652010P1200C		18.7	2015	6.7	6.1	High	720	High	1,315	0 [D]
MO652010P2100		24.7	2015	6.7	6.1	High	878	High	1,315	0 [D]
MO652010P2500		121.7	2016		7.1	*	389	*	*	*

[1]These lime recommendations assume you used the University of Missouri soil testing laboratory, or comparable lab.
[2]NA = Neutralizable Acidity, units in meq/100g soil.
[3]ENM = Effective Neutralizing Material.
[4]EMg = Effective Magnesium.

** - No recommendation: No crop has been selected for this field in order to calculate lime recommendation.
* - No recommendation: Some soil test data is missing for this field. Please run the Essential Data Detection Tool.

[D] To determine limestone needed in tons/acre, divide your ENM requirement by the guarantee of your limestone dealer.

I. Crop Record Keeping Table: 8/2020 - 7/2021

Field ID	Field SubID	Crop	Planting Date	Hybrid or Variety	Seeding Rate	Harvest date(s)	Yield/A
MO602419P 1300		Soybeans					
MO602419P 4000		Soybeans					
MO602420P 3400		Soybeans					
MO602420P 4000		Corn grain					
MO602421P 3500B		Soybeans					
MO602421P 3500C		Soybeans					
MO602429P 8000B		Soybeans					
MO602429P 8000C		Corn grain					
MO602429P 8000D		Corn grain					
MO602430P 1150B		Soybeans					
MO602430P 1150C		Soybeans					
MO602430P 1400		Soybeans					
MO602419P 3000B		Soybeans					
MO602419P 3000C		Soybeans					
MO602419P 3000D		Soybeans					
MO602429P		Corn grain					

Field ID	Field SubID	Crop	Planting Date	Hybrid or Variety	Seeding Rate	Harvest date(s)	Yield/A
8000E							
MO602430P 4200		Corn grain					
MO602430P 4300		Corn grain					
MO602430P 4400		Soybeans					
MO602524P 4600		Corn grain					
MO602525P 1500B		Corn grain					
MO602525P 1500C		Corn grain					
MO602429P 8000F		Corn grain					
MO652003P 4800B		Corn grain					
MO652003P 4800C		Soybeans					
MO652003P 4800D		Cool season grass pasture					
MO652010P 1000B		Soybeans					
MO652010P 1000C		Corn grain					
MO652010P 1000D		Corn grain					
MO652010P 1000E		Cool season grass pasture					
MO652010P 1200B		Soybeans					
MO652010P		Corn grain					

Field ID	Field SubID	Crop	Planting Date	Hybrid or Variety	Seeding Rate	Harvest date(s)	Yield/A
1200C							
MO652010P 2100		Corn grain					
MO652010P 2500		Cool season grass pasture					

Missouri
Comprehensive Nutrient Management Plan
FARMER PLAN DOCUMENT

Operation Name: Trenton Farms RE, LLC

This plan is a summary of the key activities for one year of the nutrient management plan. The period of time covered by this plan is:
8/2021 - 7/2022

The objective of this document is to provide a concise list of the nutrient management activities on this operation for the year indicated. Activities covered by this plan include:

- Planned manure transfers and sales.
- Planned manure application dates and rates.
- Planned fertilizer application dates and rates.

Record keeping is an important part of nutrient management. Please use the space in this plan to record what actually occurred on each field.

Farm contact information: Trenton Farms RE, LLC
SW State Highway W
Trenton, MO 64683
507-825-7032 (office)

Whole Plan Period: August 2017 - July 2022

Contents

A. Manure Transfers - 8/2021 - 7/2022

Exports off the Farm: *(blank rows are for recording exports as they occur)*

Export Month	Export Year	Source of Manure	Target Export Amount	Units	Receiving Operation	Notes

Imports onto the Farm: *(blank rows are for recording imports as they occur)*

Import Month	Import Year	Source of Manure	Animal Type	Target Import Amount	Units	Notes

Internal Transfers of Manure: *(blank rows are for recording transfers as they occur)*

Transfer Month	Transfer Year	Source of Manure	Manure Destination	Target Transfer Amount	Units	Notes

B. Planned Manure Applications - 8/2021 - 7/2022

Month and Year	Field ID	Field SubID	Planned Crop(s)	Source	Application Equipment	Acres Covered	Application Rate	Units per acre	Total Applied
Aug 2021	MO652010P 2500		Cool season grass pasture	Gestation	Applicator	116.1	5,800	Gal	673,380
Sep 2021	MO652010P 1000E		Cool season grass pasture	Gestation	Applicator	30.1	5,800	Gal	174,580
Oct 2021	MO602419P 1300		Corn grain	Gestation	Applicator	12.2	6,100	Gal	74,420
Oct 2021	MO602419P 3000B		Corn grain	Gestation	Applicator	31.7	7,900	Gal	250,430
Oct 2021	MO602419P 4000		Corn grain	Gestation	Applicator	107.8	6,100	Gal	657,580
Oct 2021	MO602420P 3400		Corn grain	Gestation	Applicator	29.3	7,900	Gal	231,470
Oct 2021	MO602421P 3500B		Corn grain	GDU	Applicator	21.6	3,400	Gal	73,440
Oct 2021	MO602421P 3500C		Corn grain	GDU	Applicator	18.7	3,300	Gal	61,710
Oct 2021	MO602429P 8000B		Corn grain	GDU	Applicator	94.7	3,500	Gal	331,450
Oct 2021	MO602430P 1150B		Corn grain	GDU	Applicator	4.9	2,600	Gal	12,740
Oct 2021	MO602430P 1150C		Corn grain	GDU	Applicator	6.0	3,400	Gal	20,400
Oct 2021	MO602430P 1400		Corn grain	GDU	Applicator	18.6	2,600	Gal	48,360
Oct 2021	MO602430P 4400		Corn grain	Gestation	Applicator	31.0	7,600	Gal	235,600
Oct 2021	MO652003P 4800C		Corn grain	Gestation	Applicator	26.2	8,500	Gal	222,700
Oct 2021	MO652010P 1000B		Corn grain	Gestation	Applicator	4.1	7,900	Gal	32,390

Month and Year	Field ID	Field SubID	Planned Crop(s)	Source	Application Equipment	Acres Covered	Application Rate	Units per acre	Total Applied
Oct 2021	MO652010P 1200B		Corn grain	Gestation	Applicator	32.0	7,900	Gal	252,800
Apr 2022	MO602419P 3000C		Corn grain	GDU	Applicator	3.7	3,300	Gal	12,210
May 2022	MO652010P 2500		Cool season grass pasture	Gestation	Applicator	116.1	4,700	Gal	545,670
Jul 2022	MO652003P 4800D		Cool season grass pasture	Gestation	Applicator	22.3	5,800	Gal	129,340
Jul 2022	MO652010P 1000E		Cool season grass pasture	Gestation	Applicator	30.1	4,700	Gal	141,470

Manure Application Records - 8/2021 - 7/2022

App #	Date	Field ID	Field SubID	Manure Source	Application Equipment	Actual Rate	Actual Loads	Total Applied	Acres Covered
1									
2									
3									
4									
5									
6									
7									

Manure Application Records - 8/2021 - 7/2022 (continued)

App #	Applicator's Name	[1]Soil Condition	[2]Ground Cover	[3]Days to Incorporate	Air Temp	Wind Speed	Wind Direction	[4]Rain Before	[5]Rain After	[6]Weather
1										
2										
3										
4										
5										
6										
7										

1. Soil condition at time of operations: Dry, Firm, Wet, Muddy, Snow-Covered, Frozen.
2. Percent residue or ground cover at time of application.
3. Number of days to incorporate manure after application: Use "N1" for no incorporation.
4. Amount of rainfall during the 24 hours prior to application.
5. Amount of rainfall during the 24 hours after application.
6. Weather condition at time of application: Sunny, Partly Cloudy, Cloudy, Rain, Snow.

Manure Application Records - 8/2021 - 7/2022

App #	Date	Field ID	Field SubID	Manure Source	Application Equipment	Actual Rate	Actual Loads	Total Applied	Acres Covered
8									
9									
10									
11									
12									
13									
14									

Manure Application Records - 8/2021 - 7/2022 (continued)

App #	Applicator's Name	[1]Soil Condition	[2]Ground Cover	[3]Days to Incorporate	Air Temp	Wind Speed	Wind Direction	[4]Rain Before	[5]Rain After	[6]Weather
8										
9										
10										
11										
12										
13										
14										

1. Soil condition at time of operations: Dry, Firm, Wet, Muddy, Snow-Covered, Frozen.
2. Percent residue or ground cover at time of application.
3. Number of days to incorporate manure after application: Use "N1" for no incorporation.
4. Amount of rainfall during the 24 hours prior to application.
5. Amount of rainfall during the 24 hours after application.
6. Weather condition at time of application: Sunny, Partly Cloudy, Cloudy, Rain, Snow.

Manure Application Records - 8/2021 - 7/2022

App #	Date	Field ID	Field SubID	Manure Source	Application Equipment	Actual Rate	Actual Loads	Total Applied	Acres Covered
15									
16									
17									
18									
19									
20									
21									

Manure Application Records - 8/2021 - 7/2022 (continued)

App #	Applicator's Name	[1]Soil Condition	[2]Ground Cover	[3]Days to Incorporate	Air Temp	Wind Speed	Wind Direction	[4]Rain Before	[5]Rain After	[6]Weather
15										
16										
17										
18										
19										
20										
21										

1. Soil condition at time of operations: Dry, Firm, Wet, Muddy, Snow-Covered, Frozen.
2. Percent residue or ground cover at time of application.
3. Number of days to incorporate manure after application: Use "N1" for no incorporation.
4. Amount of rainfall during the 24 hours prior to application.
5. Amount of rainfall during the 24 hours after application.
6. Weather condition at time of application: Sunny, Partly Cloudy, Cloudy, Rain, Snow.

C. Planned Commercial Fertilizer Applications - 8/2021 - 7/2022

No planned commercial fertilizer applications for the period.

Commercial Fertilizer Application Records - 8/2021 - 7/2022

Month and Year	Field ID	Field SubID	Field Size (acres)	Planned Crop(s)	Fertilizer Analysis	Application Method	Material rate/acre	Total Material Applied	N (lbs/a)	P_2O_5 (lbs/a)	K_2O (lbs/a)

D. Recommended Manure Management Practices

Every time you apply manure you should review the following checklist to be sure conditions are favorable for manure applications. **These practices are required on permitted operations and operations that receive cost-share support through EQIP.**

- Know the proper manure source and application rate for each field.
- Keep good records, write down such things as operations performed, dates and times, actual rates, and weather conditions. This document provides record keeping forms.
- No surface application of manure if precipitation, likely to create runoff, is forecasted to occur within 24 hours of the planned application.
- No manure application on land with a slope greater than 20 percent.
- No surface application of manure to frozen, snow-covered or saturated soils.
- Manure applications shall comply with all manure application setbacks defined in the table below:

Manure application setback distances where manure should not be applied. For streams, lakes and wetlands the setback distance is measured from the defined edge of the water feature.

Setback Feature	Application Conditions	Setback Distance (feet)
Public or private drinking water well, drinking water lake or impoundment, or drinking water intake structure.	All applications	300
Other wells including un-plugged abandon wells	All applications	300
Public and privately owned lakes and impoundments not used as a water supply including impoundments with no outlet. Perennial streams, intermittent streams, canals, drainage ditches and wetlands. Tile line inlet (un-plugged during application).	Permanently vegetated setback	35
	Up-gradient, no or insufficient vegetated setback	100
	Down-gradient, no or insufficient vegetated setback	35
Losing streams, cave entrance, spring, or active sinkhole.	All applications	300
Non-owned occupied residence.	All applications	150
Public use area including non-owned businesses.	All applications	150
Public roads and property boundaries.	All applications	50

The following practices are recommended:

- Apply nutrients close to crop use to maximize nutrient uptake and reduce potential losses.
- Calibrate and maintain application equipment to apply accurate and uniform rates; all land application equipment should be calibrated at least annually.
- Avoid application when wind is blowing in the direction of neighbors or on weekends and holidays when people are more likely to be outdoors.

For liquid applications:

- Adjusting surface application rates to meet infiltration rate and water holding capacity of the soil.
- Irrigation systems should have automatic shut-off devices in case of pressure loss and/or an operator on-site at all times during operation to monitor application equipment.
- The perimeter of all fields receiving manure should be checked regularly during operation of land application equipment to confirm manure is not running off the field or entering waters of the state.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN

FIELD ID: MO602419P1300

Field Information

Total Acres:	14.4	Spreadable Acres:	12.2
Non-Spreadable Acres:	2.2	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	100	75	80

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2021			
Manure Source	Gestation			
Application Rate	6,100 gal/a			
Acres Covered	12.2			
Total Applied	74,420 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	101			
P_2O_5 (lbs/acre)	153			
K_2O (lbs/acre)	248			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602419P4000

Field Information

Total Acres:	112.2	Spreadable Acres:	107.8
Non-Spreadable Acres:	4.4	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	100	75	80

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2021			
Manure Source	Gestation			
Application Rate	6,100 gal/a			
Acres Covered	107.8			
Total Applied	657,580 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	101			
P_2O_5 (lbs/acre)	153			
K_2O (lbs/acre)	248			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN FIELD ID: MO602420P3400

Field Information

Total Acres:	30.9	Spreadable Acres:	29.3
Non-Spreadable Acres:	1.6	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	130	70	20

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2021			
Manure Source	Gestation			
Application Rate	7,900 gal/a			
Acres Covered	29.3			
Total Applied	231,470 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	130			
P_2O_5 (lbs/acre)	198			
K_2O (lbs/acre)	321			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN

FIELD ID: MO602420P4000

Field Information

Total Acres:	108.8	Spreadable Acres:	104.6
Non-Spreadable Acres:	4.2	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	70	45

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN FIELD ID: MO602421P3500B

Field Information

Total Acres:	25.2	Spreadable Acres:	21.6
Non-Spreadable Acres:	3.6	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	130	80	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2021			
Manure Source	GDU			
Application Rate	3,400 gal/a			
Acres Covered	21.6			
Total Applied	73,440 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	131			
P_2O_5 (lbs/acre)	143			
K_2O (lbs/acre)	85			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN FIELD ID: MO602421P3500C

Field Information

Total Acres:	19.8	Spreadable Acres:	18.7
Non-Spreadable Acres:	1.1	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	125	0	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2021			
Manure Source	GDU			
Application Rate	3,300 gal/a			
Acres Covered	18.7			
Total Applied	61,710 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	127			
P_2O_5 (lbs/acre)	139			
K_2O (lbs/acre)	83			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN FIELD ID: MO602429P8000B

Field Information

Total Acres:	98.7	Spreadable Acres:	94.7
Non-Spreadable Acres:	4.0	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	135	115	30

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2021			
Manure Source	GDU			
Application Rate	3,500 gal/a			
Acres Covered	94.7			
Total Applied	331,450 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	135			
P_2O_5 (lbs/acre)	147			
K_2O (lbs/acre)	88			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN FIELD ID: MO602429P8000C

Field Information

Total Acres:	24.1	Spreadable Acres:	21.7
Non-Spreadable Acres:	2.4	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	75	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602429P8000D

Field Information

Total Acres:	186.1	Spreadable Acres:	168.2
Non-Spreadable Acres:	17.9	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	40	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN FIELD ID: MO602430P1150B

Field Information

Total Acres:	6.0	Spreadable Acres:	4.9
Non-Spreadable Acres:	1.1	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	100	80	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2021			
Manure Source	GDU			
Application Rate	2,600 gal/a			
Acres Covered	4.9			
Total Applied	12,740 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	100			
P_2O_5 (lbs/acre)	109			
K_2O (lbs/acre)	65			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN FIELD ID: MO602430P1150C

Field Information

Total Acres:	6.9	Spreadable Acres:	6.0
Non-Spreadable Acres:	0.9	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	130	75	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2021			
Manure Source	GDU			
Application Rate	3,400 gal/a			
Acres Covered	6.0			
Total Applied	20,400 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	131			
P_2O_5 (lbs/acre)	143			
K_2O (lbs/acre)	85			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN FIELD ID: MO602430P1400

Field Information

Total Acres:	21.0	Spreadable Acres:	18.6
Non-Spreadable Acres:	2.4	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	100	80	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2021			
Manure Source	GDU			
Application Rate	2,600 gal/a			
Acres Covered	18.6			
Total Applied	48,360 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	100			
P_2O_5 (lbs/acre)	109			
K_2O (lbs/acre)	65			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN

FIELD ID:

Field Information

Total Acres:	0.0	Spreadable Acres:	
Non-Spreadable Acres:		Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN FIELD ID: MO602419P3000B

Field Information

Total Acres:	34.0	Spreadable Acres:	31.7
Non-Spreadable Acres:	2.3	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	130	80	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2021			
Manure Source	Gestation			
Application Rate	7,900 gal/a			
Acres Covered	31.7			
Total Applied	250,430 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	130			
P_2O_5 (lbs/acre)	198			
K_2O (lbs/acre)	321			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN FIELD ID: MO602419P3000C

Field Information

Total Acres:	3.9	Spreadable Acres:	3.7
Non-Spreadable Acres:	0.2	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_20
Corn grain	122.099998474121 bu	125	85	15

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Apr 2022			
Manure Source	GDU			
Application Rate	3,300 gal/a			
Acres Covered	3.7			
Total Applied	12,210 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	127			
P_2O_5 (lbs/acre)	139			
K_2O (lbs/acre)	83			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN FIELD ID: MO602419P3000D

Field Information

Total Acres:	3.7	Spreadable Acres:	1.9
Non-Spreadable Acres:	1.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	130	85	30

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN FIELD ID: MO602429P8000E

Field Information

Total Acres:	111.4	Spreadable Acres:	98.9
Non-Spreadable Acres:	12.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	85	35

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN

FIELD ID: MO602430P4200

Field Information

Total Acres:	11.3	Spreadable Acres:	9.8
Non-Spreadable Acres:	1.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	55	30

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN

FIELD ID: MO602430P4300

Field Information

Total Acres:	17.1	Spreadable Acres:	13.6
Non-Spreadable Acres:	3.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	55	45

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602430P4400

Field Information

Total Acres:	35.6	Spreadable Acres:	31.0
Non-Spreadable Acres:	4.6	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	122.099998474121 bu	125	115	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2021			
Manure Source	Gestation			
Application Rate	7,600 gal/a			
Acres Covered	31.0			
Total Applied	235,600 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	125			
P_2O_5 (lbs/acre)	190			
K_2O (lbs/acre)	309			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN

FIELD ID: MO602524P4600

Field Information

Total Acres:	53.7	Spreadable Acres:	50.9
Non-Spreadable Acres:	2.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	50	30

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602525P1500B

Field Information

Total Acres:	19.5	Spreadable Acres:	18.7
Non-Spreadable Acres:	0.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	40	10

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO602525P1500C

Field Information

Total Acres:	34.8	Spreadable Acres:	33.1
Non-Spreadable Acres:	1.7	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	50	35

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN

FIELD ID: MO602429P8000F

Field Information

Total Acres:	23.1	Spreadable Acres:	20.6
Non-Spreadable Acres:	2.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	43.7999992370605 bu	0	55	45

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN

FIELD ID: MO652003P4800B

Field Information

Total Acres:	11.5	Spreadable Acres:	10.4
Non-Spreadable Acres:	1.1	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	40.0999984741211 bu	0	45	35

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652003P4800C

Field Information

Total Acres:	28.6	Spreadable Acres:	26.2
Non-Spreadable Acres:	2.4	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	124.300003051758 bu	140	65	25

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2021			
Manure Source	Gestation			
Application Rate	8,500 gal/a			
Acres Covered	26.2			
Total Applied	222,700 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	140			
P_2O_5 (lbs/acre)	213			
K_2O (lbs/acre)	345			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN FIELD ID: MO652003P4800D

Field Information

Total Acres:	26.1	Spreadable Acres:	22.3
Non-Spreadable Acres:	3.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Cool season grass pasture	2.40000009536743 ton	95	40	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Jul 2022			
Manure Source	Gestation			
Application Rate	5,800 gal/a			
Acres Covered	22.3			
Total Applied	129,340 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	96			
P_2O_5 (lbs/acre)	145			
K_2O (lbs/acre)	235			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Cool season grass pasture - For cool season grass pasture and bluegrass pasture split nitrogen applications between late spring after first grazing and mid August, applying 60% before the season of greatest need.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN FIELD ID: MO652010P1000B

Field Information

Total Acres:	5.8	Spreadable Acres:	4.1
Non-Spreadable Acres:	1.7	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	124.300003051758 bu	130	70	35

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2021			
Manure Source	Gestation			
Application Rate	7,900 gal/a			
Acres Covered	4.1			
Total Applied	32,390 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	130			
P_2O_5 (lbs/acre)	198			
K_2O (lbs/acre)	321			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1000C

Field Information

Total Acres:	23.5	Spreadable Acres:	17.6
Non-Spreadable Acres:	5.9	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	40.0999984741211 bu	0	50	55

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN FIELD ID: MO652010P1000D

Field Information

Total Acres:	16.6	Spreadable Acres:	13.4
Non-Spreadable Acres:	3.2	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	40.0999984741211 bu	0	50	55

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN FIELD ID: MO652010P1000E

Field Information

Total Acres:	37.1	Spreadable Acres:	30.1
Non-Spreadable Acres:	7.0	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Cool season grass pasture	2.40000009536743 ton	95	5	0

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1	Application 2		
Application Time	Sep 2021	Jul 2022		
Manure Source	Gestation	Gestation		
Application Rate	5,800 gal/a	4,700 gal/a		
Acres Covered	30.1	30.1		
Total Applied	174,580 gal	141,470 gal		
Loads per Field	0.0	0.0		
Placement	Injected	Injected		
N (lbs/acres)	96	78		
P_2O_5 (lbs/acre)	145	118		
K_2O (lbs/acre)	235	191		

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Cool season grass pasture - For cool season grass pasture and bluegrass pasture split nitrogen applications between late spring after first grazing and mid August, applying 60% before the season of greatest need.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P1200B

Field Information

Total Acres:	35.8	Spreadable Acres:	32.0
Non-Spreadable Acres:	3.8	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Corn grain	124.300003051758 bu	130	35	15

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1			
Application Time	Oct 2021			
Manure Source	Gestation			
Application Rate	7,900 gal/a			
Acres Covered	32.0			
Total Applied	252,800 gal			
Loads per Field	0.0			
Placement	Injected			
N (lbs/acres)	130			
P_2O_5 (lbs/acre)	198			
K_2O (lbs/acre)	321			

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Nitrogen Credit: Nitrogen requirements have been reduced by 30 pounds per acre for this corn crop as it follows soybeans.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN FIELD ID: MO652010P1200C

Field Information

Total Acres:	18.7	Spreadable Acres:	15.6
Non-Spreadable Acres:	3.1	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	40.0999984741211 bu	0	35	35

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P2100

Field Information

Total Acres:	24.7	Spreadable Acres:	22.2
Non-Spreadable Acres:	2.5	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_2O
Soybeans	40.0999984741211 bu	0	30	60

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

No planned manure application.

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

8/2021 - 7/2022 NUTRIENT MANAGEMENT PLAN — FIELD ID: MO652010P2500

Field Information

Total Acres:	121.7	Spreadable Acres:	116.1
Non-Spreadable Acres:	5.6	Distance to Storage:	0.00 miles

Fertilizer Recommendation (lbs/acre)

Crop	Yield Goal	N	P_2O_5	K_20
Cool season grass pasture	2.40000009536743 ton	95	5	10

This fertilizer recommendation has not been adjusted for any applications of manure or fertilizer.

Manure Management

	Application 1	Application 2		
Application Time	Aug 2021	May 2022		
Manure Source	Gestation	Gestation		
Application Rate	5,800 gal/a	4,700 gal/a		
Acres Covered	116.1	116.1		
Total Applied	673,380 gal	545,670 gal		
Loads per Field	0.0	0.0		
Placement	Injected	Injected		
N (lbs/acres)	96	78		
P_2O_5 (lbs/acre)	145	118		
K_2O (lbs/acre)	235	191		

Commercial Fertilizer Management

No planned commercial fertilizer application. No records in database.

Crop Management

* Cool season grass pasture - For cool season grass pasture and bluegrass pasture split nitrogen applications between late spring after first grazing and mid August, applying 60% before the season of greatest need.

Summary Tables - 8/2021 - 7/2022

F. Manure Summary: 8/2021 - 7/2022

	Source 1	Source 2		
Source	Gestation	GDU		
Units	gals	gals		
Beginning of Year Inventory	5,248,618	401,952		
Inputs				
Production	3,984,872	530,368		
Imports - off farm	0	0		
Transfers - on farm	0	0		
Total Inputs	3,984,872	530,368		
Outputs				
Land Applied	3,621,830	560,310		
Exports - off farm	0	0		
Transfers - on farm	0	0		
Total Outputs	3,621,830	560,310		
End of Year Inventory	5,611,660	372,010		

G. Land Applied Nutrient Summary: 8/2021 - 7/2022

	Total Applied		PAN[1]	P_2O_5	K_2O
Manure Source	(tons or gals)		----------lbs----------		
Gestation	3,621,830	gals	59,867	90,741	147,068
GDU	560,310	gals	21,595	23,542	14,067
Manure Total			81,462	114,283	161,135
	Total Applied		**N**	**P_2O_5**	**K_2O**
Fertilizer Source	(lbs or gals)		----------lbs----------		
Fertilizer Total			0	0	0
Total			81,462	114,283	161,135

H. Lime Recommendations

These lime recommendations are one-time applications meant to be applied only once to adjust soil pH to its desired level. If you have already applied the recommended lime rate in a previous year of this plan please disregard these recommendations.

Lime Recommendations[1]

Field ID	Field SubID	Field Size	Test Year	NA[2]	pH	pH Rating	Mg (lbs/a)	Mg Rating	Lime Rec. lbs ENM/acre[3]	Mg Rec. lbs EMg/acre[4]
MO602419P1300		14.4	2012	6.9	5.8	Medium	302	High	1,780	0 [D]
MO602419P4000		112.2	2012	6.9	5.8	Medium	302	High	1,780	0 [D]
MO602420P3400		30.9	2015	6.5	5.9	Medium	1,306	High	1,565	0 [D]
MO602420P4000		108.8	2015	6.5	5.7	Medium	1,358	High	1,765	0 [D]
MO602421P3500B		25.2	2015	6.4	5.7	Medium	1,334	High	1,740	0 [D]
MO602421P3500C		19.8	2015	6.4	5.6	Medium	1,238	High	1,815	0 [D]
MO602429P8000B		98.7	2015	6.6	6.1	High	1,522	High	1,295	0 [D]
MO602429P8000C		24.1	2015	6.7	6.4	High	1,562	High	495	0 [D]
MO602429P8000D		186.1	2015	6.7	6.5	High	1,290	High	0	0
MO602430P1150B		6.0	2012	7.1	6.5	High	566	High	0	0
MO602430P1150C		6.9	2015	6.4	5.8	Medium	1,584	High	1,650	0 [D]
MO602430P1400		21.0	2012	7.1	6.5	High	566	High	0	0
		0.0	2012	6.6	5.7	**	652	**	**	**
MO602419P3000B		34.0	2015	6.4	5.8	Medium	1,502	High	1,650	0 [D]
MO602419P3000C		3.9	2015	6.3	5.6	Medium	1,574	High	1,790	0 [D]
MO602419P3000D		3.7	2015	6.3	5.5	Medium	1,370	High	1,850	0 [D]
MO602429P8000E		111.4	2015	6.7	6.3	High	1,506	High	840	0 [D]
MO602430P4200		11.3	2015		7.0	*	842	*	*	*

Field ID	Field SubID	Field Size	Test Year	NA[2]	pH	pH Rating	Mg (lbs/a)	Mg Rating	Lime Rec. lbs ENM/acre[3]	Mg Rec. lbs EMg/acre[4]
MO602430P4300		17.1	2015		7.0	*	835	*	*	*
MO602430P4400		35.6	2015	6.7	6.2	High	1,324	High	1,105	0 [D]
MO602524P4600		53.7	2016	6.7	6.6	High	888	High	0	0
MO602525P1500B		19.5	2016	6.5	5.8	Medium	1,018	High	1,675	0 [D]
MO602525P1500C		34.8	2016	6.6	6.1	High	1,158	High	1,295	0 [D]
MO602429P8000F		23.1	2016	6.7	6.3	High	1,192	High	840	0 [D]
MO652003P4800B		11.5	2015		7.8	*	318	*	*	*
MO652003P4800C		28.6	2015		7.8	*	318	*	*	*
MO652003P4800D		26.1	2016	6.7	6.3	High	852	High	0	0
MO652010P1000B		5.8	2015	6.7	6.0	Medium	664	High	1,480	0 [D]
MO652010P1000C		23.5	2015	6.7	6.0	Medium	664	High	1,480	0 [D]
MO652010P1000D		16.6	2015	6.7	6.0	Medium	664	High	1,480	0 [D]
MO652010P1000E		37.1	2016	6.7	6.5	High	940	High	0	0
MO652010P1200B		35.8	2015	6.7	6.2	High	774	High	1,105	0 [D]
MO652010P1200C		18.7	2015	6.7	6.1	High	720	High	1,315	0 [D]
MO652010P2100		24.7	2015	6.7	6.1	High	878	High	1,315	0 [D]
MO652010P2500		121.7	2016		7.1	*	389	*	*	*

[1]These lime recommendations assume you used the University of Missouri soil testing laboratory, or comparable lab.
[2]NA = Neutralizable Acidity, units in meq/100g soil.
[3]ENM = Effective Neutralizing Material.
[4]EMg = Effective Magnesium.

** - No recommendation: No crop has been selected for this field in order to calculate lime recommendation.
* - No recommendation: Some soil test data is missing for this field. Please run the Essential Data Detection Tool.

[D] To determine limestone needed in tons/acre, divide your ENM requirement by the guarantee of your limestone dealer.

I. Crop Record Keeping Table: 8/2021 - 7/2022

Field ID	Field SubID	Crop	Planting Date	Hybrid or Variety	Seeding Rate	Harvest date(s)	Yield/A
MO602419P 1300		Corn grain					
MO602419P 4000		Corn grain					
MO602420P 3400		Corn grain					
MO602420P 4000		Soybeans					
MO602421P 3500B		Corn grain					
MO602421P 3500C		Corn grain					
MO602429P 8000B		Corn grain					
MO602429P 8000C		Soybeans					
MO602429P 8000D		Soybeans					
MO602430P 1150B		Corn grain					
MO602430P 1150C		Corn grain					
MO602430P 1400		Corn grain					
MO602419P 3000B		Corn grain					
MO602419P 3000C		Corn grain					
MO602419P 3000D		Corn grain					
MO602429P		Soybeans					

Field ID	Field SubID	Crop	Planting Date	Hybrid or Variety	Seeding Rate	Harvest date(s)	Yield/A
8000E							
MO602430P 4200		Soybeans					
MO602430P 4300		Soybeans					
MO602430P 4400		Corn grain					
MO602524P 4600		Soybeans					
MO602525P 1500B		Soybeans					
MO602525P 1500C		Soybeans					
MO602429P 8000F		Soybeans					
MO652003P 4800B		Soybeans					
MO652003P 4800C		Corn grain					
MO652003P 4800D		Cool season grass pasture					
MO652010P 1000B		Corn grain					
MO652010P 1000C		Soybeans					
MO652010P 1000D		Soybeans					
MO652010P 1000E		Cool season grass pasture					
MO652010P 1200B		Corn grain					
MO652010P		Soybeans					

Field ID	Field SubID	Crop	Planting Date	Hybrid or Variety	Seeding Rate	Harvest date(s)	Yield/A
1200C							
MO652010P 2100		Soybeans					
MO652010P 2500		Cool season grass pasture					

Document Source Information

Report based on information from Manure Management Planer (MMP 0.3.3.2)

Plan:

File: S:\Manure ground\MMP P Index Plans\Trenton Farms RE, LLC\2016 Permit Application materials\Original MMP 2016.1.mmp
Initialized: 11/6/2008
Last Saved: 5/20/2016 4:30:49 PM
Exported: 5/20/2016 4:31:11 PM
Title:
Years in Plan: 5
Plan Start Year: 2017
Plan Start Month: 8

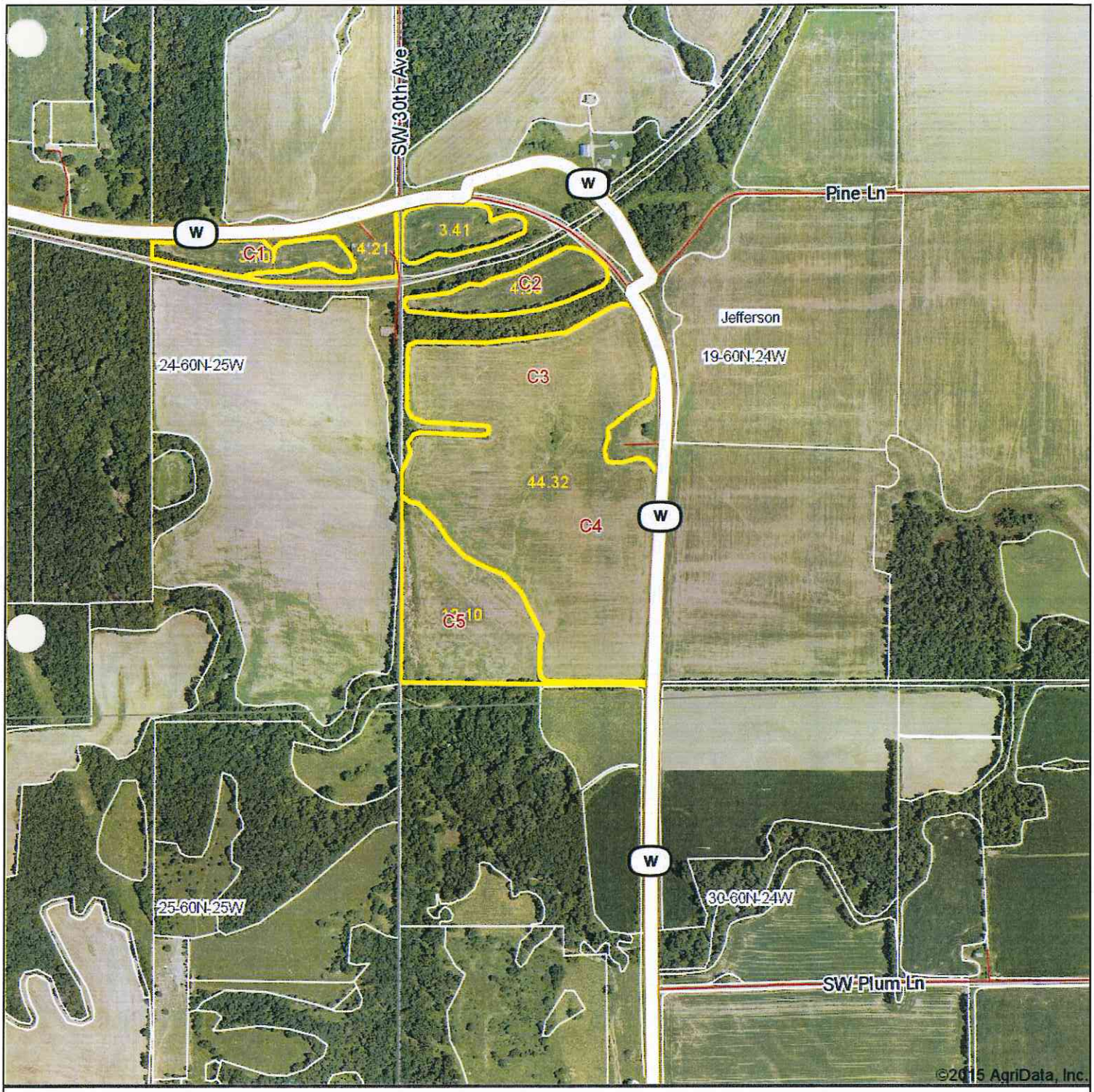
Operation:

Name: Trenton Farms RE, LLC

Operation Contact:

Trenton Farms RE, LLC
SW State Highway W
Trenton MO 64683
507-825-7032 (office)
(home)

Aerial Map



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19-60N-24W
Grundy County
Missouri

P3000B = 12.3
P3000C = 11
P3000D = 11

map center: 39.993536, -93.648094
scale: 9577

N
W E
S

6/1/2015

Field borders provided by Farm Service Agency as of 5/21/2008.

REPORT NUMBER
15-146-0084
COMPLETED DATE
May 28, 2015
ACCOUNT
9169
RECEIVED DATE
May 26, 2015

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TODAY'S DATE
May 28, 2015

UNITED FARMERS MERCANTILE COOP
BRUCE STREICHER
203 W OAK
RED OAK IA 51566-

IDENTIFICATION
DON DAVIS
501 EAST PROSPECT ST
RED OAK IOWA 51566

SOIL ANALYSIS REPORT

INFO SHEET: 719257

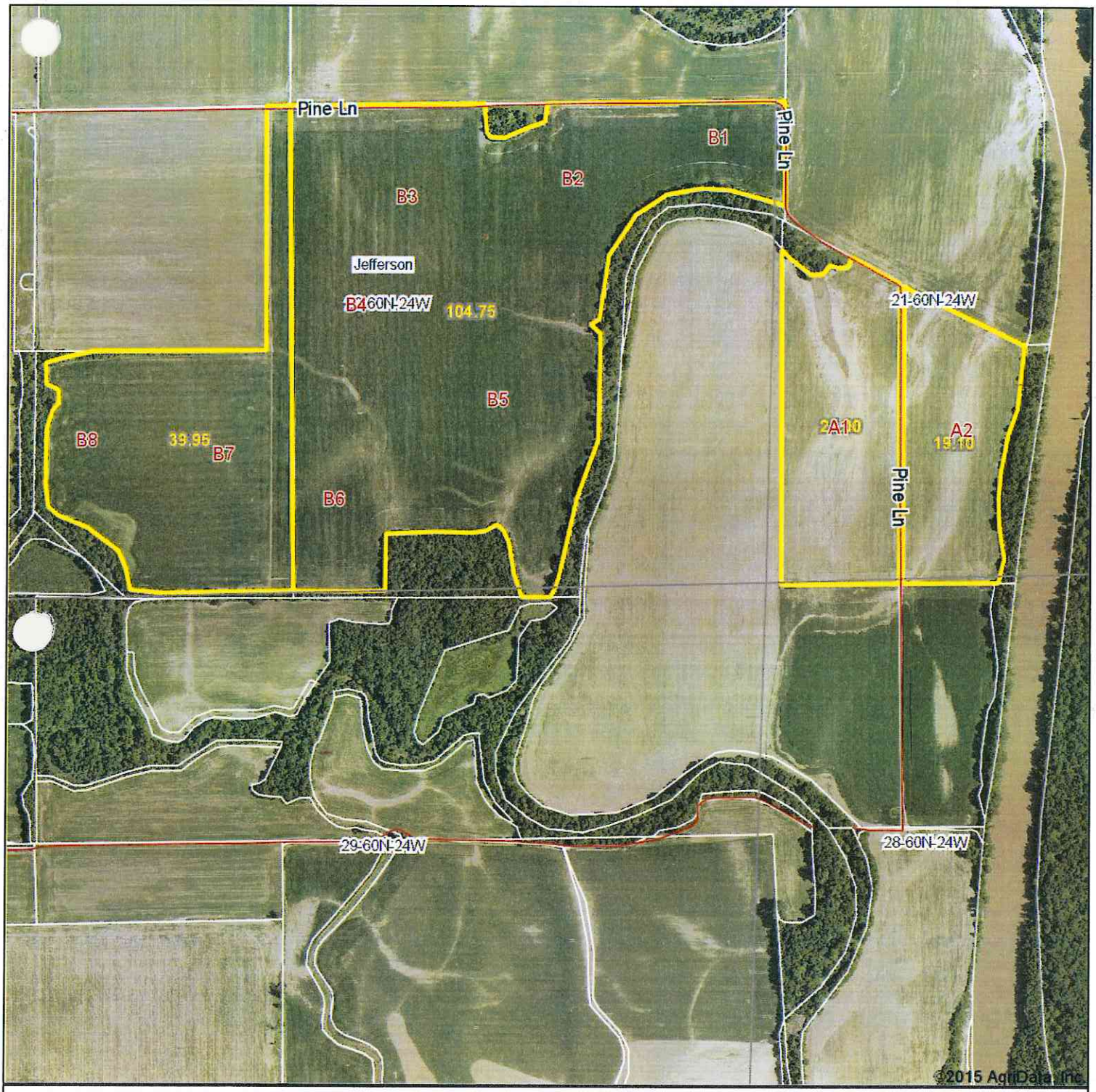
LAB NUMBER *281*	SAMPLE IDENTIFICATION	ORGANIC MATTER L.O.I. percent	RATE	PHOSPHORUS P_1 (WEAK BRAY) 1:7 ppm	RATE	PHOSPHORUS P_2 (STRONG BRAY) 1:7 ppm	RATE	OLSEN BICARBONATE P ppm	RATE	NEUTRAL AMMONIUM ACETATE (EXCHANGEABLE) POTASSIUM K ppm	RATE	MAGNESIUM Mg ppm	RATE	CALCIUM Ca ppm	RATE	SODIUM Na ppm	RATE	pH SOIL pH 1:1	BUFFER INDEX	CATION EXCHANGE CAPACITY C.E.C. meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H	% Na
60561	C1	2.9	M	11	L	21	M	11	M	196	M	685	VH	2943	M			5.5	6.3	28.3	1.8	20.2	52.0	26.0	
60562	C2	3.3	M	11	L	17	L	5	VL	245	M	787	VH	3358	M			5.6	6.3	31.4	2.0	20.9	53.5	23.6	
60563	C3	3.0	M	12	L	21	M	11	M	238	M	823	VH	3449	M			6.0	6.5	29.1	2.1	23.6	59.3	15.0	
60564	C4	3.0	M	13	L	21	M	9	L	187	M	697	VH	2957	M			5.7	6.4	26.7	1.8	21.8	55.4	21.0	
60565	C5	2.8	M	12	L	21	M	8	L	205	M	733	VH	3043	M			5.6	6.4	28.5	1.8	21.4	53.4	23.4	

LAB NUMBER *281*	NITRATE-N (FIA) SURFACE ppm	SURFACE lbs/A	SURFACE depth (in)	SUBSOIL 1 ppm	SUBSOIL 1 lbs/A	SUBSOIL 1 depth (in)	SUBSOIL 2 ppm	SUBSOIL 2 lbs/A	SUBSOIL 2 depth (in)	Total lbs/A	SULFUR S ICAP ppm	RATE	ZINC Zn DTPA ppm	RATE	MANGANESE Mn DTPA ppm	RATE	IRON Fe DTPA ppm	RATE	COPPER Cu DTPA ppm	RATE	BORON B SORB. DTPA ppm	RATE	EXCESS LIME RATE	SOLUBLE SALTS 1:1 mmhos/cm	RATE
60561			0-6																						
60562			0-6																						
60563			0-6																						
60564			0-6																						
60565			0-6																						

REV. 12/03

The above analytical results apply only to the sample(s) submitted. Samples are retained a maximum of 30 days.

Aerial Map



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20-60N-24W
Grundy County
Missouri

P 3500B = 12
P 3500C = 42
P 4000 = 9.8
P 3400 = 16

map center: 39.992568, -93.622009
scale: 9590

N
W E
S

6/1/2015

Field borders provided by Farm Service Agency as of 5/21/2008.

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SOIL ANALYSIS REPORT

INFO SHEET: 719254

LAB NUMBER *281*	SAMPLE IDENTIFICATION	ORGANIC MATTER L.O.I. percent	RATE	PHOSPHORUS P1 (WEAK BRAY) 1:7 ppm	RATE	PHOSPHORUS P2 (STRONG BRAY) 1:7 ppm	RATE	OLSEN BICARBONATE P ppm	RATE	NEUTRAL AMMONIUM ACETATE (EXCHANGEABLE) POTASSIUM K ppm	RATE	MAGNESIUM Mg ppm	RATE	CALCIUM Ca ppm	RATE	SODIUM Na ppm	RATE	pH SOIL pH 1:1	BUFFER INDEX	CATION EXCHANGE CAPACITY C.E.C. meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H	% Na
60551	A1	3.2	M	12	L	23	M	12	M	223	M	667	VH	3674	M			5.7	6.4	31.0	1.8	17.9	59.3	21.0	
60552	A2	3.5	M	42	VH	53	H	25	VH	289	VH	619	VH	2798	M			5.6	6.4	26.0	2.9	19.8	53.8	23.5	

LAB NUMBER *281*	NITRATE-N (FIA) SURFACE ppm	SURFACE lbs/A	SURFACE depth (in)	SUBSOIL 1 ppm	SUBSOIL 1 lbs/A	SUBSOIL 1 depth (in)	SUBSOIL 2 ppm	SUBSOIL 2 lbs/A	SUBSOIL 2 depth (in)	Total lbs/A	SULFUR S ICAP ppm	RATE	ZINC Zn DTPA ppm	RATE	MANGANESE Mn DTPA ppm	RATE	IRON Fe DTPA ppm	RATE	COPPER Cu DTPA ppm	RATE	BORON B SORB. DTPA ppm	RATE	EXCESS LIME RATE	SOLUBLE SALTS 1:1 mmhos/cm	RATE
60551			0-6																						
60552			0-6																						

REV. 12/03

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15-146-0083
COMPLETED DATE
May 28, 2015
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9169
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UNITED FARMERS MERCANTILE COOP
BRUCE STREICHER
203 W OAK
RED OAK IA 51566-

IDENTIFICATION
DON DAVIS
501 EAST PROSPECT ST
RED OAK IOWA 51566

SOIL ANALYSIS REPORT

INFO SHEET: 719256

LAB NUMBER *281*	SAMPLE IDENTIFICATION	ORGANIC MATTER L.O.I.	PHOSPHORUS			NEUTRAL AMMONIUM ACETATE (EXCHANGEABLE) POTASSIUM	MAGNESIUM	CALCIUM	SODIUM	pH		CATION EXCHANGE CAPACITY	PERCENT BASE SATURATION (COMPUTED)				
			P_1 (WEAK BRAY) 1:7	P_2 (STRONG BRAY) 1:7	OLSEN BICARBONATE P	K	Mg	Ca	Na	SOIL pH 1:1	BUFFER INDEX	C.E.C.	% K	% Mg	% Ca	% H	% Na
		percent RATE	ppm RATE	ppm RATE	ppm RATE	ppm RATE	ppm RATE	ppm RATE	ppm RATE			meq/100g					
60553	B1	2.8 M	6 VL	10 L	5 VL	209 H	603 VH	2543 M		5.7	6.5	23.2	2.3	21.7	54.8	21.2	
60554	B2	2.5 L	5 VL	10 L	5 VL	172 L	791 VH	2771 M		5.5	6.3	28.2	1.6	23.4	49.1	25.9	
60555	B3	2.9 M	6 VL	18 L	5 VL	190 M	770 VH	2919 M		5.6	6.4	28.1	1.7	22.8	51.9	23.6	
60556	B4	3.1 M	17 M	23 M	12 M	206 M	600 VH	3185 M		5.8	6.5	26.5	2.0	18.9	60.1	19.0	
60557	B5	3.0 M	11 L	19 L	10 L	251 H	649 VH	3450 M		5.9	6.5	28.1	2.3	19.2	61.4	17.1	
60558	B6	2.7 M	14 L	21 M	12 M	191 M	658 VH	3300 M		5.8	6.5	27.8	1.8	19.7	59.4	19.1	
60559	B7	3.0 M	19 M	24 M	15 M	206 M	556 VH	3243 M		6.0	6.6	25.2	2.1	18.4	64.3	15.2	
60560	B8	2.9 M	13 L	19 L	9 L	211 M	750 VH	3065 M		5.7	6.4	28.0	1.9	22.3	54.7	21.1	

LAB NUMBER *281*	NITRATE-N (FIA) SURFACE ppm	SURFACE lbs/A	SURFACE depth (in)	SUBSOIL 1 ppm	SUBSOIL 1 lbs/A	SUBSOIL 1 depth (in)	SUBSOIL 2 ppm	SUBSOIL 2 lbs/A	SUBSOIL 2 depth (in)	Total lbs/A	SULFUR S ICAP ppm RATE	ZINC Zn DTPA ppm RATE	MANGANESE Mn DTPA ppm RATE	IRON Fe DTPA ppm RATE	COPPER Cu DTPA ppm RATE	BORON B SORB. DTPA ppm RATE	EXCESS LIME RATE	SOLUBLE SALTS 1:1 mmhos/cm RATE
60553			0-6															
60554			0-6															
60555			0-6															
60556			0-6															
60557			0-6															
60558			0-6															
60559			0-6															
60560			0-6															

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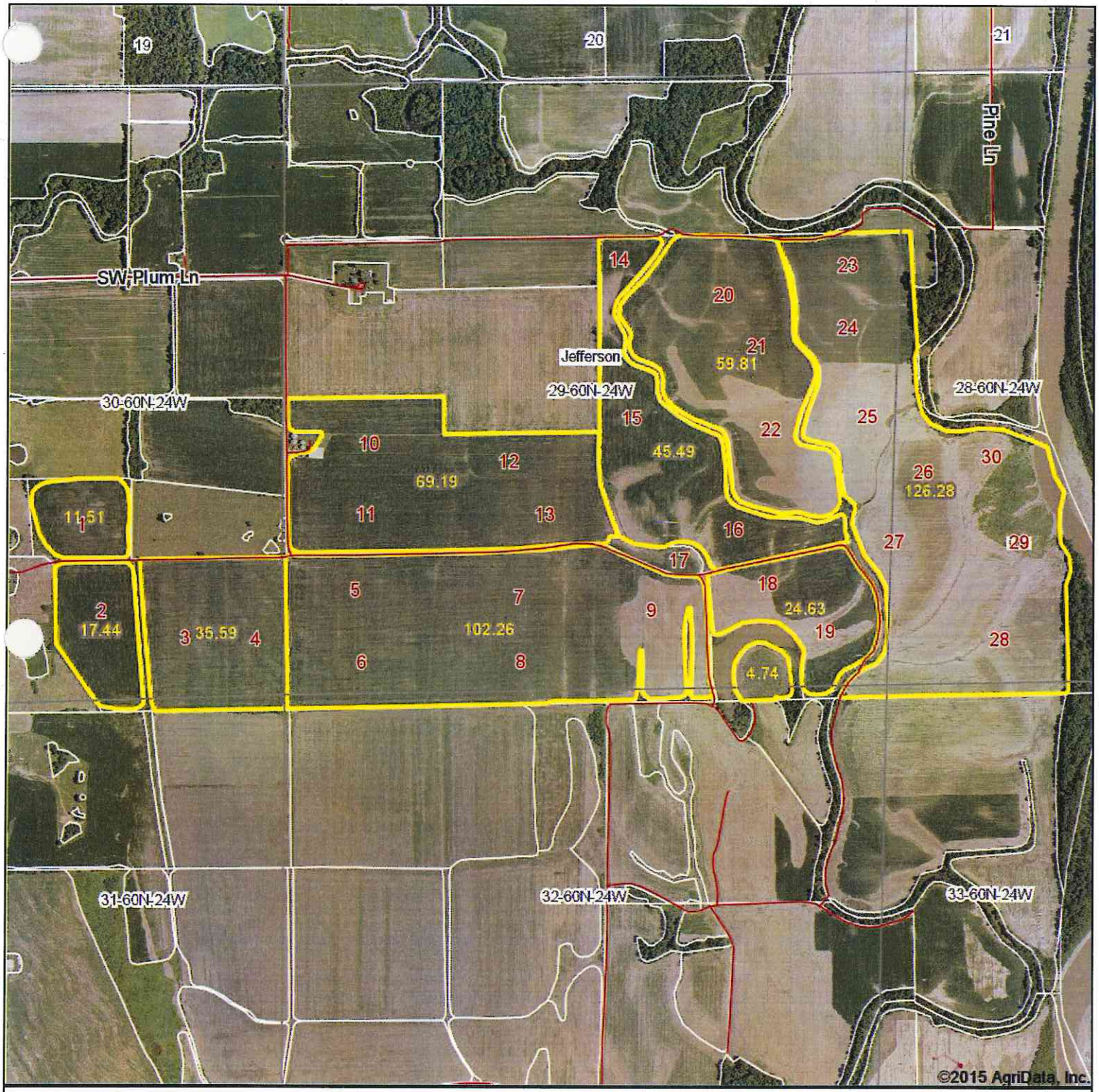
The above analytical results apply only to the sample(s) submitted. Samples are retained a maximum of 30 days.

Aerial Map



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Maps Provided By:
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PA200 = 14
PA300 = 15
PA400 = 25

29-60N-24W
Grundy County
Missouri

PS000B = 2.4
PS000C = 7.5
PS000D = 21.9
PS000E = 4.8

map center: 39.980877, -93.628422
scale: 15151

N
W E
S

6/1/2015

Field borders provided by Farm Service Agency as of 5/21/2008.

REPORT NUMBER
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COMPLETED DATE
May 27, 2015
ACCOUNT
9169
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May 26, 2015

UNITED FARMERS MERCANTILE COOP
BRUCE STREICHER
203 W OAK
RED OAK IA 51566-

IDENTIFICATION
DON DAVIS

SOIL ANALYSIS REPORT

INFO SHEET: 718969

LAB NUMBER *281*	SAMPLE IDENTIFICATION	ORGANIC MATTER L.O.I.	PHOSPHORUS			NEUTRAL AMMONIUM ACETATE (EXCHANGEABLE) POTASSIUM	MAGNESIUM	CALCIUM	SODIUM	pH		CATION EXCHANGE CAPACITY C.E.C.	PERCENT BASE SATURATION (COMPUTED)				
			P_1 (WEAK BRAY) 1:7	P_2 (STRONG BRAY) 1:7	OLSEN BICARBONATE P	K	Mg	Ca	Na	SOIL pH 1:1	BUFFER INDEX		% K	% Mg	% Ca	% H	% Na
		percent RATE	ppm RATE	ppm RATE	ppm RATE	ppm RATE	ppm RATE	ppm RATE	ppm RATE			meq/100g					
51461	DAVIS1	1.7 L	14 L	60 VH	17 H	208 H	842 VH	2945 M		7.0		22.3	2.4	31.5	66.1	0.0	
51462	DAVIS2	1.3 VL	15 M	62 VH	15 M	186 M	835 VH	2822 M		7.0		21.5	2.2	32.4	65.4	0.0	
51463	DAVIS3	3.5 M	2 VL	8 L	4 VL	188 H	617 VH	2373 M		6.1	6.6	20.3	2.4	25.3	58.4	13.9	
51464	DAVIS4	3.2 M	3 VL	8 L	6 L	200 H	707 VH	2659 M		6.3	6.7	22.0	2.3	26.8	60.4	10.5	
51465	DAVIS5	2.9 M	2 VL	21 M	5 VL	180 M	756 VH	2749 M		6.2	6.6	23.3	2.0	27.0	59.0	12.0	
51466	DAVIS6	2.6 M	3 VL	5 VL	4 VL	166 M	730 VH	2629 M		6.0	6.6	23.2	1.8	26.2	56.7	15.3	
51467	DAVIS7	2.7 M	2 VL	4 VL	3 VL	167 M	754 VH	2691 M		6.0	6.6	23.8	1.8	26.4	56.5	15.3	
51468	DAVIS8	2.8 M	2 VL	7 VL	6 L	204 M	750 VH	2771 M		6.1	6.6	24.0	2.2	26.0	57.7	14.1	
51469	DAVIS9	2.7 M	3 VL	6 VL	5 VL	196 M	816 VH	2933 M		6.1	6.6	25.6	2.0	26.6	57.3	14.1	
51470	DAVIS10	3.2 M	3 VL	6 VL	4 VL	215 H	759 VH	2846 M		6.2	6.6	24.0	2.3	26.4	59.3	12.0	

LAB NUMBER *281*	NITRATE-N (FIA) SURFACE ppm	SURFACE lbs/A	SURFACE depth (in)	SUBSOIL 1 ppm	SUBSOIL 1 lbs/A	SUBSOIL 1 depth (in)	SUBSOIL 2 ppm	SUBSOIL 2 lbs/A	SUBSOIL 2 depth (in)	Total lbs/A	SULFUR S ICAP ppm RATE	ZINC Zn DTPA ppm RATE	MANGANESE Mn DTPA ppm RATE	IRON Fe DTPA ppm RATE	COPPER Cu DTPA ppm RATE	BORON B SORB. DTPA ppm RATE	EXCESS LIME RATE	SOLUBLE SALTS 1:1 mmhos/cm RATE
51461			0-6															
51462			0-6															
51463			0-6															
51464			0-6															
51465			0-6															
51466			0-6															
51467			0-6															
51468			0-6															
51469			0-6															
51470			0-6															

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The above analytical results apply only to the sample(s) submitted. Samples are retained a maximum of 30 days.

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BRUCE STREICHER
203 W OAK
RED OAK IA 51566-

IDENTIFICATION
DON DAVIS

SOIL ANALYSIS REPORT

INFO SHEET: 718969

LAB NUMBER *281*	SAMPLE IDENTIFICATION	ORGANIC MATTER L.O.I. percent	RATE	PHOSPHORUS P_1 (WEAK BRAY) 1:7 ppm	RATE	PHOSPHORUS P_2 (STRONG BRAY) 1:7 ppm	RATE	OLSEN BICARBONATE P ppm	RATE	NEUTRAL AMMONIUM ACETATE (EXCHANGEABLE) POTASSIUM K ppm	RATE	MAGNESIUM Mg ppm	RATE	CALCIUM Ca ppm	RATE	SODIUM Na ppm	RATE	pH SOIL pH 1:1	BUFFER INDEX	CATION EXCHANGE CAPACITY C.E.C. meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H	% Na
51471	DAVIS11	2.5	L	2	VL	31	M	4	VL	180	M	732	VH	2690	M			6.1	6.6	23.3	2.0	26.2	57.7	14.1	
51472	DAVIS12	3.0	M	4	VL	5	VL	5	VL	193	M	726	VH	2717	M			6.2	6.7	22.8	2.2	26.5	59.6	11.7	
51473	DAVIS13	2.9	M	2	VL	6	VL	5	VL	208	M	746	VH	2782	M			6.1	6.6	24.1	2.2	25.8	57.7	14.3	
51474	DAVIS14	3.2	M	3	VL	8	L	6	L	201	H	693	VH	2659	M			6.1	6.6	22.8	2.3	25.3	58.3	14.1	
51475	DAVIS15	2.8	M	6	VL	23	M	9	L	221	H	806	VH	2943	M			6.5	6.7	23.8	2.4	28.2	61.8	7.6	
51476	DAVIS16	2.9	M	7	VL	25	M	10	L	198	H	747	VH	2737	M			6.6	6.8	21.7	2.3	28.7	63.1	5.9	
51477	DAVIS17	2.6	M	11	L	30	M	13	M	236	H	818	VH	2992	M			6.5	6.7	24.2	2.5	28.2	61.8	7.5	
51478	DAVIS18	2.9	M	7	VL	20	M	9	L	218	H	776	VH	2828	M			6.3	6.7	23.7	2.4	27.3	59.7	10.6	
51479	DAVIS19	2.9	M	8	L	23	M	7	L	217	H	786	VH	2846	M			6.4	6.7	23.4	2.4	28.0	60.8	8.8	
51481	DAVIS20	3.8	H	9	L	20	M	5	VL	306	VH	704	VH	2873	M			6.6	6.8	22.3	3.5	26.3	64.4	5.8	

LAB NUMBER *281*	NITRATE-N (FIA) SURFACE ppm	SURFACE lbs/A	SURFACE depth (in)	SUBSOIL 1 ppm	SUBSOIL 1 lbs/A	SUBSOIL 1 depth (in)	SUBSOIL 2 ppm	SUBSOIL 2 lbs/A	SUBSOIL 2 depth (in)	Total lbs/A	SULFUR S ICAP ppm	RATE	ZINC Zn DTPA ppm	RATE	MANGANESE Mn DTPA ppm	RATE	IRON Fe DTPA ppm	RATE	COPPER Cu DTPA ppm	RATE	BORON B SORB. DTPA ppm	RATE	EXCESS LIME RATE	SOLUBLE SALTS 1:1 mmhos/cm	RATE
51471			0-6																						
51472			0-6																						
51473			0-6																						
51474			0-6																						
51475			0-6																						
51476			0-6																						
51477			0-6																						
51478			0-6																						
51479			0-6																						
51481			0-6																						

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May 26, 2015

UNITED FARMERS MERCANTILE COOP
BRUCE STREICHER
203 W OAK
RED OAK IA 51566-

IDENTIFICATION
DON DAVIS

SOIL ANALYSIS REPORT

INFO SHEET: 718969

LAB NUMBER *281*	SAMPLE IDENTIFICATION	ORGANIC MATTER L.O.I.	PHOSPHORUS			NEUTRAL AMMONIUM ACETATE (EXCHANGEABLE) POTASSIUM	MAGNESIUM	CALCIUM	SODIUM	pH		CATION EXCHANGE CAPACITY	PERCENT BASE SATURATION (COMPUTED)				
			P_1 (WEAK BRAY) 1:7	P_2 (STRONG BRAY) 1:7	OLSEN BICARBONATE P	K	Mg	Ca	Na	SOIL pH 1:1	BUFFER INDEX	C.E.C.	% K	% Mg	% Ca	% H	% Na
		percent RATE	ppm RATE	ppm RATE	ppm RATE	ppm RATE	ppm RATE	ppm RATE	ppm RATE			meq/100g					
51482	DAVIS21	3.7 H	11 L	29 M	11 M	297 VH	791 VH	3025 M		6.7		22.5	3.4	29.3	67.3	0.0	
51483	DAVIS22	3.3 M	6 VL	21 M	7 L	253 VH	694 VH	2644 M		6.3	6.7	22.0	2.9	26.3	60.1	10.7	
51484	DAVIS23	2.9 M	8 L	27 M	9 L	234 H	734 VH	2718 M		6.3	6.7	22.7	2.6	26.9	59.9	10.6	
51485	DAVIS24	2.5 L	14 L	49 H	16 H	222 H	782 VH	2770 M		6.7		20.9	2.7	31.2	66.1	0.0	
51486	DAVIS25	3.2 M	44 VH	84 VH	47 VH	308 VH	548 VH	2741 M		6.5	6.8	20.6	3.8	22.2	66.5	7.5	
51487	DAVIS26	3.4 M	45 VH	76 VH	37 VH	357 VH	544 VH	3095 H		6.5	6.7	22.6	4.1	20.1	68.5	7.3	
51488	DAVIS27	2.0 L	23 H	58 H	26 VH	251 VH	641 VH	2805 M		6.4	6.7	22.0	2.9	24.3	63.8	9.0	
51489	DAVIS28	2.6 M	26 H	43 H	25 VH	303 VH	519 VH	2984 M		6.3	6.7	22.3	3.5	19.4	66.9	10.2	
51490	DAVIS29	2.8 M	23 H	33 M	20 H	306 VH	567 VH	3173 H		6.4	6.7	23.5	3.3	20.1	67.5	9.1	
51491	DAVIS30	2.8 M	32 VH	56 H	30 VH	319 VH	567 VH	3088 M		6.3	6.7	23.5	3.5	20.1	65.7	10.7	

LAB NUMBER *281*	NITRATE-N (FIA) SURFACE ppm	SURFACE lbs/A	SURFACE depth (in)	SUBSOIL 1 ppm	SUBSOIL 1 lbs/A	SUBSOIL 1 depth (in)	SUBSOIL 2 ppm	SUBSOIL 2 lbs/A	SUBSOIL 2 depth (in)	Total lbs/A	SULFUR S ICAP ppm RATE	ZINC Zn DTPA ppm RATE	MANGANESE Mn DTPA ppm RATE	IRON Fe DTPA ppm RATE	COPPER Cu DTPA ppm RATE	BORON B SORB. DTPA ppm RATE	EXCESS LIME RATE	SOLUBLE SALTS 1:1 mmhos/cm RATE
51482			0-6															
51483			0-6															
51484			0-6															
51485			0-6															
51486			0-6															
51487			0-6															
51488			0-6															
51489			0-6															
51490			0-6															
51491			0-6															

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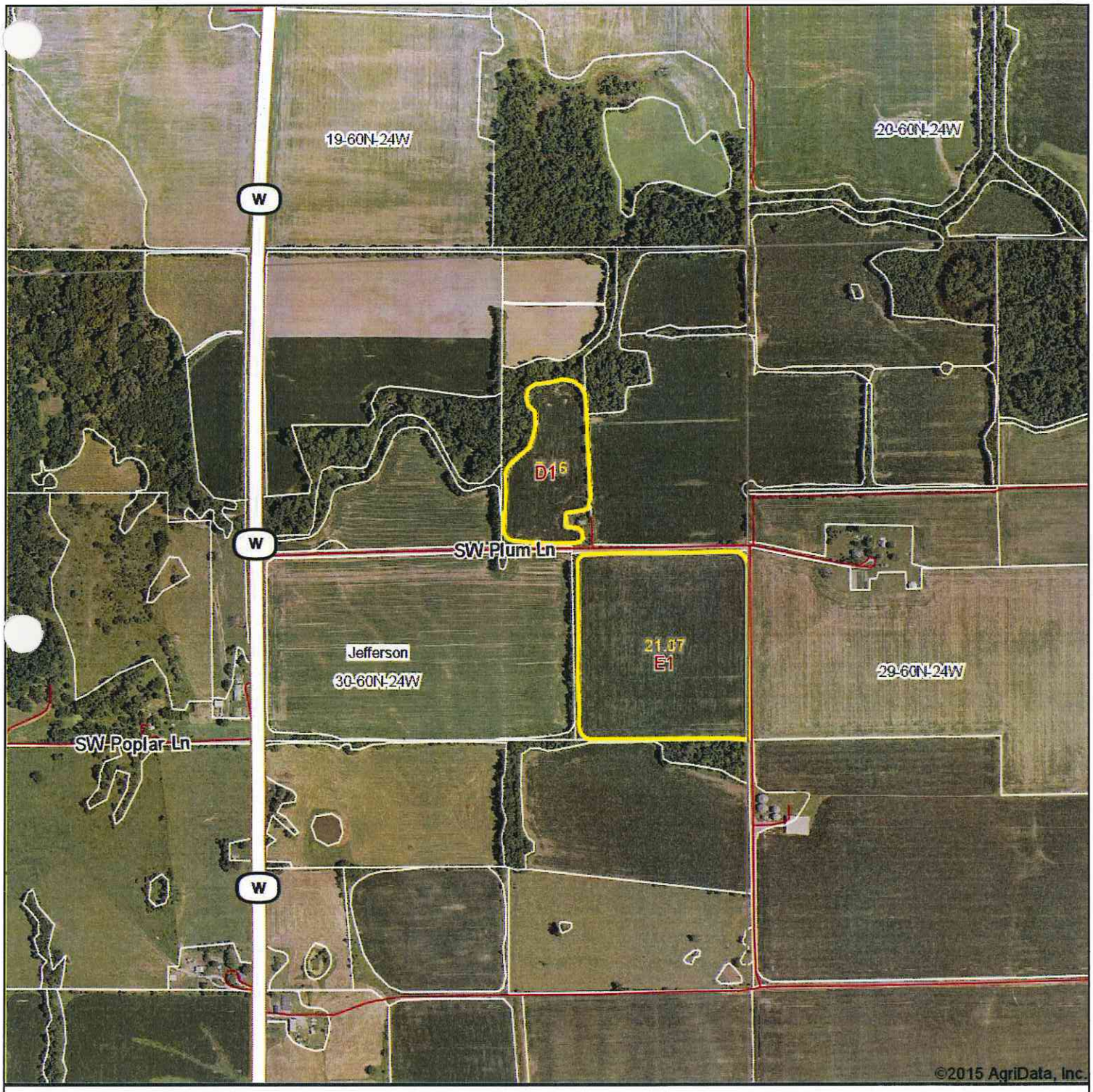
The above analytical results apply only to the sample(s) submitted. Samples are retained a maximum of 30 days.

Aerial Map



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30-60N-24W
Grundy County
Missouri

map center: 39.987148, -93.640446
scale: 9577

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6/1/2015

Field borders provided by Farm Service Agency as of 5/21/2008.

REPORT NUMBER
15-146-0085
COMPLETED DATE
May 28, 2015
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UNITED FARMERS MERCANTILE COOP
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203 W OAK
RED OAK IA 51566-

IDENTIFICATION
DON DAVIS
501 EAST PROSPECT ST
RED OAK IOWA 51566

SOIL ANALYSIS REPORT

INFO SHEET: 719258

LAB NUMBER *281*	SAMPLE IDENTIFICATION	ORGANIC MATTER L.O.I. percent	RATE	PHOSPHORUS P_1 (WEAK BRAY) 1:7 ppm	RATE	PHOSPHORUS P_2 (STRONG BRAY) 1:7 ppm	RATE	OLSEN BICARBONATE P ppm	RATE	NEUTRAL AMMONIUM ACETATE (EXCHANGEABLE) POTASSIUM K ppm	RATE	MAGNESIUM Mg ppm	RATE	CALCIUM Ca ppm	RATE	SODIUM Na ppm	RATE	pH SOIL pH 1:1	BUFFER INDEX	CATION EXCHANGE CAPACITY C.E.C. meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H	% Na
60566	D1	2.8	M	14	L	22	M	11	M	218	M	792	VH	3376	M			5.8	6.4	29.6	1.9	22.3	57.0	18.8	

LAB NUMBER *281*	NITRATE-N (FIA) SURFACE ppm	SURFACE lbs/A	SURFACE depth (in)	SUBSOIL 1 ppm	SUBSOIL 1 lbs/A	SUBSOIL 1 depth (in)	SUBSOIL 2 ppm	SUBSOIL 2 lbs/A	SUBSOIL 2 depth (in)	Total lbs/A	SULFUR S ICAP ppm	RATE	ZINC Zn DTPA ppm	RATE	MANGANESE Mn DTPA ppm	RATE	IRON Fe DTPA ppm	RATE	COPPER Cu DTPA ppm	RATE	BORON B SORB. DTPA ppm	RATE	EXCESS LIME RATE	SOLUBLE SALTS 1:1 mmhos/cm	RATE
60566			0-6																						

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15-146-0086
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203 W OAK
RED OAK IA 51566-

IDENTIFICATION
DON DAVIS
501 EAST PROSPECT ST
RED OAK IOWA 51566

SOIL ANALYSIS REPORT

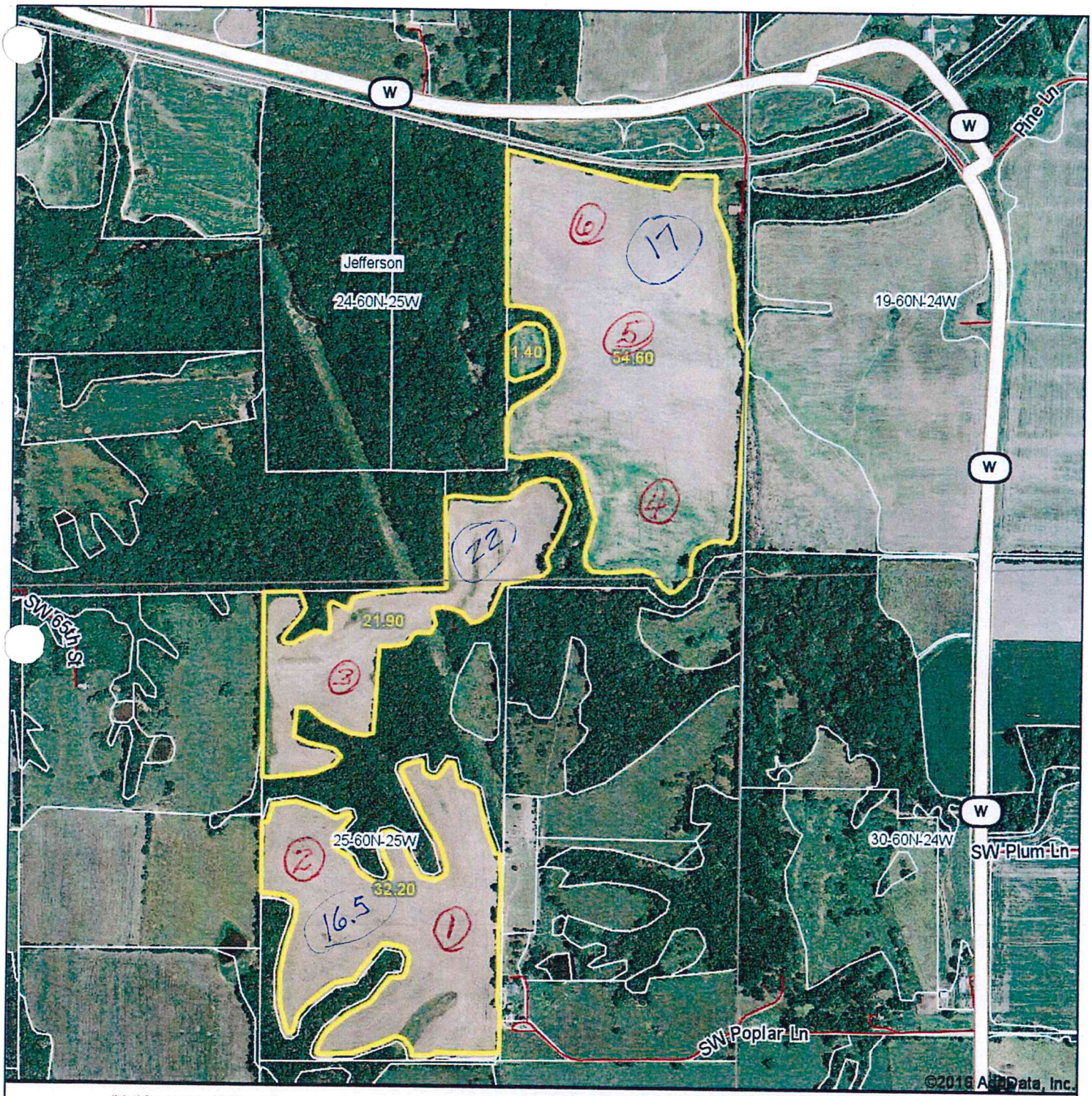
INFO SHEET: 719259

LAB NUMBER *281*	SAMPLE IDENTIFICATION	ORGANIC MATTER L.O.I. percent	RATE	PHOSPHORUS P_1 (WEAK BRAY) 1:7 ppm	RATE	PHOSPHORUS P_2 (STRONG BRAY) 1:7 ppm	RATE	OLSEN BICARBONATE P ppm	RATE	NEUTRAL AMMONIUM ACETATE (EXCHANGEABLE) POTASSIUM K ppm	RATE	MAGNESIUM Mg ppm	RATE	CALCIUM Ca ppm	RATE	SODIUM Na ppm	RATE	pH SOIL pH 1:1	BUFFER INDEX	CATION EXCHANGE CAPACITY C.E.C. meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H	% Na
60568	E1	3.0	M	11	L	20	M	10	L	194	M	632	VH	2852	M			5.8	6.5	24.7	2.0	21.3	57.7	19.0	

LAB NUMBER *281*	NITRATE-N (FIA) SURFACE ppm	SURFACE lbs/A	SURFACE depth (in)	SUBSOIL 1 ppm	SUBSOIL 1 lbs/A	SUBSOIL 1 depth (in)	SUBSOIL 2 ppm	SUBSOIL 2 lbs/A	SUBSOIL 2 depth (in)	Total lbs/A	SULFUR S ICAP ppm	RATE	ZINC Zn DTPA ppm	RATE	MANGANESE Mn DTPA ppm	RATE	IRON Fe DTPA ppm	RATE	COPPER Cu DTPA ppm	RATE	BORON B SORB. DTPA ppm	RATE	EXCESS LIME RATE	SOLUBLE SALTS 1:1 mmhos/cm	RATE
60568			0-6																						

REV. 12/03

Aerial Map



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map center: 39.991451, -93.654794

0ft 853ft 1706ft

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24-60N-25W
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Missouri

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3/22/2016

Field borders provided by Farm Service Agency as of 5/21/2008.

REPORT NUMBER
16-054-0194
COMPLETED DATE
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Feb 25, 2016

UNITED FARMERS MERCANTILE COOP
BRUCE STREICHER
203 W OAK
RED OAK IA 51566-

IDENTIFICATION
Don Davis
Beaver Creek

SOIL ANALYSIS REPORT

INFO SHEET: 788568

LAB NUMBER *294*	SAMPLE IDENTIFICATION	ORGANIC MATTER L.O.I. percent	RATE	PHOSPHORUS P_1 (WEAK BRAY) 1:7 ppm	RATE	PHOSPHORUS P_2 (STRONG BRAY) 1:7 ppm	RATE	OLSEN BICARBONATE P ppm	RATE	NEUTRAL AMMONIUM ACETATE (EXCHANGEABLE) POTASSIUM K ppm	RATE	MAGNESIUM Mg ppm	RATE	CALCIUM Ca ppm	RATE	SODIUM Na ppm	RATE	pH SOIL pH 1:1	BUFFER INDEX	CATION EXCHANGE CAPACITY C.E.C. meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H	% Na
31692	1	2.5	L	16	M	29	M			202	H	573	VH	2983	M			6.2	6.6	23.0	2.3	20.8	64.8	12.1	
31693	2	2.4	L	17	M	28	M			203	H	585	VH	2889	M			6.0	6.6	23.3	2.2	20.9	62.0	14.9	
31694	3	3.3	M	22	H	28	M			236	H	509	VH	2716	M			5.8	6.5	22.7	2.7	18.7	59.8	18.8	
31695	4	2.9	M	11	L	21	M			190	H	422	VH	2411	M			6.1	6.7	18.7	2.6	18.8	64.5	14.1	
31696	5	2.3	L	25	H	51	H			201	H	477	VH	2689	H			6.4	6.7	19.7	2.6	20.2	68.2	9.0	
31697	6	3.0	M	15	M	26	M			211	H	432	VH	3134	H			7.2		19.8	2.7	18.2	79.1	0.0	

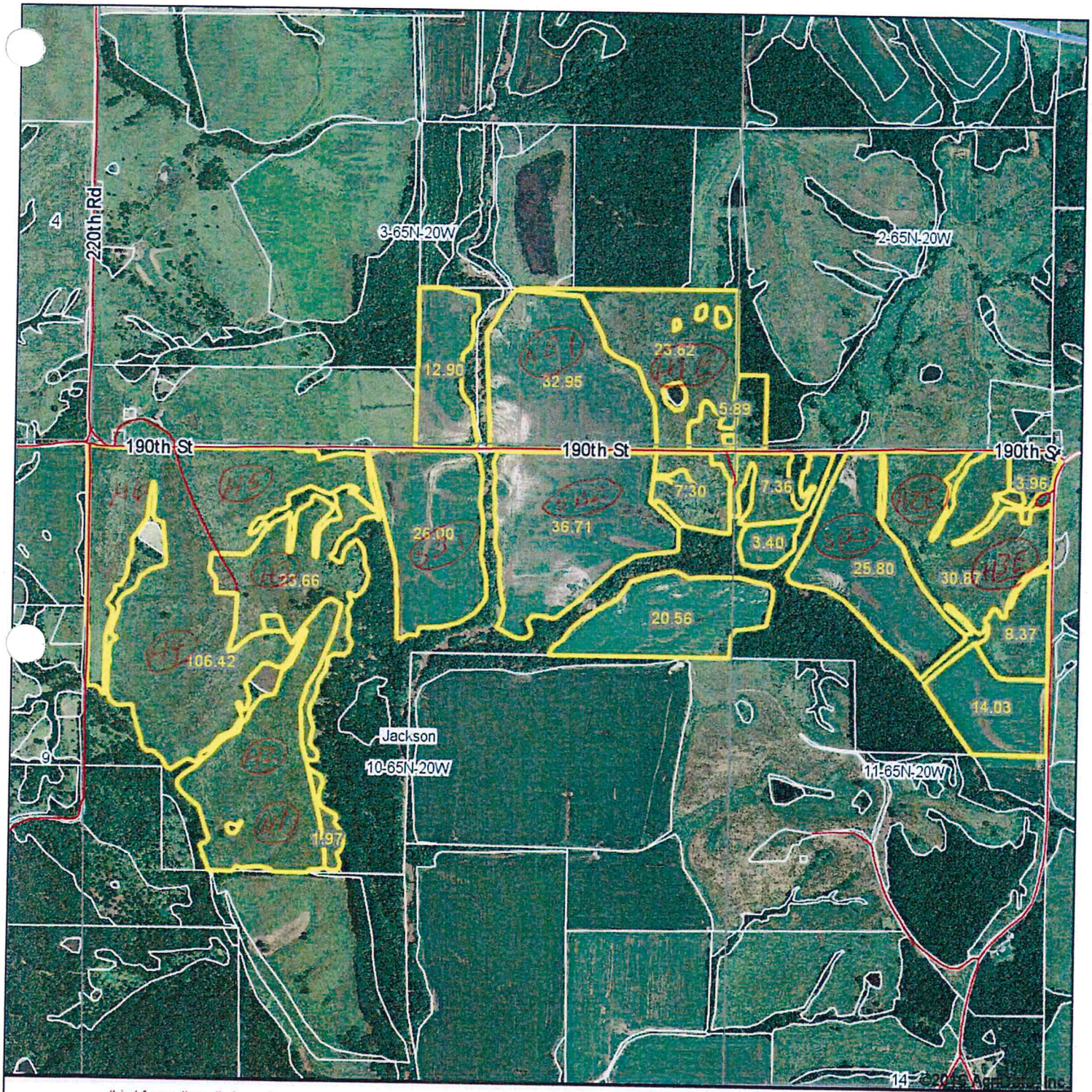
LAB NUMBER *294*	NITRATE-N (FIA) SURFACE ppm	SURFACE lbs/A	SURFACE depth (in)	SUBSOIL 1 ppm	SUBSOIL 1 lbs/A	SUBSOIL 1 depth (in)	SUBSOIL 2 ppm	SUBSOIL 2 lbs/A	SUBSOIL 2 depth (in)	Total lbs/A	SULFUR S ICAP ppm	RATE	ZINC Zn DTPA ppm	RATE	MANGANESE Mn DTPA ppm	RATE	IRON Fe DTPA ppm	RATE	COPPER Cu DTPA ppm	RATE	BORON B SORB. DTPA ppm	RATE	EXCESS LIME RATE	SOLUBLE SALTS 1:1 mmhos/cm	RATE
31692			0-6								8	L	0.5	VL											
31693			0-6								9	L	0.5	VL											
31694			0-6								16	M	0.5	VL											
31695			0-6								10	L	0.5	VL											
31696			0-6								8	L	0.7	L											
31697			0-6								8	L	0.6	L											
													0.7	L											

REV. 12/03

The above analytical results apply only to the sample(s) submitted. Samples are retained a maximum of 30 days.

TRENTON FARMS

Aerial Map



United Farmers Mercantile Cooperative
UFMC
"United To Serve You Better"

map center: 40.456172, -93.127067

0ft 1253ft 2507ft

Maps Provided By:
surety
CUSTOMIZED ONLINE MAPPING
AgriData, Inc. 2016 www.AgriDataInc.com

10-65N-20W
Putnam County
Missouri

N
W E
S

3/22/2016

Field borders provided by Farm Service Agency as of 5/21/2008.

REPORT NUMBER
15-336-0459
COMPLETED DATE
Dec 4, 2015
RECEIVED DATE
Dec 2, 2015
ACCOUNT
9169

Midwest Laboratories inc.®
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www.midwestlabs.com

TODAY'S DATE
Dec 04, 2015

IDENTIFICATION
Don Davis

UNITED FARMERS MERCANTILE COOP
BRUCE STREICHER
203 W OAK
RED OAK IA 51566-

SOIL ANALYSIS REPORT

INFO SHEET: 776822

LAB NUMBER *292*	SAMPLE IDENTIFICATION	ORGANIC MATTER L.O.I.		PHOSPHORUS P_1 (WEAK BRAY) 1:7		P_2 (STRONG BRAY) 1:7		OLSEN BICARBONATE P		NEUTRAL AMMONIUM ACETATE (EXCHANGEABLE) POTASSIUM K		MAGNESIUM Mg		CALCIUM Ca		SODIUM Na		pH SOIL pH 1:1	pH BUFFER INDEX	CATION EXCHANGE CAPACITY C.E.C.	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H	% Na
		percent	RATE	ppm	RATE	ppm	RATE	ppm	RATE	ppm	RATE	ppm	RATE	ppm	RATE	ppm	RATE			meq/100g					
41134	North Bottom 1	2.1	L	18	M	25	M			196	M	318	VH	3910	VH			7.8		22.7	2.2	11.7	86.1	0.0	

LAB NUMBER *292*	NITRATE-N (FIA) SURFACE ppm	SURFACE lbs/A	SURFACE depth (in)	SUBSOIL 1 ppm	SUBSOIL 1 lbs/A	SUBSOIL 1 depth (in)	SUBSOIL 2 ppm	SUBSOIL 2 lbs/A	SUBSOIL 2 depth (in)	Total lbs/A	SULFUR S ICAP ppm	SULFUR RATE	ZINC Zn DTPA ppm	ZINC RATE	MANGANESE Mn DTPA ppm	MANGANESE RATE	IRON Fe DTPA ppm	IRON RATE	COPPER Cu DTPA ppm	COPPER RATE	BORON B SORB. DTPA ppm	BORON RATE	EXCESS LIME RATE	SOLUBLE SALTS 1:1 mmhos/cm	SOLUBLE SALTS RATE
41134			0-6																						

REV. 12/03

REPORT NUMBER
16-054-0193
COMPLETED DATE
Feb 25, 2016
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Feb 23, 2016
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9169

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TODAY'S DATE
Feb 25, 2016

IDENTIFICATION
Don Davis

UNITED FARMERS MERCANTILE COOP
BRUCE STREICHER
203 W OAK
RED OAK IA 51566-

SOIL ANALYSIS REPORT

INFO SHEET: 788572

LAB NUMBER *294*	SAMPLE IDENTIFICATION	ORGANIC MATTER LOI percent	RATE	PHOSPHORUS P, (WEAK BRAY) 1:7 ppm	RATE	P, (STRONG BRAY) 1:7 ppm	RATE	OLSEN BICARBONATE P ppm	RATE	NEUTRAL AMMONIUM ACETATE (EXCHANGEABLE) POTASSIUM K ppm	RATE	MAGNESIUM Mg ppm	RATE	CALCIUM Ca ppm	RATE	SODIUM Na ppm	RATE	pH SOIL pH 1:1	BUFFER INDEX	CATION EXCHANGE CAPACITY C.E.C. meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H	% Na
31689	Hill SE 1	3.2	M	8	L	13	L			201	H	426	VH	3238	H			6.3	6.7	22.7	2.3	15.6	71.3	10.8	
31690	Hill SE 2	3.3	M	17	M	23	M			224	VH	419	VH	2778	H			6.3	6.7	20.1	2.9	17.4	69.1	10.6	
31691	Hill SE 3	2.7	M	24	H	65	VH			236	VH	521	VH	3064	H			6.7		20.3	3.0	21.4	75.6	0.0	

LAB NUMBER *294*	NITRATE-N (FIA) SURFACE ppm	SURFACE lbs/A	SURFACE depth (in)	SUBSOIL 1 ppm	SUBSOIL 1 lbs/A	SUBSOIL 1 depth (in)	SUBSOIL 2 ppm	SUBSOIL 2 lbs/A	SUBSOIL 2 depth (in)	Total lbs/A	SULFUR S ICAP ppm	RATE	ZINC Zn DTPA ppm	RATE	MANGANESE Mn DTPA ppm	RATE	IRON Fe DTPA ppm	RATE	COPPER Cu DTPA ppm	RATE	BORON B SORB DTPA ppm	RATE	EXCESS LIME RATE	SOLUBLE SALTS 1:1 mmhos/cm	RATE
31689			0-6								10	L	0.9	L											
31690			0-6								8	L	0.9	L											
31691			0-6								7	L	1.2	M											

REV. 12/03

REPORT NUMBER
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COMPLETED DATE
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9169
RECEIVED DATE
Nov 24, 2015

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TODAY'S DATE
Nov 27, 2015

IDENTIFICATION
Davis

UNITED FARMERS MERCANTILE COOP
BRUCE STREICHER
203 W OAK
RED OAK IA 51566-

SOIL ANALYSIS REPORT

INFO SHEET 775458

LAB NUMBER *291*	SAMPLE IDENTIFICATION	ORGANIC MATTER LOI percent	RATE	PHOSPHORUS P_1 (WEAK BRAY) 1:7 ppm	RATE	PHOSPHORUS P_2 (STRONG BRAY) 1:7 ppm	RATE	OLSEN BICARBONATE P ppm	RATE	NEUTRAL AMMONIUM ACETATE (EXCHANGEABLE) POTASSIUM K ppm	RATE	MAGNESIUM Mg ppm	RATE	CALCIUM Ca ppm	RATE	SODIUM Na ppm	RATE	pH SOIL pH 1:1	BUFFER INDEX	CATION EXCHANGE CAPACITY C.E.C. meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H	% Na
85585	S Bottom 1	2.7	M	23	H	41	H			157	M	439	VH	2484	M			6.1	6.7	19.2	2.1	19.1	64.7	14.1	
85586	S Bottom 2	3.2	M	27	H	33	M			212	H	387	VH	2756	H			6.2	6.7	19.9	2.7	16.2	69.2	11.9	
85587	S Bottom 3	3.2	M	16	M	26	M			160	M	332	VH	2415	M			6.0	6.7	18.0	2.3	15.4	67.1	15.2	

LAB NUMBER *291*	NITRATE-N (FIA) SURFACE ppm	SURFACE lbs/A	SURFACE depth (in)	SUBSOIL 1 ppm	SUBSOIL 1 lbs/A	SUBSOIL 1 depth (in)	SUBSOIL 2 ppm	SUBSOIL 2 lbs/A	SUBSOIL 2 depth (in)	Total lbs/A	SULFUR S ICAP ppm	RATE	ZINC Zn DTPA ppm	RATE	MANGANESE Mn DTPA ppm	RATE	IRON Fe DTPA ppm	RATE	COPPER Cu DTPA ppm	RATE	BORON B SORB DTPA ppm	RATE	EXCESS LIME RATE	SOLUBLE SALTS 1:1 mmhos/cm	RATE
85585			0-6								16	M	0.6	L											
85586			0-6								15	M	0.9	L											
85587			0-6								13	M	0.6	L											

REV. 12/03

The above analytical results apply only to the sample(s) submitted. Samples are retained a maximum of 30 days.

REPORT NUMBER
16-067-0186
COMPLETED DATE
Mar 9, 2016
RECEIVED DATE
Mar 7, 2016
ACCOUNT
9169

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TODAY'S DATE
Mar 09, 2016

IDENTIFICATION
Don Davis

UNITED FARMERS MERCANTILE COOP
BRUCE STREICHER
203 W OAK
RED OAK IA 51566-

SOIL ANALYSIS REPORT

INFO SHEET 792312

LAB NUMBER *294*	SAMPLE IDENTIFICATION	ORGANIC MATTER LOI percent	RATE	PHOSPHORUS P1 (WEAK BRAY) 1:7 ppm	RATE	PHOSPHORUS P2 (STRONG BRAY) 1:7 ppm	RATE	OLSEN BICARBONATE P ppm	RATE	NEUTRAL AMMONIUM ACETATE (EXCHANGEABLE) POTASSIUM K ppm	RATE	MAGNESIUM Mg ppm	RATE	CALCIUM Ca ppm	RATE	SODIUM Na ppm	RATE	pH SOIL pH 1:1	BUFFER INDEX	CATION EXCHANGE CAPACITY C.E.C. meq/100g	PERCENT BASE SATURATION (COMPUTED) % K	% Mg	% Ca	% H	% Na
84391	Hill SW 1	2.3	L	32	VH	49	H			182	H	344	VH	2899	H			7.3		17.8	2.6	16.1	81.3	0.0	
84392	Hill SW 2	2.7	M	46	VH	62	VH			203	H	477	VH	3280	H			7.2		20.9	2.5	19.0	78.5	0.0	
84393	Hill SW 3	2.7	M	25	H	36	M			186	H	402	VH	3002	H			6.9		18.8	2.5	17.8	79.7	0.0	
84394	Hill SW 4	2.8	M	18	M	34	M			141	M	387	VH	2878	H			7.0		18.0	2.0	17.9	80.1	0.0	
84395	Hill SW 5	3.2	M	9	L	17	L			135	M	359	VH	3129	H			7.4		19.0	1.8	15.7	82.5	0.0	
84397	Hill SW 6	3.1	M	10	L	18	L			145	M	365	VH	2824	H			6.7		17.5	2.1	17.4	80.5	0.0	

LAB NUMBER *294*	NITRATE-N (FIA) SURFACE ppm	SURFACE lbs/A	SURFACE depth (in)	SUBSOIL 1 ppm	SUBSOIL 1 lbs/A	SUBSOIL 1 depth (in)	SUBSOIL 2 ppm	SUBSOIL 2 lbs/A	SUBSOIL 2 depth (in)	Total lbs/A	SULFUR S ICAP ppm	RATE	ZINC Zn DTPA ppm	RATE	MANGANESE Mn DTPA ppm	RATE	IRON Fe DTPA ppm	RATE	COPPER Cu DTPA ppm	RATE	BORON B SORB DTPA ppm	RATE	EXCESS LIME RATE	SOLUBLE SALTS 1:1 mmhos/cm	RATE
84391			0-6																						
84392			0-6																						
84393			0-6																						
84394			0-6																						
84395			0-6																						
84397			0-6																						

REV 12/03

The above analytical results apply only to the sample(s) submitted. Samples are retained a maximum of 30 days.

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO602419P1300

File: profiles\default

Inputs:
Location: USA\Missouri\Grundy County
Soil: Grundy County, Missouri\30214 Vigar loam, 2 to 5 percent slopes, rarely flooded\Vigar loam 95%
Slope length (horiz): 130 ft
Avg. slope steepness: 4.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain	bushels	122.14
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	43.800

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Adjust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 3.6 t/ac/yr
Detachment on slope: 3.6 t/ac/yr
Soil loss for cons. plan: 3.6 t/ac/yr
Sediment delivery: 3.6 t/ac/yr

Crit. slope length: 130 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		72
4/10/1	Cultivator, field 6-12 in sweeps		40
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain	38
10/25/1	Harvest, killing crop 50pct standing stubble		73
4/28/2	Chisel, st. pt.		43
4/28/2	Cultivator, field 6-12 in sweeps		43
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	45
10/20/2	Harvest, killing crop 30pct standing stubble		73

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO602419P4000

File: profiles\default

Inputs:
Location: USA\Missouri\Grundy County
Soil: Grundy County, Missouri\36042 Vesser silt loam, 0 to 2 percent slopes, occasionally flooded\Vesser silt loam 90%
Slope length (horiz): 120 ft
Avg. slope steepness: 1.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain	bushels	122.14
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	43.800

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
!just res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 1.3 t/ac/yr
Detachment on slope: 1.3 t/ac/yr
Soil loss for cons. plan: 1.3 t/ac/yr
Sediment delivery: 1.3 t/ac/yr

Crit. slope length: 120 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		72
4/10/1	Cultivator, field 6-12 in sweeps		40
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain	38
10/25/1	Harvest, killing crop 50pct standing stubble		73
4/28/2	Chisel, st. pt.		43
4/28/2	Cultivator, field 6-12 in sweeps		43
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	45
10/20/2	Harvest, killing crop 30pct standing stubble		73

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO602419P3000B

File: profiles\default

Inputs:
Location: USA\Missouri\Grundy County
Soil: Grundy County, Missouri\30175 Pershing silty clay loam, 2 to 5 percent slopes, eroded\Pershing silty clay loam 100%
Slope length (horiz): 210 ft
Avg. slope steepness: 4.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain	bushels	122.14
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	43.800

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
bsurface drainage: (none)
Adjust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 5.5 t/ac/yr
Detachment on slope: 5.5 t/ac/yr
Soil loss for cons. plan: 5.5 t/ac/yr
Sediment delivery: 5.5 t/ac/yr

Crit. slope length: 210 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		72
4/10/1	Cultivator, field 6-12 in sweeps		40
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain	38
10/25/1	Harvest, killing crop 50pct standing stubble		73
4/28/2	Chisel, st. pt.		43
4/28/2	Cultivator, field 6-12 in sweeps		43
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	45
10/20/2	Harvest, killing crop 30pct standing stubble		73

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO602419P3000C

File: profiles\default

Inputs:
Location: USA\Missouri\Grundy County
Soil: Grundy County, Missouri\30167 Pershing silt loam, 2 to 5 percent slopes\Pershing silt loam 90%
Slope length (horiz): 210 ft
Avg. slope steepness: 4.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain	bushels	122.14
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	43.800

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Surface res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 9.1 t/ac/yr
Detachment on slope: 9.1 t/ac/yr
Soil loss for cons. plan: 9.1 t/ac/yr
Sediment delivery: 9.1 t/ac/yr

Crit. slope length: 210 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		72
4/10/1	Cultivator, field 6-12 in sweeps		40
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain	38
10/25/1	Harvest, killing crop 50pct standing stubble		73
4/28/2	Chisel, st. pt.		43
4/28/2	Cultivator, field 6-12 in sweeps		43
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	45
10/20/2	Harvest, killing crop 30pct standing stubble		73

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO602419P3000D

File: profiles\default

Inputs:
Location: USA\Missouri\Grundy County
Soil: Grundy County, Missouri\30036 Armstrong loam, 5 to 9 percent slopes\Armstrong loam 95%
Slope length (horiz): 150 ft
Avg. slope steepness: 7.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain	bushels	122.14
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	43.800

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Ijust res. burial level: Normal res. burial

Outputs:
T value: 3.0 t/ac/yr
Soil loss erod. portion: 10 t/ac/yr
Detachment on slope: 10 t/ac/yr
Soil loss for cons. plan: 10 t/ac/yr
Sediment delivery: 10 t/ac/yr

Crit. slope length: 150 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		72
4/10/1	Cultivator, field 6-12 in sweeps		40
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain	38
10/25/1	Harvest, killing crop 50pct standing stubble		73
4/28/2	Chisel, st. pt.		43
4/28/2	Cultivator, field 6-12 in sweeps		43
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	45
10/20/2	Harvest, killing crop 30pct standing stubble		73

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO602420P3400

File: profiles\default

Inputs:
Location: USA\Missouri\Grundy County
Soil: Grundy County, Missouri\36042 Vesser silt loam, 0 to 2 percent slopes, occasionally flooded\Vesser silt loam 90%
Slope length (horiz): 120 ft
Avg. slope steepness: 1.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain	bushels	122.14
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	43.800

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
ljust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 1.3 t/ac/yr
Detachment on slope: 1.3 t/ac/yr
Soil loss for cons. plan: 1.3 t/ac/yr
Sediment delivery: 1.3 t/ac/yr

Crit. slope length: 120 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		72
4/10/1	Cultivator, field 6-12 in sweeps		40
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain	38
10/25/1	Harvest, killing crop 50pct standing stubble		73
4/28/2	Chisel, st. pt.		43
4/28/2	Cultivator, field 6-12 in sweeps		43
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	45
10/20/2	Harvest, killing crop 30pct standing stubble		73

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO602420P4000

File: profiles\default

Inputs:
Location: USA\Missouri\Grundy County
Soil: Grundy County, Missouri\36042 Vesser silt loam, 0 to 2 percent slopes, occasionally flooded\Vesser silt loam 90%
Slope length (horiz): 120 ft
Avg. slope steepness: 1.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain	bushels	122.14
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	43.800

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Adjust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 1.3 t/ac/yr
Detachment on slope: 1.3 t/ac/yr
Soil loss for cons. plan: 1.3 t/ac/yr
Sediment delivery: 1.3 t/ac/yr

Crit. slope length: 120 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		72
4/10/1	Cultivator, field 6-12 in sweeps		40
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain	38
10/25/1	Harvest, killing crop 50pct standing stubble		73
4/28/2	Chisel, st. pt.		43
4/28/2	Cultivator, field 6-12 in sweeps		43
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	45
10/20/2	Harvest, killing crop 30pct standing stubble		73

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO602421P3500B

File: profiles\default

Inputs:
Location: USA\Missouri\Grundy County
Soil: Grundy County, Missouri\66004 Dockery silt loam, 0 to 2 percent slopes, frequently flooded\Dockery silt loam 90%
Slope length (horiz): 98 ft
Avg. slope steepness: 1.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain	bushels	122.14
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	43.800

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Adjust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 1.9 t/ac/yr
Detachment on slope: 1.9 t/ac/yr
Soil loss for cons. plan: 1.9 t/ac/yr
Sediment delivery: 1.9 t/ac/yr

Crit. slope length: 98 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		72
4/10/1	Cultivator, field 6-12 in sweeps		40
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain	38
10/25/1	Harvest, killing crop 50pct standing stubble		73
4/28/2	Chisel, st. pt.		43
4/28/2	Cultivator, field 6-12 in sweeps		43
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	45
10/20/2	Harvest, killing crop 30pct standing stubble		73

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO602421P3500C

File: profiles\default

Inputs:
Location: USA\Missouri\Grundy County
Soil: Grundy County, Missouri\66004 Dockery silt loam, 0 to 2 percent slopes, frequently flooded\Dockery silt loam 90%
Slope length (horiz): 98 ft
Avg. slope steepness: 1.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain	bushels	122.14
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	43.800

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Adjust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 1.9 t/ac/yr
Detachment on slope: 1.9 t/ac/yr
Soil loss for cons. plan: 1.9 t/ac/yr
Sediment delivery: 1.9 t/ac/yr

Crit. slope length: 98 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		72
4/10/1	Cultivator, field 6-12 in sweeps		40
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain	38
10/25/1	Harvest, killing crop 50pct standing stubble		73
4/28/2	Chisel, st. pt.		43
4/28/2	Cultivator, field 6-12 in sweeps		43
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	45
10/20/2	Harvest, killing crop 30pct standing stubble		73

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO602429P8000B

File: profiles\default

Inputs:
Location: USA\Missouri\Grundy County
Soil: Grundy County, Missouri\36046 Wabash silty clay, 0 to 2 percent slopes, occasionally flooded\Wabash silty clay 85%
Slope length (horiz): 160 ft
Avg. slope steepness: 1.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain	bushels	122.14
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	43.800

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Adjust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 0.60 t/ac/yr
Detachment on slope: 0.60 t/ac/yr
Soil loss for cons. plan: 0.60 t/ac/yr
Sediment delivery: 0.60 t/ac/yr

Crit. slope length: 160 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		72
4/10/1	Cultivator, field 6-12 in sweeps		40
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain	38
10/25/1	Harvest, killing crop 50pct standing stubble		73
4/28/2	Chisel, st. pt.		43
4/28/2	Cultivator, field 6-12 in sweeps		43
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	45
10/20/2	Harvest, killing crop 30pct standing stubble		73

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO602429P8000C

File: profiles\default

Inputs:
Location: USA\Missouri\Grundy County
Soil: Grundy County, Missouri\66004 Dockery silt loam, 0 to 2 percent slopes, frequently flooded\Dockery silt loam 90%
Slope length (horiz): 98 ft
Avg. slope steepness: 1.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain	bushels	122.14
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	43.800

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
ljust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 1.9 t/ac/yr
Detachment on slope: 1.9 t/ac/yr
Soil loss for cons. plan: 1.9 t/ac/yr
Sediment delivery: 1.9 t/ac/yr

Crit. slope length: 98 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		72
4/10/1	Cultivator, field 6-12 in sweeps		40
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain	38
10/25/1	Harvest, killing crop 50pct standing stubble		73
4/28/2	Chisel, st. pt.		43
4/28/2	Cultivator, field 6-12 in sweeps		43
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	45
10/20/2	Harvest, killing crop 30pct standing stubble		73

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO602429P8000D

File: profiles\default

Inputs:
Location: USA\Missouri\Grundy County
Soil: Grundy County, Missouri\66004 Dockery silt loam, 0 to 2 percent slopes, frequently flooded\Dockery silt loam 90%
Slope length (horiz): 98 ft
Avg. slope steepness: 1.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain	bushels	122.14
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	43.800

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Surface res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 1.9 t/ac/yr
Detachment on slope: 1.9 t/ac/yr
Soil loss for cons. plan: 1.9 t/ac/yr
Sediment delivery: 1.9 t/ac/yr

Crit. slope length: 98 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		72
4/10/1	Cultivator, field 6-12 in sweeps		40
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain	38
10/25/1	Harvest, killing crop 50pct standing stubble		73
4/28/2	Chisel, st. pt.		43
4/28/2	Cultivator, field 6-12 in sweeps		43
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	45
10/20/2	Harvest, killing crop 30pct standing stubble		73

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO602429P8000E

File: profiles\default

Inputs:
Location: USA\Missouri\Grundy County
Soil: Grundy County, Missouri\36042 Vesser silt loam, 0 to 2 percent slopes, occasionally flooded\Vesser silt loam 90%
Slope length (horiz): 120 ft
Avg. slope steepness: 1.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain	bushels	122.14
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	43.800

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Thrust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 1.3 t/ac/yr
Detachment on slope: 1.3 t/ac/yr
Soil loss for cons. plan: 1.3 t/ac/yr
Sediment delivery: 1.3 t/ac/yr

Crit. slope length: 120 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		72
4/10/1	Cultivator, field 6-12 in sweeps		40
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain	38
10/25/1	Harvest, killing crop 50pct standing stubble		73
4/28/2	Chisel, st. pt.		43
4/28/2	Cultivator, field 6-12 in sweeps		43
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	45
10/20/2	Harvest, killing crop 30pct standing stubble		73

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO602430P1150B

File: profiles\default

Inputs:
Location: USA\Missouri\Grundy County
Soil: Grundy County, Missouri\36013 Fatima silt loam, 0 to 2 percent slopes, occasionally flooded\Fatima silt loam 90%
Slope length (horiz): 160 ft
Avg. slope steepness: 1.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain	bushels	122.14
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	43.800

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Adjust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 1.4 t/ac/yr
Detachment on slope: 1.4 t/ac/yr
Soil loss for cons. plan: 1.4 t/ac/yr
Sediment delivery: 1.4 t/ac/yr

Crit. slope length: 160 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		72
4/10/1	Cultivator, field 6-12 in sweeps		40
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain	38
10/25/1	Harvest, killing crop 50pct standing stubble		73
4/28/2	Chisel, st. pt.		43
4/28/2	Cultivator, field 6-12 in sweeps		43
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	45
10/20/2	Harvest, killing crop 30pct standing stubble		73

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO602430P1150C

File: profiles\default

Inputs:
Location: USA\Missouri\Grundy County
Soil: Grundy County, Missouri\36050 Zook silty clay loam, 0 to 2 percent slopes, occasionally flooded\Zook silty clay loam 90%
Slope length (horiz): 120 ft
Avg. slope steepness: 1.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain	bushels	122.14
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	43.800

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Adjust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 1.1 t/ac/yr
Detachment on slope: 1.1 t/ac/yr
Soil loss for cons. plan: 1.1 t/ac/yr
Sediment delivery: 1.1 t/ac/yr

Crit. slope length: 120 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		72
4/10/1	Cultivator, field 6-12 in sweeps		40
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain	38
10/25/1	Harvest, killing crop 50pct standing stubble		73
4/28/2	Chisel, st. pt.		43
4/28/2	Cultivator, field 6-12 in sweeps		43
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	45
10/20/2	Harvest, killing crop 30pct standing stubble		73

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO602430P1400

File: profiles\default

Inputs:
Location: USA\Missouri\Grundy County
Soil: Grundy County, Missouri\36042 Vesser silt loam, 0 to 2 percent slopes, occasionally flooded\Vesser silt loam 90%
Slope length (horiz): 120 ft
Avg. slope steepness: 1.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain	bushels	122.14
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	43.800

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
ljust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 1.3 t/ac/yr
Detachment on slope: 1.3 t/ac/yr
Soil loss for cons. plan: 1.3 t/ac/yr
Sediment delivery: 1.3 t/ac/yr

Crit. slope length: 120 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		72
4/10/1	Cultivator, field 6-12 in sweeps		40
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain	38
10/25/1	Harvest, killing crop 50pct standing stubble		73
4/28/2	Chisel, st. pt.		43
4/28/2	Cultivator, field 6-12 in sweeps		43
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	45
10/20/2	Harvest, killing crop 30pct standing stubble		73

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO602430P4200

File: profiles\default

Inputs:
Location: USA\Missouri\Grundy County
Soil: Grundy County, Missouri\36046 Wabash silty clay, 0 to 2 percent slopes, occasionally flooded\Wabash silty clay 85%
Slope length (horiz): 160 ft
Avg. slope steepness: 1.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain	bushels	122.14
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	43.800

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
ubsurface drainage: (none)
djust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 0.60 t/ac/yr
Detachment on slope: 0.60 t/ac/yr
Soil loss for cons. plan: 0.60 t/ac/yr
Sediment delivery: 0.60 t/ac/yr

Crit. slope length: 160 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		72
4/10/1	Cultivator, field 6-12 in sweeps		40
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain	38
10/25/1	Harvest, killing crop 50pct standing stubble		73
4/28/2	Chisel, st. pt.		43
4/28/2	Cultivator, field 6-12 in sweeps		43
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	45
10/20/2	Harvest, killing crop 30pct standing stubble		73

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO602430P4300

File: profiles\default

Inputs:
Location: USA\Missouri\Grundy County
Soil: Grundy County, Missouri\30214 Vigar loam, 2 to 5 percent slopes, rarely flooded\Vigar loam 95%
Slope length (horiz): 130 ft
Avg. slope steepness: 4.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain	bushels	122.14
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	43.800

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Adjust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 3.6 t/ac/yr
Detachment on slope: 3.6 t/ac/yr
Soil loss for cons. plan: 3.6 t/ac/yr
Sediment delivery: 3.6 t/ac/yr

Crit. slope length: 130 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		72
4/10/1	Cultivator, field 6-12 in sweeps		40
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain	38
10/25/1	Harvest, killing crop 50pct standing stubble		73
4/28/2	Chisel, st. pt.		43
4/28/2	Cultivator, field 6-12 in sweeps		43
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	45
10/20/2	Harvest, killing crop 30pct standing stubble		73

USDA NRCS Natural Resources Conservation Service

RUSLE2 Profile Erosion Calculation Record

Info: MO602430P4400

File: profiles\default

Inputs:
Location: USA\Missouri\Grundy County
Soil: Grundy County, Missouri\36046 Wabash silty clay, 0 to 2 percent slopes, occasionally flooded\Wabash silty clay 85%
Slope length (horiz): 160 ft
Avg. slope steepness: 1.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain	bushels	122.14
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	43.800

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Adjust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 0.60 t/ac/yr
Detachment on slope: 0.60 t/ac/yr
Soil loss for cons. plan: 0.60 t/ac/yr
Sediment delivery: 0.60 t/ac/yr

Crit. slope length: 160 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		72
4/10/1	Cultivator, field 6-12 in sweeps		40
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain	38
10/25/1	Harvest, killing crop 50pct standing stubble		73
4/28/2	Chisel, st. pt.		43
4/28/2	Cultivator, field 6-12 in sweeps		43
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	45
10/20/2	Harvest, killing crop 30pct standing stubble		73

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO602524P4600

File: profiles\default

Inputs:
Location: USA\Missouri\Grundy County
Soil: Grundy County, Missouri\36050 Zook silty clay loam, 0 to 2 percent slopes, occasionally flooded\Zook silty clay loam 90%
Slope length (horiz): 120 ft
Avg. slope steepness: 1.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain, high yield	bushels	122.14
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	43.800

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Adjust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 1.1 t/ac/yr
Detachment on slope: 1.1 t/ac/yr
Soil loss for cons. plan: 1.1 t/ac/yr
Sediment delivery: 1.1 t/ac/yr

Crit. slope length: 120 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		73
4/10/1	Cultivator, field 6-12 in sweeps		41
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain, high yield	38
10/25/1	Harvest, killing crop 50pct standing stubble		74
11/1/1	Chisel, st. pt.		50
4/28/2	Cultivator, field 6-12 in sweeps		49
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	51
10/20/2	Harvest, killing crop 30pct standing stubble		74

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO602525P1500B

File: profiles\default

Inputs:
Location: USA\Missouri\Grundy County
Soil: Grundy County, Missouri\30054 Gara clay loam, 9 to 14 percent slopes, eroded\Gara clay loam 90%
Slope length (horiz): 150 ft
Avg. slope steepness: 12 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain, high yield	bushels	122.14
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	43.800

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
ıbsurface drainage: (none)
djust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 11 t/ac/yr
Detachment on slope: 11 t/ac/yr
Soil loss for cons. plan: 11 t/ac/yr
Sediment delivery: 11 t/ac/yr

Crit. slope length: 150 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		73
4/10/1	Cultivator, field 6-12 in sweeps		41
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain, high yield	38
10/25/1	Harvest, killing crop 50pct standing stubble		74
11/1/1	Chisel, st. pt.		50
4/28/2	Cultivator, field 6-12 in sweeps		49
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	51
10/20/2	Harvest, killing crop 30pct standing stubble		74

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO602525P1500C

File: profiles\default

Inputs:
Location: USA\Missouri\Grundy County
Soil: Grundy County, Missouri\30054 Gara clay loam, 9 to 14 percent slopes, eroded\Gara clay loam 90%
Slope length (horiz): 150 ft
Avg. slope steepness: 12 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain, high yield	bushels	122.14
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	43.800

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
ubsurface drainage: (none)
djust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 11 t/ac/yr
Detachment on slope: 11 t/ac/yr
Soil loss for cons. plan: 11 t/ac/yr
Sediment delivery: 11 t/ac/yr

Crit. slope length: 150 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		73
4/10/1	Cultivator, field 6-12 in sweeps		41
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain, high yield	38
10/25/1	Harvest, killing crop 50pct standing stubble		74
11/1/1	Chisel, st. pt.		50
4/28/2	Cultivator, field 6-12 in sweeps		49
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	51
10/20/2	Harvest, killing crop 30pct standing stubble		74

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO652003P4800B

File: profiles\default

Inputs:
Location: USA\Missouri\Putnam County
Soil: Putnam County, Missouri\36031 Nodaway silt loam, 0 to 2 percent slopes, frequently flooded\Nodaway silt loam 85%
Slope length (horiz): 95 ft
Avg. slope steepness: 1.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain, high yield	bushels	124.30
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	40.130

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
iversion/terrace, sediment basin: (none)
ubsurface drainage: (none)
Adjust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 1.5 t/ac/yr
Detachment on slope: 1.5 t/ac/yr
Soil loss for cons. plan: 1.5 t/ac/yr
Sediment delivery: 1.5 t/ac/yr

Crit. slope length: 95 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		71
4/10/1	Cultivator, field 6-12 in sweeps		42
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain, high yield	39
10/25/1	Harvest, killing crop 50pct standing stubble		75
11/1/1	Chisel, st. pt.		50
4/28/2	Cultivator, field 6-12 in sweeps		50
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	52
10/20/2	Harvest, killing crop 30pct standing stubble		72

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO652003P4800C

File: profiles\default

Inputs:
Location: USA\Missouri\Putnam County
Soil: Putnam County, Missouri\36009 Colo silt loam, 0 to 2 percent slopes, frequently flooded\Colo silt loam 90%
Slope length (horiz): 90 ft
Avg. slope steepness: 1.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain, high yield	bushels	124.30
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	40.130

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Adjust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 1.3 t/ac/yr
Detachment on slope: 1.3 t/ac/yr
Soil loss for cons. plan: 1.3 t/ac/yr
Sediment delivery: 1.3 t/ac/yr

Crit. slope length: 90 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		71
4/10/1	Cultivator, field 6-12 in sweeps		42
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain, high yield	39
10/25/1	Harvest, killing crop 50pct standing stubble		75
11/1/1	Chisel, st. pt.		50
4/28/2	Cultivator, field 6-12 in sweeps		50
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	52
10/20/2	Harvest, killing crop 30pct standing stubble		72

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO652003P4800D

File: profiles\default

Inputs:
Location: USA\Missouri\Putnam County
Soil: Putnam County, Missouri\30058 Gara loam, 14 to 20 percent slopes, eroded\Gara loam 90%
Slope length (horiz): 93 ft
Avg. slope steepness: 16 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*Pasture	vegetations\Grass, cool season pasture, regrowth after grazing	ton	1.0000
managements\CMZ 04\c.Other Local Mgt Records*Pasture	vegetations\Grass, cool season pasture, regrowth after grazing	ton	1.0000
managements\CMZ 04\c.Other Local Mgt Records*Pasture	vegetations\Grass, cool season pasture, regrowth after grazing	ton	1.0000
managements\CMZ 04\c.Other Local Mgt Records*Pasture	vegetations\Grass, cool season pasture, regrowth after grazing	ton	1.0000
managements\CMZ 04\c.Other Local Mgt Records*Pasture	vegetations\Grass, cool season pasture, regrowth after grazing	ton	1.0000

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Adjust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 0.14 t/ac/yr
Detachment on slope: 0.14 t/ac/yr
Soil loss for cons. plan: 0.14 t/ac/yr
Sediment delivery: 0.14 t/ac/yr

Crit. slope length: 93 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 5000 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
5/1/0	Graze, rotational	Grass, cool season pasture, regrowth after grazing	49
6/15/0	Manure injector, liquid low disturb.30 inch		62
20/0	Graze, rotational	Grass, cool season pasture, regrowth after grazing	55

/1/0	Graze, rotational	Grass, cool season pasture, regrowth after grazing	47
9/15/0	Graze, rotational	Grass, cool season pasture, regrowth after grazing	46
11/1/0	Graze, rotational	Grass, cool season pasture, regrowth after grazing	46

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO652010P1000B

File: profiles\default

Inputs:
Location: USA\Missouri\Putnam County
Soil: Putnam County, Missouri\30245 Vigar-Zook-Nodaway complex, 2 to 5 percent slopes\Vigar loam 38%
Slope length (horiz): 160 ft
Avg. slope steepness: 3.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain, high yield	bushels	124.30
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	40.130

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
'ubsurface drainage: (none)
\djust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 2.8 t/ac/yr
Detachment on slope: 2.8 t/ac/yr
Soil loss for cons. plan: 2.8 t/ac/yr
Sediment delivery: 2.8 t/ac/yr

Crit. slope length: 160 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		71
4/10/1	Cultivator, field 6-12 in sweeps		42
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain, high yield	39
10/25/1	Harvest, killing crop 50pct standing stubble		75
11/1/1	Chisel, st. pt.		50
4/28/2	Cultivator, field 6-12 in sweeps		50
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	52
10/20/2	Harvest, killing crop 30pct standing stubble		72

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO652010P1000C

File: profiles\default

Inputs:
Location: USA\Missouri\Putnam County
Soil: Putnam County, Missouri\30216 Vigar silt loam, 2 to 9 percent slopes, rarely flooded\Vigar silt loam 90%
Slope length (horiz): 90 ft
Avg. slope steepness: 6.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain, high yield	bushels	124.30
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	40.130

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
ubsurface drainage: (none)
djust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 6.2 t/ac/yr
Detachment on slope: 6.2 t/ac/yr
Soil loss for cons. plan: 6.2 t/ac/yr
Sediment delivery: 6.2 t/ac/yr

Crit. slope length: 90 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		71
4/10/1	Cultivator, field 6-12 in sweeps		42
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain, high yield	39
10/25/1	Harvest, killing crop 50pct standing stubble		75
11/1/1	Chisel, st. pt.		50
4/28/2	Cultivator, field 6-12 in sweeps		50
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	52
10/20/2	Harvest, killing crop 30pct standing stubble		72

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO652010P1000D

File: profiles\default

Inputs:
Location: USA\Missouri\Putnam County
Soil: Putnam County, Missouri\30216 Vigar silt loam, 2 to 9 percent slopes, rarely flooded\Vigar silt loam 90%
Slope length (horiz): 90 ft
Avg. slope steepness: 6.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain, high yield	bushels	124.30
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	40.130

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Adjust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 6.2 t/ac/yr
Detachment on slope: 6.2 t/ac/yr
Soil loss for cons. plan: 6.2 t/ac/yr
Sediment delivery: 6.2 t/ac/yr

Crit. slope length: 90 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		71
4/10/1	Cultivator, field 6-12 in sweeps		42
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain, high yield	39
10/25/1	Harvest, killing crop 50pct standing stubble		75
11/1/1	Chisel, st. pt.		50
4/28/2	Cultivator, field 6-12 in sweeps		50
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	52
10/20/2	Harvest, killing crop 30pct standing stubble		72

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO652010P1000E

File: profiles\default

Inputs:
Location: USA\Missouri\Putnam County
Soil: Putnam County, Missouri\30058 Gara loam, 14 to 20 percent slopes, eroded\Gara loam 90%
Slope length (horiz): 93 ft
Avg. slope steepness: 16 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*Pasture	vegetations\Grass, cool season pasture, regrowth after grazing	ton	1.0000
managements\CMZ 04\c.Other Local Mgt Records*Pasture	vegetations\Grass, cool season pasture, regrowth after grazing	ton	1.0000
managements\CMZ 04\c.Other Local Mgt Records*Pasture	vegetations\Grass, cool season pasture, regrowth after grazing	ton	1.0000
managements\CMZ 04\c.Other Local Mgt Records*Pasture	vegetations\Grass, cool season pasture, regrowth after grazing	ton	1.0000
managements\CMZ 04\c.Other Local Mgt Records*Pasture	vegetations\Grass, cool season pasture, regrowth after grazing	ton	1.0000

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Adjust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 0.14 t/ac/yr
Detachment on slope: 0.14 t/ac/yr
Soil loss for cons. plan: 0.14 t/ac/yr
Sediment delivery: 0.14 t/ac/yr

Crit. slope length: 93 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 5000 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
5/1/0	Graze, rotational	Grass, cool season pasture, regrowth after grazing	49
6/15/0	Manure injector, liquid low disturb.30 inch		62
'20/0	Graze, rotational	Grass, cool season pasture, regrowth after grazing	55

./1/0	Graze, rotational	Grass, cool season pasture, regrowth after grazing	47
9/15/0	Graze, rotational	Grass, cool season pasture, regrowth after grazing	46
11/1/0	Graze, rotational	Grass, cool season pasture, regrowth after grazing	46

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO652010P1200B

File: profiles\default

Inputs:
Location: USA\Missouri\Putnam County
Soil: Putnam County, Missouri\36009 Colo silt loam, 0 to 2 percent slopes, frequently flooded\Colo silt loam 90%
Slope length (horiz): 90 ft
Avg. slope steepness: 1.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain, high yield	bushels	124.30
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	40.130

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
ubsurface drainage: (none)
djust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 1.3 t/ac/yr
Detachment on slope: 1.3 t/ac/yr
Soil loss for cons. plan: 1.3 t/ac/yr
Sediment delivery: 1.3 t/ac/yr

Crit. slope length: 90 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		71
4/10/1	Cultivator, field 6-12 in sweeps		42
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain, high yield	39
10/25/1	Harvest, killing crop 50pct standing stubble		75
11/1/1	Chisel, st. pt.		50
4/28/2	Cultivator, field 6-12 in sweeps		50
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	52
10/20/2	Harvest, killing crop 30pct standing stubble		72

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO652010P1200C

File: profiles\default

Inputs:
Location: USA\Missouri\Putnam County
Soil: Putnam County, Missouri\36009 Colo silt loam, 0 to 2 percent slopes, frequently flooded\Colo silt loam 90%
Slope length (horiz): 90 ft
Avg. slope steepness: 1.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain, high yield	bushels	124.30
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	40.130

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
ubsurface drainage: (none)
djust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 1.3 t/ac/yr
Detachment on slope: 1.3 t/ac/yr
Soil loss for cons. plan: 1.3 t/ac/yr
Sediment delivery: 1.3 t/ac/yr

Crit. slope length: 90 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		71
4/10/1	Cultivator, field 6-12 in sweeps		42
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain, high yield	39
10/25/1	Harvest, killing crop 50pct standing stubble		75
11/1/1	Chisel, st. pt.		50
4/28/2	Cultivator, field 6-12 in sweeps		50
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	52
10/20/2	Harvest, killing crop 30pct standing stubble		72

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO652010P2100

File: profiles\default

Inputs:
Location: USA\Missouri\Putnam County
Soil: Putnam County, Missouri\36031 Nodaway silt loam, 0 to 2 percent slopes, frequently flooded\Nodaway silt loam 85%
Slope length (horiz): 95 ft
Avg. slope steepness: 1.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Corn, grain, high yield	bushels	124.30
managements\CMZ 04\c.Other Local Mgt Records*CB South	vegetations\Soybean, mw 30 in rows	bu	40.130

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
iversion/terrace, sediment basin: (none)
ubsurface drainage: (none)
Adjust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 1.5 t/ac/yr
Detachment on slope: 1.5 t/ac/yr
Soil loss for cons. plan: 1.5 t/ac/yr
Sediment delivery: 1.5 t/ac/yr

Crit. slope length: 95 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 0 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
10/25/0	Manure injector, liquid low disturb.30 inch		71
4/10/1	Cultivator, field 6-12 in sweeps		42
4/15/1	Planter, double disk opnr w/fluted coulter	Corn, grain, high yield	39
10/25/1	Harvest, killing crop 50pct standing stubble		75
11/1/1	Chisel, st. pt.		50
4/28/2	Cultivator, field 6-12 in sweeps		50
5/1/2	Planter, double disk opnr w/fluted coulter	Soybean, mw 30 in rows	52
10/20/2	Harvest, killing crop 30pct standing stubble		72

USDA NRCS

RUSLE2 Profile Erosion Calculation Record

Info: MO652010P2500

File: profiles\default

Inputs:
Location: USA\Missouri\Putnam County
Soil: Putnam County, Missouri\30058 Gara loam, 14 to 20 percent slopes, eroded\Gara loam 90%
Slope length (horiz): 93 ft
Avg. slope steepness: 16 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\c.Other Local Mgt Records*Pasture	vegetations\Grass, cool season pasture, regrowth after grazing	ton	1.0000
managements\CMZ 04\c.Other Local Mgt Records*Pasture	vegetations\Grass, cool season pasture, regrowth after grazing	ton	1.0000
managements\CMZ 04\c.Other Local Mgt Records*Pasture	vegetations\Grass, cool season pasture, regrowth after grazing	ton	1.0000
managements\CMZ 04\c.Other Local Mgt Records*Pasture	vegetations\Grass, cool season pasture, regrowth after grazing	ton	1.0000
managements\CMZ 04\c.Other Local Mgt Records*Pasture	vegetations\Grass, cool season pasture, regrowth after grazing	ton	1.0000

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Subsurface drainage: (none)
Adjust res. burial level: Normal res. burial

Outputs:
T value: 5.0 t/ac/yr
Soil loss erod. portion: 0.14 t/ac/yr
Detachment on slope: 0.14 t/ac/yr
Soil loss for cons. plan: 0.14 t/ac/yr
Sediment delivery: 0.14 t/ac/yr

Crit. slope length: 93 ft
Surf. cover after planting: -- %
Avg. ann. forage harvest: 5000 lb/ac

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
5/1/0	Graze, rotational	Grass, cool season pasture, regrowth after grazing	49
6/15/0	Manure injector, liquid low disturb.30 inch		62
'20/0	Graze, rotational	Grass, cool season pasture, regrowth after grazing	55

/1/0	Graze, rotational	Grass, cool season pasture, regrowth after grazing	47
9/15/0	Graze, rotational	Grass, cool season pasture, regrowth after grazing	46
11/1/0	Graze, rotational	Grass, cool season pasture, regrowth after grazing	46

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Program	Year	Period	Week Ending	Geo Level	State	State ANSI	Ag District	Ag District Code	County	County ANSI	Zip Code	Region	watershed_code	Watershed	Commodity	Data Item	Domain	Domain Category	Value	CV (%)
SURVEY	2012	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	GRUNDY	079			00000000		CORN	CORN, GRAIN - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	60.5	
SURVEY	2011	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	GRUNDY	079			00000000		CORN	CORN, GRAIN - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	131.6	
SURVEY	2010	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	GRUNDY	079			00000000		CORN	CORN, GRAIN - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	109.1	
SURVEY	2009	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	GRUNDY	079			00000000		CORN	CORN, GRAIN - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	137	
SURVEY	2008	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	GRUNDY	079			00000000		CORN	CORN, GRAIN - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	117	

Avg. = 111

Avg. +10% = 122.14

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Program	Year	Period	Week Ending	Geo Level	State	State ANSI	Ag District	Ag District Code	County	County ANSI	Zip Code	Region	watershed_code	Watershed	Commodity	Data Item	Domain	Domain Category	Value	CV (%)
SURVEY	2014	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	GRUNDY	079			00000000		SOYBEANS	SOYBEANS - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	44.4	
SURVEY	2012	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	GRUNDY	079			00000000		SOYBEANS	SOYBEANS - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	27.7	
SURVEY	2011	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	GRUNDY	079			00000000		SOYBEANS	SOYBEANS - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	44.3	
SURVEY	2010	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	GRUNDY	079			00000000		SOYBEANS	SOYBEANS - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	40.2	
SURVEY	2009	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	GRUNDY	079			00000000		SOYBEANS	SOYBEANS - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	42.5	

Avg. = 39.8

Avg. +10% = 43.8

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Program	Year	Period	Week Ending	Geo Level	State	State ANSI	Ag District	Ag District Code	County	County ANSI	Zip Code	Region	watershed_code	Watershed	Commodity	Data Item	Domain	Domain Category	Value	CV (%)
SURVEY	2008	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	GRUNDY	079			00000000		HAY	HAY - YIELD, MEASURED IN TONS / ACRE	TOTAL	NOT SPECIFIED	1.95	
SURVEY	2007	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	GRUNDY	079			00000000		HAY	HAY - YIELD, MEASURED IN TONS / ACRE	TOTAL	NOT SPECIFIED	1.68	
SURVEY	2006	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	GRUNDY	079			00000000		HAY	HAY - YIELD, MEASURED IN TONS / ACRE	TOTAL	NOT SPECIFIED	1.67	
SURVEY	2005	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	GRUNDY	079			00000000		HAY	HAY - YIELD, MEASURED IN TONS / ACRE	TOTAL	NOT SPECIFIED	1.73	
SURVEY	2004	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	GRUNDY	079			00000000		HAY	HAY - YIELD, MEASURED IN TONS / ACRE	TOTAL	NOT SPECIFIED	2.04	

Avg. = 1.81

Avg +10% - ~~1.99~~

2.00

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Program	Year	Period	Week Ending	Geo Level	State	State ANSI	Ag District	Ag District Code	County	County ANSI	Zip Code	Region	watershed_code	Watershed	Commodity	Data Item	Domain	Domain Category	Value	CV (%)
SURVEY	2015	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	PUTNAM	171			00000000		CORN	CORN, GRAIN - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	141.4	
SURVEY	2012	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	PUTNAM	171			00000000		CORN	CORN, GRAIN - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	65.6	
SURVEY	2011	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	PUTNAM	171			00000000		CORN	CORN, GRAIN - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	116	
SURVEY	2010	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	PUTNAM	171			00000000		CORN	CORN, GRAIN - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	93	
SURVEY	2009	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	PUTNAM	171			00000000		CORN	CORN, GRAIN - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	149	

Avg. = 113
+10% = 124.3

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Program	Year	Period	Week Ending	Geo Level	State	State ANSI	Ag District	Ag District Code	County	County ANSI	Zip Code	Region	watershed_code	Watershed	Commodity	Data Item	Domain	Domain Category	Value	CV (%)
SURVEY	2015	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	PUTNAM	171			00000000		SOYBEANS	SOYBEANS - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	37.7	
SURVEY	2014	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	PUTNAM	171			00000000		SOYBEANS	SOYBEANS - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	46.3	
SURVEY	2013	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	PUTNAM	171			00000000		SOYBEANS	SOYBEANS - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	30.1	
SURVEY	2012	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	PUTNAM	171			00000000		SOYBEANS	SOYBEANS - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	25.5	
SURVEY	2011	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	PUTNAM	171			00000000		SOYBEANS	SOYBEANS - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	42.8	

Avg. = 36.48
+10% = 40.13

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2007 CENSUS AGRICULTURE

Quick Stats

Program	Year	Period	Week Ending	Geo Level	State	State ANSI	Ag District	Ag District Code	County	County ANSI	Zip Code	Region	watershed_code	Watershed	Commodity	Data Item	Domain	Domain Category	Value	CV (%)
SURVEY	2008	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	PUTNAM	171			00000000		HAY	HAY - YIELD, MEASURED IN TONS / ACRE	TOTAL	NOT SPECIFIED	2.45	
SURVEY	2007	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	PUTNAM	171			00000000		HAY	HAY - YIELD, MEASURED IN TONS / ACRE	TOTAL	NOT SPECIFIED	2.25	
SURVEY	2006	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	PUTNAM	171			00000000		HAY	HAY - YIELD, MEASURED IN TONS / ACRE	TOTAL	NOT SPECIFIED	1.96	
SURVEY	2005	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	PUTNAM	171			00000000		HAY	HAY - YIELD, MEASURED IN TONS / ACRE	TOTAL	NOT SPECIFIED	1.86	
SURVEY	2004	YEAR		COUNTY	MISSOURI	29	NORTH CENTRAL	20	PUTNAM	171			00000000		HAY	HAY - YIELD, MEASURED IN TONS / ACRE	TOTAL	NOT SPECIFIED	2.48	

Avg = 2.2

Avg +10% Yield Goal = 2.42

Compost Land Application Plan

Name of operation: Trenton Farms RE, LLC

Owner and contacts of the animal feeding operation:

Owner Trenton Farms RE, LLC Phone 507-825-7032
Address 1300 S Hwy 75, Pipestone, MN 56164
E-mail address (optional) _____ Cell phone (optional) _____

Contact person (if different than owner) _____ Phone _____
Address _____
E-mail address (optional) _____ Cell phone (optional) _____

Contract company (if applicable) _____ Phone _____
Address _____

Table 1. Information about livestock production and manure management system

1	2	3	4	5	6	7	8
Animal type/ Production phase[a]		Manure Storage Structure [b]	N[c]	P_2O_5[c]	Death Loss per day (tons)	Days/yr Facility in use	Annual Death Loss (Tons)
Select production phase			0	0	0.0	N/A	000
Select production phase			0	0	0.00	N/A	000
Select production phase			0	0	0.00	N/A	000
Mortalities		Composter	20	2	0.4	365	133
						Total Tons	**133**

Source of Compost Nutrient Content Data: UM Publication WQ351 (Attached)

Manure Management Plan Form

Determining Maximum Allowable Manure Application Rate

Instructions: Complete a worksheet for each unique combination of the following factors (crop rotation, optimum crop yield, manure nutrient concentration, remaining crop N need, method of application) that occurs at this operation. Complete form by filling in blanks, yellow-colored cells, and drop down menus. Gray shaded cells will calculate automatically. Footnotes are given on pages 4, 5 and 6.

Management Identification (Mgt ID)[l]

Compost material N-Based

(identify this application scenario by letter)

Method to determine optimum crop yield[f]: USDA Ag Statistics County yields

Timing of application: Spring/Fall

Method of application: Surface apply solid (dry) compost with no incorporation

Application loss factor: 0.7

If spray irrigation is used, identify method[i]:

Table 2. Manure nutrient concentration

Manure Nutrient Content (lbs/1000gal or lbs/ton) [j]					
Total N	20		P_2O_5	2	
%TN Available 1st year[k]	55%	2nd year	0%	3rd year	0%
Available N 1st year[l]	7.7	2nd year[m]	0.0	3rd year[n]	0.0

Table 3. Crop usage rates[o]

lb/bu or lb/ton	N	P_2O_5
Corn	1.2	0.32
Soybean	3.8	0.72
Alfalfa	50	13
Other crop	0	0

*Use blank space above to add crop not listed.

Table 4. Calculations for rate based on nitrogen (always required)

			Corn	Soybean	Corn	Soybean
1	Applying Manure For (crop to be grown) [p]					
2	Optimum Crop Yield [g]	bu or ton/acre	122.14	43.8	122.14	43.8
3	P_2O_5 removed with crop by harvest [q]	lb/acre	39.1	31.5	39.1	31.5
4	Crop N utilization [r]	lb/acre	147	166	147	166
5a	Legume N credit [s]	lb/acre	43.8	0	43.8	0
5b	Commercial N planned [t]	lb/acre	0	0	0	0
5c	Manure N carryover credit [u]	lb/acre	0	0.0	0.0	0.0
6	Remaining crop N need [v]	lb/acre	103	166	103	166
7	Manure rate to supply remaining N [w]	ton/acre	13.3	21.6	13.3	21.6
8	P_2O_5 applied with N-based rate [x]	lb/acre	27	43	27	43

Table 5. Calculations for rate based on phosphorus (fill out only if P-based rates are planned)

9	Commercial P_2O_5 planned [y]	lb/acre	0	0	0	0
10	Manure rate to supply P removal [z]	ton/acre	19.5	15.8	19.5	15.8
11	Manure rate for P based plan [aa]	ton/acre	13.3	15.8	13.3	15.8
12	Manure N applied with P-based plan [bb]	lb/acre	102	122	102	122

Table 6. Application rates that will be carried over to page 3

13	Planned manure application rate [cc]	ton/acre	13.3	21.6	13.3	21.6

MO602419P3000B; 15 (34.04 ac.)

Date: Jun 2, 2015
Field Name: MO602419P3000B; 15
Location: Grundy Co., Missouri, U.S.
Farm Name: Trenton Farms RE LLC
Client Name: P-Index
Total Acres: 34.04
Field Boundary Start Location:
Latitude: 39.99473320
Longitude: -93.64783230

pinnacle
620 Country Club Road
Iowa Falls, Iowa 50126
Office: 641.648.7300
Fax: 641.648.7310
www.pinnacleiowa.com

(31.7ac.)Field Boundary
100 ft Water Buffer
50 ft Property LIneRoad Buffer

Manure Management Plan Form
Year by Year Manure Management Plan Summary

Crop year(s): 2018, 2020

1		4	5	7	9	10
Field Designation [ee]		Planned Crop	Acres receiving manure[gg]	P index value [ii]	Planned Application ton/acre	Planned Application ton/field [kk]
MO602419P3000B		Soybeans	31.7	4.70	21.6	685
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
			31.7			685

University of Missouri Extension

WQ351, Reviewed August 1996

Composting Dead Swine

Charles D. Fulhage
Department of Agricultural Engineering

Charles E. Ellis
Extension Agricultural Engineering Specialist, Troy, Mo.

The Missouri Dead Animal Law requires that a dead animal carcass be properly disposed of within 24 hours. In Missouri there are five acceptable methods of carcass disposal. They are: rendering, composting, landfilling, incineration and burial. This publication discusses composting as a means of complying with the dead animal law for swine operations. For information on the other methods, refer to MU publication *WQ216, Dead Animal Disposal Laws in Missouri.*

Composter location

The composter should be located away from areas of sensitive water quality such as streams, ponds and wells. A location at or near the crest of a hill will eliminate or minimize the amount of surface water approaching the composter from higher areas. If a composter must be located in the lower part of a slope, a diversion terrace should be constructed around the upper side of the composter to keep surface water out.

When locating a composter, consider the farm residence and any nearby neighbor residences that might be affected. While offensive odors are not generated if the composting process is properly managed, the handling of dead swine and compost on a daily basis may not be aesthetically pleasing. Also, consider traffic patterns required in moving dead swine to the composter, moving the required ingredients to the composter and removing finished compost from the composter. The composter site should be well-drained and provide all-weather capability for access roads and work areas.

Composting ingredients and recipe

Composting dead swine requires the addition of a carbon source to ensure proper carbon/nitrogen ratios are present for the composting process. Experience thus far suggests that sawdust an ideal carbon source due to its small particle size, ease of handling, absorbency and high carbon content. Experience using straw as the only carbon source has been less successful, with lower composting temperatures, leaching of fluids from the composting pile and longer composting times required. When sawdust is used as a carbon source, plan to provide about 100 cubic feet of sawdust per 1,000 pounds of carcass to be composted. For farrow-to-finish operations, sawdust requirements are about one-third to one-half cubic yards per sow in the herd on an annual basis. See Table 1 for a summary of compost criteria.

Table 1
Summary of swine composting design and management criteria

- **Sawdust requirements**

One half cubic yard of sawdust per sow in the herd for farrow-to-finish operations (annually) or 100 cubic feet (about 4 cubic yards) of sawdust per 1,000 pound carcass composted.

- **Nitrogen addition**
  Up to 3 pounds ammonium nitrate per 100 pounds swine carcass as needed, mix with sawdust.
- **Water addition**
  If sawdust is dry, add water to obtain a damp feel and appearance, up to 1 to 1-1/2 gallons per cubic foot of sawdust.
- **Composter size**
  20 cubic feet of primary and secondary bin volume per pound of carcass composted daily. Size bins for floor area of 100 to 200 square feet, and depth of 5 to 6 feet.
- **Temperature**
  130 to 160 degrees Fahrenheit indicates active composting.
- **Time**
  Compost three months in primary bins, and an additional three months in secondary bins.

A precise carbon/nitrogen ratio does not seem to be necessary to obtain good composting, and most composting with sawdust as the carbon source has been done without adding supplemental nitrogen. However, if sawdust is used according to the above recommendations, some supplemental nitrogen would have to be added to obtain the ideal carbon/nitrogen ratio of 25. The addition of about 3 pounds of ammonium nitrate (NH_4NO_3) in the dry, granular form per 100 pounds of swine carcass will provide the nitrogen necessary to achieve a carbon nitrogen ratio of about 25. The ammonium nitrate should be mixed with the sawdust used to cover the carcass and can be applied by simply "hand-scattering" as carcasses are covered with sawdust. As noted previously, most composting is accomplished without the use of additional nitrogen, but this practice may help in starting up new composting operations and obtaining the desired composting temperatures.

The type of sawdust used in composting can influence the success of the operation. Although a fine or small particle size sawdust is not necessary, wood chips and shavings do not seem to work well due to their larger particle size. Sawdust or wood refuse material derived from bark and/or mulching operations may contain rocks, stones and other foreign material as well as excessively large wood particles, and should not be used for composting.

Most sawdust in Missouri is obtained from sawmills, lumbering and logging operations or cabinet making and furniture making businesses. Such sawdust is generally quite adequate for composting. The moisture content and bulk density of sawdust are important factors in composting. Bulk density is important in estimating the amount of sawdust to use; moisture content, which also affects bulk density, should be in the proper range for composting. Tests on fresh sawdust obtained from seasoned logs or kiln-dried lumber indicate a bulk density of 16 to 20 pounds per cubic foot with a moisture content of 20 to 30 percent. Sawdust stored in a pile tends to gain moisture content. Tests on aged sawdust (more than 5 years old) showed moisture content in the 50 to 70 percent range and bulk density of about 30 pounds per cubic foot. Most of the increase in bulk density is due to the increase in moisture content.

The ideal moisture content in a composting pile is 50 to 60 percent. Swine carcasses have a moisture content near this range, and much sawdust obtained from outside piles may also be near this range. Hence it may not be necessary to adjust moisture content or add water in the composting recipe. However, if the sawdust is exceptionally dry or the composting pile becomes dry due to the internal heat generated, it may be necessary to add water for optimum composting.

The moisture content of sawdust or a composting mixture can be judged somewhat by its appearance and feel. Sawdust that has a damp appearance and feel is probably near the proper moisture content for composting. If it appears wet, or free water can be squeezed out, it should be allowed to dry to a damp

condition before being used. Fresh sawdust taken immediately from sawing kiln-dried lumber or seasoned logs will probably be too dry and water will have to be added. Add water as needed to obtain a damp feel and appearance in the sawdust. Very dry sawdust (20 percent moisture) may require the addition of 1 to 1-1/2 gallons of water per cubic foot of sawdust to obtain the proper moisture content. Water should be mixed with the sawdust by sprinkling or spraying as the sawdust is placed on the carcasses. Avoid the over-addition of water, as excessively wet mixtures do not compost properly and may require removal and mixing with dry sawdust to recover the process. "Green" sawdust from fresh-cut, unseasoned logs may have a moisture content as high as 80 percent. Green sawdust may be too wet for optimum composting, and should be allowed to dry somewhat or should be mixed with drier sawdust or finished compost before using. A water line and hydrant installed at the composter will facilitate water addition and general cleanup activities.

Temperature is the best indicator that the composting process is proceeding properly. Temperatures in the composting pile should rise to the 130 to 160 degrees Fahrenheit range, indicating active microbial activity and breakdown of the carcasses.

Composter design

The composting process requires the proper ingredients to be placed in composting bins in the correct proportions, allowed to compost for a period of time, then moved to a second bin for a secondary composting phase. A minimum of three months composting time is needed in both the primary and secondary phases. It may be necessary to extend this period of time if an unusual number of large carcasses are composted, or if ambient temperatures are low enough to slow the composting process.

In most cases a minimum of three bins will be required, two of which are used for primary composting and the third for secondary composting. In the typical scenario, Bin 1 is filled with three months' death loss, at which time Bin 2 is started. At the end of the second three-month period, Bin 2 is full, and the last carcasses placed in Bin 1 have composted for three months. The contents of Bin 1 are then ready to move to Bin 3 for the secondary composting phase.

After three months of secondary composting, the material can be moved out and applied to land, and the secondary bin is available to receive the contents of Bin 2. Larger operations will require more than the minimum three bins; experience has shown that having extra bins available for storage of fresh sawdust and finished compost is beneficial.

Total bin area and volume requirements depend upon the size of operation and death loss incurred. Actual past death loss data should be used in sizing composters for existing operations. For planning purposes and sizing composters for new operations, see the average death loss data in Table 2. A minimum of 20 cubic feet of volume is needed in both primary and secondary bins per pound of carcass composted daily. Bins are typically filled to a depth of 5 to 6 feet for composting. While bin configuration is not critical, bins are usually laid out as three-sided enclosures. The open side should be wide enough (at least two feet wider than bucket width) so that the bin contents are easily accessible with a front end or skid-steer loader. Square bins offer the greatest opportunity for reduced side effects, (heat loss through walls), although length:width ratios of up to 2:1 are acceptable. Primary and secondary bins should be located close or adjacent to each other (perhaps with a common wall) to facilitate moving compost from bin-to-bin. Excessively large bins should be avoided. Experience has shown that bins with 100 to 200 square feet of surface area work well. See Table 1 for a summary of composter design criteria.

Table 2
Average annual death loss for swine in confinement

	Weight range (pounds)	Average weight (pounds)	Annual death loss (percent)	Annual death loss per animal space (pounds)
Sow herd[1]	350 to 400	375	6 to 8	21 to 32
Nursery[2]	13 to 50	32	22 to 26	3 to 13
Finishing	50 to 250	150	10 to 12	5 to 30

[1]Includes all mature animals, farrowing, gestating, and boars.
[2]Includes losses in farrowing house prior to weaning.

Note
Death losses can vary significantly from the values shown above depending upon genetics, management, environmental conditions, and many other factors.

Composter construction

Prior to constructing a composter, you must decide whether or not a roof over the composter is preferable. Current Missouri regulations do not require a roof or concrete floor in a swine composter, provided that sawdust is used as the carbon source in the composter. Properly mounded and landscaped sawdust effectively sheds water; leaching of fluids from the bottom of properly managed swine composters does not occur. The use of other carbon sources, such as straw, may require a roof to exclude rainwater and leaching from the pile. Limited experience has shown that use of less absorbent carbon sources like straw may result in leaching and less effective composting even though the composter is roofed.

The primary advantage of an unroofed composter is reduced cost. Advantages of roofed composters include: fewer weather effects on the composting process; worker protection during inclement weather; and a more aesthetically pleasing appearance to match other buildings in the production unit.

Field experience suggests that composting bins can be constructed using large round bales (5 to 6 feet in diameter) of low-quality hay. Bales are placed end-to-end to form walls for three-sided enclosures or bins. A layout three bales deep and two bales wide as shown in Figure 1 has worked well for swine composters.

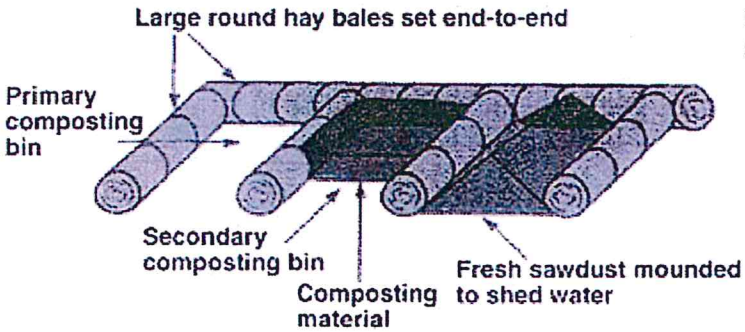

Figure 1
Sample composter layout using hay bales.

Another alternative for the unroofed composter is to use concrete for the bin floor and walls. Although more costly, the concrete is a more durable construction material and is less subject to weathering and mechanical damage during cleaning operations. Also, less room is required than a similar composter using large round bales.

Figure 2 and Figure 3 are schematic drawings of one possible configuration for a roofed composter. This design uses concrete bin walls and floor and pole construction for end walls and roof. The roof overhang and concrete apron in front of the composter minimize rain blowing into the bins and provide a solid work area in front of the composting bins. Many other layouts and materials and could be used in constructing a composter.

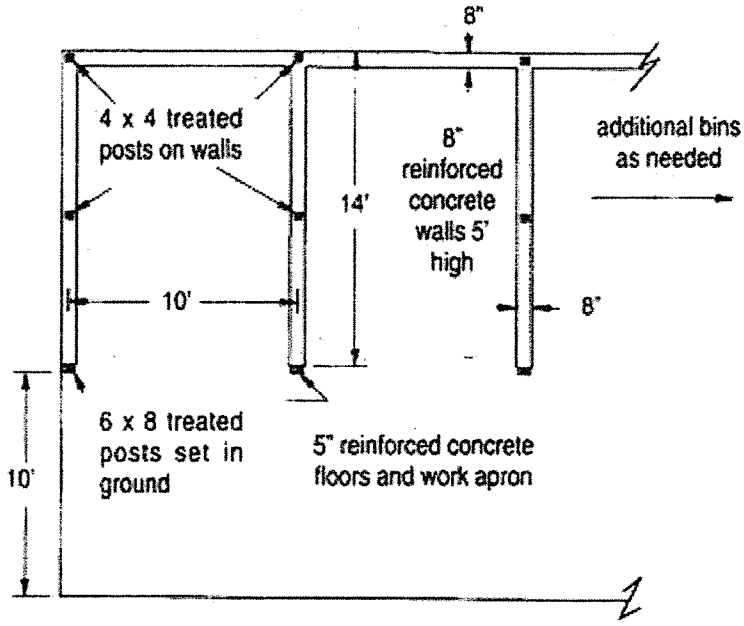

Figure 2
Schematic top view of a roofed composter with concrete bin walls.

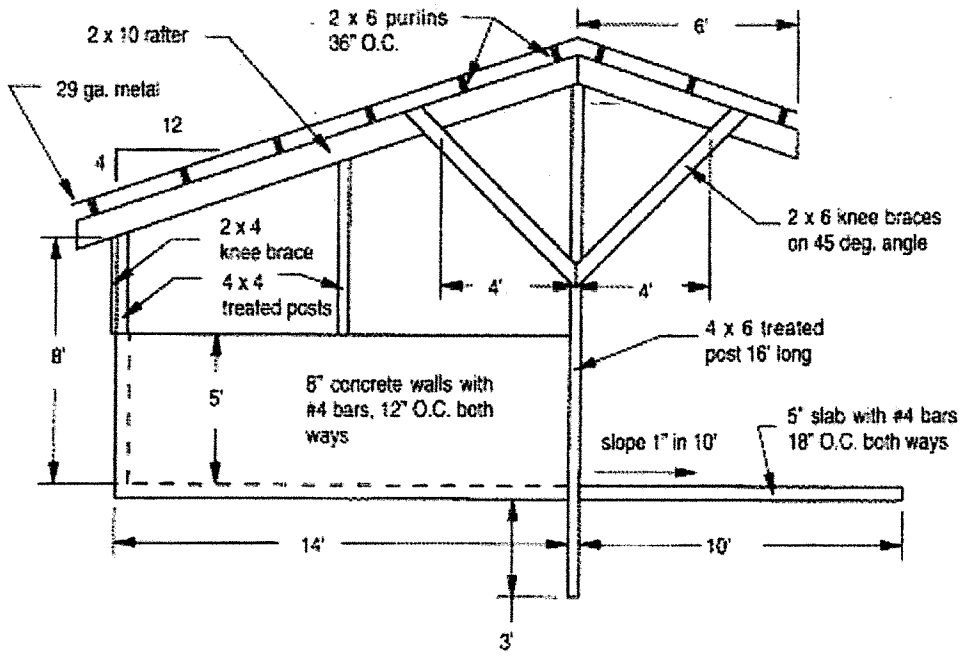

Figure 3
Schematic side view of a roofed composter with concrete bin walls

Equipment requirements

Although composting is a simple process, certain equipment is necessary for good management of the operation.

Some type of front-end or skid steer loader is the most necessary piece of equipment in a composting

operation. The loader is needed to move carcasses from the production buildings to the composter. Although small carcasses can be deposited and covered in the composter by hand, larger carcasses cannot be adequately managed by hand. The loader provides a means to properly place larger carcasses in the compost pile and adequately cover the carcasses with sawdust of finished compost. The loader is also needed to move compost from primary to secondary bins and can be useful in receiving, storing and piling fresh sawdust from the sawmill. Finally, the loader is necessary for loading out finished compost for field spreading.

A probe-type thermometer will aid in monitoring the compost to determine if it is composting properly. Dial-type thermometers with a minimum 36-inch stainless steel stem allow measurement of temperatures in the interior of the composting pile. Temperatures should rise to the 130 to 160 degree F range for good composting.

A manure spreader should be available for field spreading finished compost. A conventional beater-type spreader for handling solid manure is also adequate for land applying finished compost.

A logbook is a useful record-keeping tool in a composting operation. Dates and weights of carcasses placed in the composter provide a record of death losses and a basis for improving death loss statistics. Temperature readings, amounts of fresh sawdust inventoried and used and dates when compost is transferred from primary to secondary bins are record-keeping items that can aid in managing the composting operation. Finally, dates and amounts of finished compost removed for land spreading also provide data for future management and planning.

Composter operation and management

Although composters are simple and relatively easy to operate and manage, certain steps and procedures are necessary to ensure that the process proceeds properly. Table 3 outlines the steps that should provide acceptable finished compost in a swine operation.

Table 3
Steps in operating and managing a swine composter

1. Start a primary composting bin by placing enough sawdust in the bin so that there is at least one foot under and around the first carcasses placed in the bin. Carcasses placed directly on dirt or concrete floors or against bin walls will **not** compost properly.
2. Place carcasses in the primary bin as necessary. It is **very** important to use sufficient sawdust so each carcass is covered on all sides with a minimum of one foot of sawdust. Small pigs may be grouped or placed with less sawdust between carcasses, but a one foot covering between carcasses and the pile surface should always be maintained to minimize odors and rodent problems. **Never** leave hoofs legs ears or snouts sticking out of the sawdust pile. Most problems in swine composting arise when insufficient sawdust is used in covering carcasses. Use a pointed rod or dowel to measure the thickness of the sawdust cover. Large carcasses may need to be recovered after a day or two as the sawdust settles around the carcass. Keep the surface of the pile shaped so that it will shed rainwater out the front of the bin if the composter is not roofed. Do not allow pockets to form in the bin corners or elsewhere that will pool water. Carcasses placed in warm sawdust begin composting more quickly. This can be accomplished by overfilling sawdust over the previous carcasses. This allows the sawdust to heat up so that the next carcass is then buried in this pre-warmed sawdust. The loader bucket is used to "wallow-out" a cavity in the pre-warmed sawdust and the fresh carcass is placed in this cavity. If finished compost is available, it should be used to cover the carcass to provide additional heat and bacteria to start the composting process. Fresh sawdust should then be used to provide the final cover thickness needed so a new cavity can be

provided for the next carcass.

3. Monitor temperature of the composting pile with a long-stem dial-type thermometer. When composting is proceeding properly temperatures will reach 130 to 160 degrees Fahrenheit. If a thermometer is not available you can obtain a rough indication of temperature by inserting a steel rod in the compost pile and feeling how hot it is when you pull it out. Primary bins started during cold weather may not begin composting immediately. However if carcasses are buried with the proper amounts of sawdust composting should begin on its own as temperatures warm up in the spring. There is usually enough heat in active (as opposed to newly started) compost piles to continue composting through cold weather regardless of ambient temperature. If sawdust is used as recommended the insulation effect is sufficient to minimize the effects of ambient temperature.
4. After the last carcasses placed in the primary bin have composted three months or longer move the contents to a secondary bin. This step provides mixing and re-aeration of the material so that the compost will "finish off" properly.
5. After the pile has composted another three months in the secondary bin it should appear as a dark granular nearly black humus-like material with very little odor. Some resistant parts such as teeth may still be identifiable but should be soft and easily crumbled.
6. Use the finished compost as noted above for a "starter" material on the new carcasses being composted in the primary bin. This provides heat and bacteria to enhance starting of the composting process. Experience has shown that up to 50 percent of the sawdust requirement for composting can be filled using "recycled" finished compost. However plan to use fresh sawdust in the amounts noted for starting up a composting operation until sufficient finished compost becomes available. Haul and spread finished compost as needed using a conventional manure spreader. Apply finished compost at agronomic rates for the crop being grown. Obtain a laboratory analysis of the compost for nitrogen (N) phosphate (P_2O_5) and potash (K_2O) for precise fertilizer content. The following table gives average values of fertilizer nutrients from several samples of finished swine compost.

	Fertilizer nutrients, pounds per ton wet basis				
	Dry matter	Total nitrogen	Ammonia nitrogen	P_2O_5	K_2O
Finished compost	1,000	20	4	2	6
Fresh sawdust	800	1	0	0.2	0.4

7. Keep fresh sawdust as dry as possible because dry sawdust works better in the composting process. Fresh sawdust in a pile will shed water reasonably well if the pile is mounded, with no pockets or depressions.
8. Keep the area around the composter mowed and free of tall weeds and brush. Watch for any leaching that might occur. Using more sawdust in the bottom of the bins can help eliminate leaching.

Frequently asked questions

Certain questions regarding composting frequently arise. Some of these questions and answers are as follows.

Doesn't a dead animal compost stink, and attract rodents and dogs?

If carcasses are properly covered with sawdust (one foot recommended), odors are sufficiently suppressed

or absorbed so that they are not a problem in most cases. When operated properly, composters do not add to, or increase odor levels around a production facility. Using too little sawdust is the single greatest factor in excess odor and associated rodent problems. It is important to prevent a rodent problem when starting up a composter, because once rodents learn the composter is a source of carcasses, they can be difficult to stop.

What happens in the wintertime when temperatures are cold?

In general, the warmer the ambient temperature, the better the composting process works. However, an active compost pile contains considerable heat which, with the insulating effect of the sawdust, minimizes effects of ambient temperatures. Interior pile temperatures of 130 to 160 degrees Fahrenheit are typical in properly operating composters when ambient temperatures are as low as zero degrees Fahrenheit. Cold or frozen carcasses placed in cold (fresh) sawdust will not begin composting during cold weather. However, carcasses placed under these conditions will begin to compost as ambient temperatures warm up in the spring.

Carcasses placed in an active compost pile during cold weather should begin composting as heat is absorbed from the composting mass. Covering the carcass with warm or hot finished compost from an active secondary bin will further enhance composting fresh carcasses in cold ambient temperatures.

How large a carcass can be put in the composter?

Mature sows and boars (300 to 600 pounds) have been successfully composted. Longer composting times are required for larger carcasses. However, six months of active (temperatures 130 degrees Fahrenheit or above) composting time should be sufficient for most swine carcasses. These carcasses are composted whole (no cleaving or cutting up of the carcass).

Will Missouri DNR approve this type of composter in a waste management plan?

The primary concern of the regulatory agency is to prevent contamination of ground or surface water. Hence, any contamination problem arising from a composter (or any other part of the production facility) would have to be corrected. Contamination potential from composters located and operated as indicated in this publication is quite low. Under current policy, Missouri DNR will approve unroofed swine composters if sawdust is used as the carbon source and the composter is properly managed. Use of other carbon sources such as straw will likely require a roofed structure to minimize water absorption and leaching.

What should the finished compost look like?

Properly finished compost should appear as a dark, nearly black granular material resembling humus or potting soil. It may have a slight musty odor. Some resistant bones (skull parts, teeth) will be visible, but they should be soft and easily crumbled by hand.

What about diseases, flies and pathogens?

Temperatures above 140 degrees Fahrenheit normally occur at some time in the composting pile. This is sufficient to destroy pathogens and prevent fly incubation. Good coverage of the composting pile with sawdust eliminates the fly breeding and incubation environment. No disease outbreaks have been associated with composting to date. Spreading finished compost in fields or pastures helps assure that disease organisms do not find their way back to the production area.

I do not have sawdust available. Can I use something else for a carbon source?

Any granular organic material with a high carbon content should be a candidate as an ingredient in composting. Most successful swine composting thus far has been accomplished using sawdust as the carbon source. More research and experience is needed to evaluate other carbon sources such as straw, hay, rice hulls and cornstalks. A long, fibrous material such as straw or cornstalks would likely work much better for composting if it were ground to reduce the particle size similar to that of sawdust. This would allow the material to settle around the carcass and provide the contact needed for good bacterial activity.

Can finished compost be used as a partial or full substitute for fresh sawdust in the primary bin?

Experience to date indicates that up to 50 percent of the fresh sawdust requirement may be fulfilled using finished compost. It is unlikely that long-term viability of the process could be maintained if no fresh sawdust were used, as the source of carbon would eventually be exhausted. Advantages of recycling finished compost include: less fresh sawdust required, active bacteria and heat contained in finished compost and less finished compost to haul for land spreading.

What happens if the composting process fails, or leaching occurs?

Excessive moisture in the composting pile is the most frequent cause of leaching and failure of carcasses to compost properly. The use of adequate amounts of dry or nearly dry sawdust is the best way to eliminate excessive moisture. Any surface water should be diverted around and away from the composter. If a composting pile becomes too wet, it can usually be recovered by moving it to another bin, and mixing in additional dry ingredients during the moving process.

What should I do with finished compost?

Finished dead animal compost, which is not recycled in primary bins, should be spread following agronomic practices used for spreading manure. Compost should be spread at agronomic rates so that applied nutrients do not exceed the uptake capabilities of the crop being grown. Conventional "beater-type" manure spreaders are ideal for handling and spreading compost. Care should be taken not to spread compost in or near sensitive areas such as streams, lakes, ponds, sinkholes, public rights-of-way and road ditches.

Can I compost in just one step, rather than moving the material from primary to secondary bins?

Moving compost from primary to secondary bins provides mixing, adds oxygen, and allows the compost to "finish off" with a high degree of breakdown. The success of the primary/secondary approach has been demonstrated in many other areas of composting, as well as swine. Some producers have reported acceptable results with single-step composting, but total composting time may be longer than that required for primary/secondary composting. Also, bin volume requirements are not reduced by single-step composting.

What about using 'green' or wet sawdust?

Generally, the dryer the sawdust, the better, since dryer sawdust can absorb more water. However, producers have reported success when using green sawdust for some or all of the fresh sawdust

requirement. Sawdust containing excessive moisture may freeze into chunks in the winter, making it difficult to handle and place around carcasses.

Will composting work for larger carcasses such as cattle?

Experience with large swine carcasses (600 to 700 pounds) suggest that cattle carcasses could be composted in this manner if properly managed. Large cattle carcasses will be more difficult to handle and properly place in a composter. Required composting time is proportional to carcass weight, hence large cattle carcasses may require up to a year of active composting time. Also, more movement, mixing, and aeration of the composting pile may be necessary. It is likely that more sawdust per pound of carcass will be required with cattle carcasses due to the amount required for adequate coverage of the legs and head. No experience has been gained to date to provide information similar to that in Table 1 for cattle.

Sizing a composter

The examples on the following pages, used with the Swine composter worksheet, illustrate a method of sizing a swine composter, and estimating annual sawdust requirements.

Example 1

Size a composter for a 200-sow, farrow-to-finish operation. Use data in Table 2 to estimate death loss. Estimate annual sawdust requirements. There are 200 mature animals (sows, boars, gilts), 700 nursery pigs, and 1,640 finishing pigs in the operation.

Swine composter worksheet

1. Calculate weight of carcasses composted. Use data from actual experience, or use Table 2.

Sow herd

Number of sows x average weight x percent (Table 2) ÷ 100 = pounds loss per year

_200_ x _375_ pounds x _7_ percent ÷ 100 = _5,250_ pounds per year

Nursery

Number of pig spaces x average weight x percent (Table 2) ÷ 100 = pounds loss per year

_700_ x _32_ pounds x _24_ percent ÷ 100 = _5,376_ pounds per year

Finishing

Number of pig spaces x average weight x percent (Table 2) ÷ 100 = pounds loss per year

_1,640_ x _150_ pounds x _11_ percent ÷ 100 = _27,060_ pounds per year

Total = _37,686_ pounds per year

pounds composted daily = (pounds per year) ÷ 365 = _37,686_ pounds per year ÷ 365 = _103_ pounds per day

2. Calculate primary and secondary bin volume.

pounds composted daily (Step 1) x 20 = primary bin volume, cubic feet

_103_ pounds per day x 20 = _2,060_ cubic feet primary bin volume

pounds composted daily (Step 1) x 20 = secondary bin volume, cubic feet

_103_ pounds per day x 20 = _2,060_ cubic feet secondary bin volume

3. Calculate bin area (use volumes from Step 2).

bin volume, cubic feet ÷ depth (usually 5 to 6 feet) = bin area, square feet

_2,060_ cubic feet ÷ _6_ feet = _343_ square feet primary bin

bin volume, cubic feet ÷ depth (usually 5 to 6 feet) = bin area, square feet

_2,060_ cubic feet ÷ _6_ feet = _343_ square feet secondary bin

4. Calculate number of bins (at least 3 bins required).

primary bin area (Step 3) ÷ (100 to 200 square feet per bin) = number of bins

_343_ square feet ÷ _110_ square feet per bin = _3.1_ primary bins

secondary bin area (Step 3) ÷ (100 to 200 square feet per bin) = number of bins

_343_ square feet ÷ _110_ square feet per bin = _3.1_ secondary bins

5. Calculate bin dimensions.

bin depth = composting depth (usually 5 to 6 feet) = _6_ feet depth

bin width = loader bucket width + 2 feet or wider = _10_ feet width

bin length = bin area (Step 3) ÷ bin width = _110_ square feet ÷ _10_ feet = _11_ feet length

6. Calculate annual sawdust requirements.

pounds composted per year (Step 1) x 0.0037 = cu yd sawdust per year

_37,686_ pounds per year x 0.0037 = _139_ cu yd sawdust per year

Example 2

Size a composter for a 2,400-sow farrowing operation. Death loss data for the operation is as follows:

Four 375 pound sows per week
200 pound small pigs and afterbirth per day

Calculate annual and daily carcass weight and enter directly in Step 1 of the worksheet.

375 pound sow x 4 sows per week x 52 weeks per year = 78,000 pounds per year

200 pound pigs and afterbirth per day x 365 days per year = 73,000 pounds per year

Total = 151,000 pounds per year = 414 pounds per day

Swine composter worksheet

1. Calculate weight of carcasses composted. Use data from actual experience, or use Table 2.

Sow herd

Number of sows x average weight x percent (Table 2) ÷ 100 = pounds loss per year

___ x ___ pounds x ___ percent ÷ 100 = ___ pounds per year

Nursery

Number of pig spaces x average weight x percent (Table 2) ÷ 100 = pounds loss per year

___ x ___ pounds x ___ percent ÷ 100 = ___ pounds per year

Finishing

Number of pig spaces x average weight x percent (Table 2) ÷ 100 = pounds loss per year

___ x ___ pounds x ___ percent ÷ 100 = ___ pounds per year

Total = _151,000_ pounds per year

pounds composted daily = (pounds per year) ÷ 365 = _151,000_ pounds per year ÷ 365 = _414_ pounds per day

2. Calculate primary and secondary bin volume.

pounds composted daily (Step 1) x 20 = primary bin volume, cubic feet

_414_ pounds per day x 20 = _8,280_ cubic feet primary bin volume

pounds composted daily (Step 1) x 20 = secondary bin volume, cubic feet

_414_ pounds per day x 20 = _8,280_ cubic feet secondary bin volume

3. Calculate bin area (use volumes from Step 2).

bin volume, cubic feet ÷ depth (usually 5 to 6 feet) = bin area, square feet

_8,280_ cubic feet ÷ _6_ feet = _1,380_ square feet primary bin

bin volume, cubic feet ÷ depth (usually 5 to 6 feet) = bin area, square feet

_8,280_ cubic feet ÷ _6_ feet = _1,380_ square feet secondary bin

4. Calculate number of bins (at least 3 bins required).

primary bin area (Step 3) ÷ (100 to 200 square feet per bin) = Number of bins

_1,380_ square feet ÷ _170_ square feet per bin = _8.1_ primary bins

secondary bin area (Step 3) ÷ (100 to 200 square feet per bin) = Number of bins

_1,380_ square feet ÷ _170_ square feet per bin = _8.1_ secondary bins

5. Calculate bin dimensions.

bin depth = composting depth (usually 5 to 6 feet) = _6_ feet depth

bin width = loader bucket width + 2 feet or wider = _12_ feet width

bin length = bin area (Step 3) ÷ bin width = _170_ square feet ÷ _12_ feet = _14_ feet length

6. Calculate annual sawdust requirements.

pounds composted per year (Step 1) x 0.0037 = cu yd sawdust per year

_151,110_ pounds per year x 0.0037 = _559_ cu yd sawdust per year

Example 3

Size a composter for an off-site nursery with a capacity of 8,400 pigs. Average weight in the nursery is 27 pounds. Use data in Table 2 to estimate death loss.

Swine composter worksheet

1. Calculate weight of carcasses composted. Use data from actual experience, or use Table 2.

Sow herd

Number of sows x average weight x percent (Table 2) ÷ 100 = pounds loss per year

___ x ___ pounds x ___ percent ÷ 100 = ___ pounds per year

Nursery

Number of pig spaces x average weight x percent (Table 2) ÷ 100 = pounds loss per year

_8,400_ x _27_ pounds x _24_ percent ÷ 100 = _54,432_ pounds per year

Finishing

Number of pig spaces x average weight x percent (Table 2) ÷ 100 = pounds loss per year

___ x ___ pounds x ___ percent ÷ 100 = ___ pounds per year

Total = _54,432_ pounds per year

pounds composted daily = (pounds per year) ÷ 365 = _54,432_ pounds per year ÷ 365 = _149_ pounds per day

2. Calculate primary and secondary bin volume.

pounds composted daily (Step 1) x 20 = primary bin volume, cubic feet

_149_ pounds per day x 20 = _2,980_ cubic feet primary bin volume

pounds composted daily (Step 1) x 20 = secondary bin volume, cubic feet

_149_ pounds per day x 20 = _2,980_ cubic feet secondary bin volume

3. Calculate bin area (use volumes from Step 2).

bin volume, cubic feet ÷ depth (usually 5 to 6 feet) = bin area, square feet

_2,980_ cubic feet ÷ _6_ feet = _497_ square feet primary bin

bin volume, cubic feet ÷ depth (usually 5 to 6 feet) = bin area, square feet

_2,980_ cubic feet ÷ _6_ feet = _497_ square feet secondary bin

4. Calculate number of bins (at least 3 bins required).

primary bin area (Step 3) ÷ (100 to 200 square feet per bin) = Number of bins

_497_ square feet ÷ _160_ square feet per bin = _3.1_ primary bins

secondary bin area (Step 3) ÷ (100 to 200 square feet per bin) = Number of bins

_497_ square feet ÷ _160_ square feet per bin = _3.1_ secondary bins

5. Calculate bin dimensions.

bin depth = composting depth (usually 5 to 6 feet) = _16_ feet depth

bin width = loader bucket width + 2 feet or wider = _10_ feet width

bin length = bin area (Step 3) ÷ bin width = _160_ square feet ÷ _10_ feet = _16_ feet length

6. Calculate annual sawdust requirements.

pounds composted per year (Step 1) x 0.0037 = cu yd sawdust per year

_54,432_ pounds per year x 0.0037 = _201_ cu yd sawdust per year

Swine composter worksheet

1. Calculate weight of carcasses composted. Use data from actual experience, or use Table 2.

Sow herd

Number of sows x average weight x percent (Table 2) ÷ 100 = pounds loss per year

___ x ___ pounds x ___ percent ÷ 100 = ___ pounds per year

Nursery

Number of pig spaces x average weight x percent (Table 2) ÷ 100 = pounds loss per year

___ x ___ pounds x ___ percent ÷ 100 = ___ pounds per year

Finishing

Number of pig spaces x average weight x percent (Table 2) ÷ 100 = pounds loss per year

___ x ___ pounds x ___ percent ÷ 100 = ___ pounds per year

Total = ___ pounds per year

pounds composted daily = (pounds per year) ÷ 365 = ___ pounds per year ÷ 365 = ___ pounds per day

2. Calculate primary and secondary bin volume.

pounds composted daily (Step 1) x 20 = primary bin volume, cubic feet

___ pounds per day x 20 = ___ cubic feet primary bin volume

pounds composted daily (Step 1) x 20 = secondary bin volume, cubic feet

___ pounds per day x 20 = ___ cubic feet secondary bin volume

3. Calculate bin area (use volumes from Step 2).

bin volume, cubic feet ÷ depth (usually 5 to 6 feet) = bin area, square feet

___ cubic feet ÷ ___ feet = ___ square feet primary bin

bin volume, cubic feet ÷ depth (usually 5 to 6 feet) = bin area, square feet

___ cubic feet ÷ ___ feet = ___ square feet secondary bin

4. Calculate number of bins (at least 3 bins required).

primary bin area (Step 3) ÷ (100 to 200 square feet per bin) = number of bins

___ square feet ÷ ___ square feet per bin = ___ primary bins

secondary bin area (Step 3) ÷ (100 to 200 square feet per bin) = number of bins

___ square feet ÷ ___ square feet per bin = ___ secondary bins

5. Calculate bin dimensions.

bin depth = composting depth (usually 5 to 6 feet) = ___ feet depth

bin width = loader bucket width + 2 feet or wider = ___ feet width

bin length = bin area (Step 3) ÷ bin width = ___ square feet ÷ ___ feet = ___ feet length

6. Calculate annual sawdust requirements.

pounds composted per year (Step 1) x 0.0037 = cu yd sawdust per year

___ pounds per year x 0.0037 = ___ cu yd sawdust per year

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