Comprehensive Nutrient Management Plan

For

Travis Popham

(Producer)

Hamlin

(County)

Prepared in Cooperation with the

USDA-Natural Resources Conservation Service

Table of Contents

Contact Information

Producer Name:	Travis Popham	**Phone:**	
Email:	travis.popham@hotmail.com	**Cell Phone:**	1-605-520-4022
Address:			
Nurient Planner:	Jason Gilb	**Phone:**	605-996-1564
Email:	jason.gilb@sd.usda.gov	**Cell Phone:**	605-656-6221
Address:	1820 N Kimball, Suite 4, Mitchell, SD 57301		
Engineer's Name:	Nicholaus Rowe	**Phone:**	507-841-3269
Email:	nic@proageng.com	**Cell Phone:**	0
Address:	71469 US HWY 71, Jackson MN 56143		
Local NRCS Office:	Hayti Service Center	**Phone:**	605-783-3642
Address:	PO BOX 165 Hayti, SD		57241

NUTRIENT MANAGEMENT PLAN INFORMATION

1. Type of Livestock: beef
   Animal Units: 4000 AU's
   Average Weight: 900 lbs

2. Total Number of Acres Included in NMP: _____ acres

3. Will this be a DENR State Permitted Facility? yes

4. Is there any anticipated funding? (EQIP, 319, none) _____

This nutrient management plan was developed based on criteria from the following documents:

- ■ **SD DENR General Water Pollution Control Permit for Concentrated Animal Feeding Operations** — 2017 (Date)
- ■ **USDA, Natural Resources Conservation Service (NRCS) Nutrient Management Standard (590)** — 2020 (Date)
- ■ **County Zoning Ordinance for Animal Feeding Operations As Amended** — Hamlin (County) _____ (Date)

Additional notes:

Comprehensive Nutrient Management Plan

The Comprehensive Nutrient Management Plan (CNMP) is an important part of the conservation management system (CMS) for your Animal Feeding Operation (AFO). This CNMP documents the planning decisions and operation and maintenance for the animal feeding operation.

Address of Farm/Facility: **44619 190th Street**
Hayti SD 57241

Owner/Operator: **Travis Popham**

Plan Period: 2025-2028

Certified Comprehensive Nutrient Management Plan (CNMP) Planner

As a Certified Comprehensive Nutrient Management Plan (CNMP) Planner, I certify that I have reviewed both the Comprehensive Nutrient Management Plan for technical adequacy and that the elements of the documents are technically compatible, reasonable and can be implemented.

Signature:_____ Date:
Name:
Title: Certification Credentials:

NRCS District Conservationist

I have reviewed the Comprehensive Nutrient Management Plan and concur that the plan meets the Local Conservation District's goals.

Signature:_____ Date:
Name:
Title:

Owner/Operator

As the owner/operator of this CNMP, I, as the decision maker, have been involved in the planning process and agree that the items/practices listed in each element of the CNMP are needed. I understand that I am responsible for keeping all the necessary records associated with the implementation of this CNMP. It is my intention to implement/accomplish this CNMP in a timely manner as described in the plan.

Signature:_____ Date:
Name:
Title:

Section 1
Farmstead (Production Area)

☐ 1.1 Map of Farmstead, Existing and Planned Conservation Practices 1.2 Farmstead Conservation Practices – Record of Decision 1.3 Farmstead Conservation Practices – Implementation Requirements (Dealing with a Manure Spill Fact Sheet, Catastrophic Mortality Report from WSS, Engineering Plans & Specs) 1.4 Animal Inventory (from SD-CPA-63) 1.5 Manure Storage Information 1.6, 1.7, 1.8 Planned Manure Exports/Imports/Transfers 1.9 Brief Description of, or Additional Information about Animal Feeding Operation (Optional) ☐ 1.10 SD CNMP Air Quality Component

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

INITIAL NUTRIENT MANAGEMENT PLAN
FOR
SOUTH DAKOTA ANIMAL FEEDING OPERATIONS

SD-CPA-63A
Rev. 4/24

1. **Operator:** Popham Livestock LLC 2. **County:** Hamlin 3. **Prepared By:** Jason Gilb 4. **Date:** 08-Aug-25

Total Nitrogen And Phosphorus Produced From Livestock Operation(s)

5.	6.	7.	8.	9.		10.		11.	12.	13.		14.	15.		16.	
Animal Type:	No. of animals	Avg. weight (lbs.)	Days of Confine-ment	N	P_2O_5	N retained		Total N available for application (lbs.)	Time of applic-ation	N Retained		Total N retained in field (lbs.)	3-Yr. Mineralization Rate		N	P_2O_5
				Total solid/liquid Manure as Excreted (lbs.)		Handling/Storage	%			Application Method	%		Manure Handling	%	Available for the crop (lbs.)	
Beef	5,000	1,000	365	565,750	456,250	Solid - open lot	52	294,190	Spring/Fall/Summer	Broadcast (incorp. 1 - 5 days)	85	250,062	Solid without bedding	61	152,538	456,250
Other Animals																

Total Manure as Excreted: 295,000 **OR** 107,675,000 **lbs/year** **Total lbs. of N and P2O5 available for the crop:** 152,538 456,250

Catastrophic Event, Large Animal Mortality, Burial—Hamlin County, South Dakota
(Popham home)

Map Scale: 1:21,900 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 300 600 1200 1600

Feet: 0 1000 2000 4000 6000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

Catastrophic Event, Large Animal Mortality, Burial

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
Cu	Cubden-Badger silty clay loams, coteau, 0 to 2 percent slopes	Very severely limited	Cubden (50%)	Wetness (1.00)	130.9	13.8%
			Badger (40%)	Wetness (1.00)		
				Flooding (0.70)		
				Water gathering surface (0.33)		
			Waubay (4%)	Wetness (1.00)		
				Water gathering surface (0.27)		
			Badger, poorly drained (2%)	Wetness (1.00)		
				Flooding (0.70)		
				Water gathering surface (0.33)		
			Cubden, moderately saline (2%)	Wetness (1.00)		
			Tonka, undrained (1%)	Ponding (1.00)		
				Wetness (1.00)		
				Water gathering surface (0.50)		
			Poinsett (1%)	Wetness (1.00)		
Cx	Cubden-Tonka silty clay loams, coteau, 0 to 2 percent slopes	Very severely limited	Cubden (55%)	Wetness (1.00)	32.3	3.4%
			Tonka, undrained (35%)	Ponding (1.00)		
				Wetness (1.00)		
				Water gathering surface (0.50)		
			Badger (3%)	Wetness (1.00)		
				Flooding (0.70)		
				Water gathering surface (0.33)		
			Cubden, moderately saline (2%)	Wetness (1.00)		
			Parnell (2%)	Ponding (1.00)		
				Wetness (1.00)		
				Water gathering surface (0.50)		
			Waubay (2%)	Wetness (1.00)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Water gathering surface (0.33)		
			Cubden (3%)	Wetness (1.00)		
			Tonka, undrained (2%)	Ponding (1.00)		
				Wetness (1.00)		
				Water gathering surface (0.50)		
			Parnell, undrained (2%)	Ponding (1.00)		
				Wetness (1.00)		
				Water gathering surface (0.50)		
PwA	Poinsett-Waubay silty clay loams, 0 to 2 percent slopes	Very severely limited	Poinsett (60%)	Wetness (1.00)	249.1	26.2%
			Waubay (30%)	Wetness (1.00)		
				Water gathering surface (0.27)		
			Tonka, undrained (4%)	Ponding (1.00)		
				Wetness (1.00)		
				Water gathering surface (0.50)		
			Cubden (4%)	Wetness (1.00)		
PwB	Poinsett-Waubay silty clay loams, 1 to 6 percent slopes	Very severely limited	Poinsett (65%)	Wetness (1.00)	55.1	5.8%
			Waubay (25%)	Wetness (1.00)		
				Water gathering surface (0.27)		
			Tonka, undrained (2%)	Ponding (1.00)		
				Wetness (1.00)		
				Water gathering surface (0.50)		
			Cubden (2%)	Wetness (1.00)		
So	Southam silty clay loam, 0 to 1 percent slopes	Very severely limited	Southam (90%)	Ponding (1.00)	24.1	2.5%
				Wetness (1.00)		
				Water gathering surface (0.50)		
			Vallers (6%)	Wetness (1.00)		
				Water gathering surface (0.33)		
			Hamerly (4%)	Wetness (1.00)		
To	Tonka silty clay loam, 0 to 1 percent slopes	Very severely limited	Tonka (90%)	Ponding (1.00)	1.9	0.2%
				Wetness (1.00)		
				Water gathering surface (0.50)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Badger (1%)	Wetness (1.00)		
				Flooding (0.70)		
				Water gathering surface (0.33)		
Totals for Area of Interest					**949.7**	**100.0%**

Rating	Acres in AOI	Percent of AOI
Very severely limited	949.7	100.0%
Totals for Area of Interest	**949.7**	**100.0%**

when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and difficult to place as a uniformly thick cover over a layer of carcasses. The uppermost part of the final cover should be soil material that is favorable for the growth of plants. It should not contain excess sodium or salt and should not be too acid. In comparison with other horizons, the A horizon in most soils has the best workability and the highest content of organic matter. Thus, for a Large Animal Disposal, Burial operation it may be desirable to stockpile the surface layer for use in the final blanketing of the filled pit area.

Numerical ratings indicate the severity of the individual limitations. The ratings are shown in decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses.

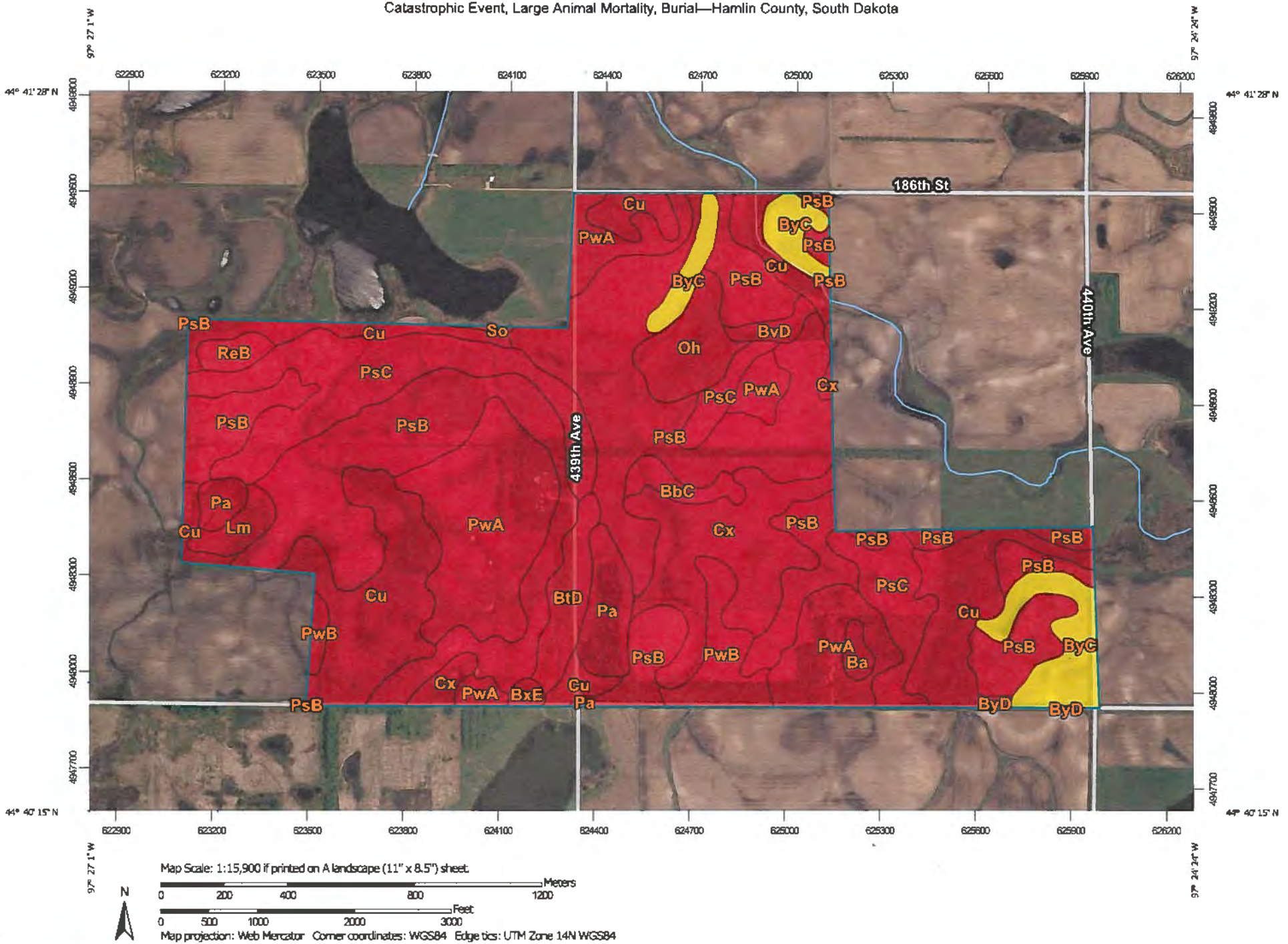
Not limited (rating index equals 0) - The limitation for large animal disposal during a catastrophic event is insignificant. This soil is able to support standard excavation equipment, the soil has minimal contamination of groundwater, and soil reclamation using conventional processes is possible. Not limited soils have features that are very favorable for the specified use. Very good performance and very low maintenance can be expected of a properly designed and installed system.

Slightly limited (rating index greater than 0 but less than 0.30) - The limitation for large animal disposal during a catastrophic event is slightly limited. There are one or more soil properties that pose a slight limitation for contamination of groundwater, site reclamation, or excavation equipment. Slightly limited indicates the soil have features that are favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Good performance and low maintenance can be expected.

Somewhat limited (greater than 0.30 but less than 0.80) - The limitation for large animal disposal during a catastrophic event is somewhat limited. There are more than one soil properties that pose a limitation for contamination of groundwater, site reclamation, or excavation equipment. Any corrective measures taken to overcome these limitations are considered economical however, special care must be taken to overcome limitations. Somewhat limited indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected.

Severely limited (greater than 0.80 but less than 0.99) - The limitation for large animal disposal during a catastrophic event is severely limited. There are many soil properties that pose a limitation for contamination of groundwater, site reclamation, or excavation equipment. Additionally, corrective measures will be needed to overcome these limitations. Corrective measures taken may be costly to overcome limitations that pose a severely limited rating. Severely limited indicates that the soil has features that are unfavorable for the specified use. The limitations can be overcome or minimized by special planning, design, or

Catastrophic Event, Large Animal Mortality, Burial—Hamlin County, South Dakota



Dealing with a Manure Spill

Nutrient management professionals urge producers and professional nutrient applicators alike to remember the **"Four Cs"** if the worst happens and they are faced with a manure spill emergency:

Step 1: Control-eliminate the source of the manure spill.

Step 2: Contain-limit the area impacted.

Step 3: Comply-assess and report damage to the proper authorities.

Step 4: Clean up-restore the affected area.

During the recent North American Manure Expo, officials demonstrated ways producers and applicators could create dams with hay or straw bales to help slow the manure's spread. Five-gallon buckets, PVC pipe, plastic sheets and plywood are some examples of items that can be used to help plug tile outlets and cover tile inlets in the event of a spill. If the spill is sizeable, using tillage equipment to stop the manure's movement toward vulnerable waterways may be necessary. Using sand or other materials to soak up or slow the manure's spread can also be a containment option.

Experts recommend assembling a manure spill response kit to have ready and accessible on the farm when pumping and applying manure. The kit should include:

1. A copy of the farm's emergency response plan, if it has one, including emergency numbers and a site map;
2. Hay or straw bales that could be used to block a culvert or build a berm or diversion;
3. T-posts to support plywood or bale stacks;
4. 14-inch diameter PVC pipe in both 3-foot and 2-foot sections to be used to cover tile inlets;
5. Several 6-mil plastic sheets of approximately 12-foot x 25-foot lengths that could be applied to tile inlets or other sensitive areas with duct tape;
6. At least one sheet of 4-foot x 4-foot plywood that could be used to block culverts. Round the plywood on one end to fit the curve of the ditch;
7. Pliers, vice grips, fencing pliers, channel lock pliers, hammers, utility knife, hand saw, hatchet, post driver;
8. 1 roll duct tape;
9. Baling wire; and
10. Sand shovels.

At the minimum, nutrient management experts recommend a mini-kit that could be kept in the truck or tractor. The mini-kit should contain a sand shovel, duct tape, utility knife and 6-mil plastic sheets.

The Department of Environment and Natural Resources (DENR) should be contacted as soon as possible after the spill, but no later than twenty-four (24) hours from the time the producer first became aware of it. The report shall be made to the State of South Dakota at (605) 773-3351. If after normal business hours (8:00 am to 5:00 p.m. Central time on Monday through Friday), the producer shall report the discharge by calling (605)773-3231. The producer shall also take immediate steps to stop the discharge and notify anyone downstream that may be impacted by the discharge. When notifying the DENR, be prepared to provide information about the location, time, and estimated amount and source of the manure spill. Let the DENR know about any water resources that have been or could be impacted by the spill.

SOUTH DAKOTA CNMP AIR QUALITY COMPONENT

As part of an NRCS Comprehensive Nutrient Management Plan (CNMP) the potential resource concern of air quality must discussed with each producer receiving NRCS technical assistance for CNMP development. During our site assessment the following potential air quality resource concerns were observed:

1. Particulate matter (dust) noted coming from feedlot, roads, and feed storage/mixing area.

2. Slight odor (ammonia) emitting from manure storage area.

The National Air Quality Site Assessment Tool (NAQSAT) has been developed for the voluntary use of livestock producers and their advisors or consultants. It is intended to provide assistance to livestock and poultry producers in determining the areas in their operations where there are opportunities to make changes that result in reduced air emissions. NAQSAT is based on the most accurate, credible data currently available regarding mitigation strategies for air emissions of ammonia, methane, volatile organic compounds, hydrogen sulfide, particulates, and odor. NAQSAT was designed to provide information and education, only. It is not intended to provide emissions data and/or regulatory guidance. All users receive a report of priority areas where improvements can be made, regardless of the amount of emissions produced by the facility. These priorities are not a reflection of risk, but rather a relative evaluation of current production systems based on the most accurate data and understanding of management systems currently available.

If you would like to have NRCS run NAQSAT on your farm please indicate below:

I **want** NRCS to run NAQSAT on my farmstead

I **do not want** NRCS to run NAQSAT on my farmstead

_____ _____

Signature Date

Section 2
Crop and Pasture (Land Treatment)

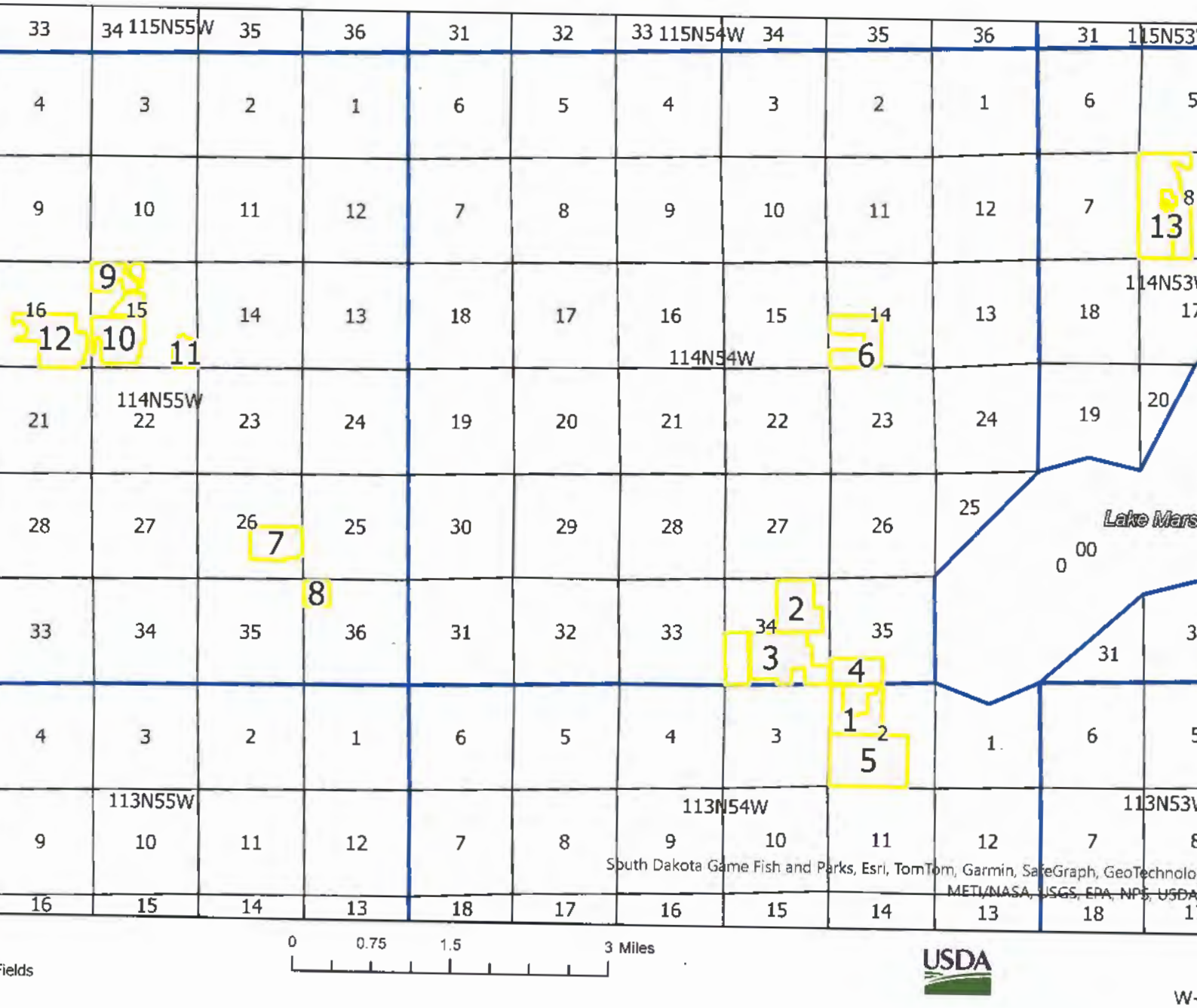
2.1 Maps (Plat Map, WQRA Maps, Winter WQRA Maps, Soil Maps, Existing and Planned Crop/Pasture Conservation Practices)

2.2 Crop and Pasture Conservation Practices – Record of Decision

2.3 Crop and Pasture Conservation Practices – Implementation Requirements (N&P BMP Fact Sheet)

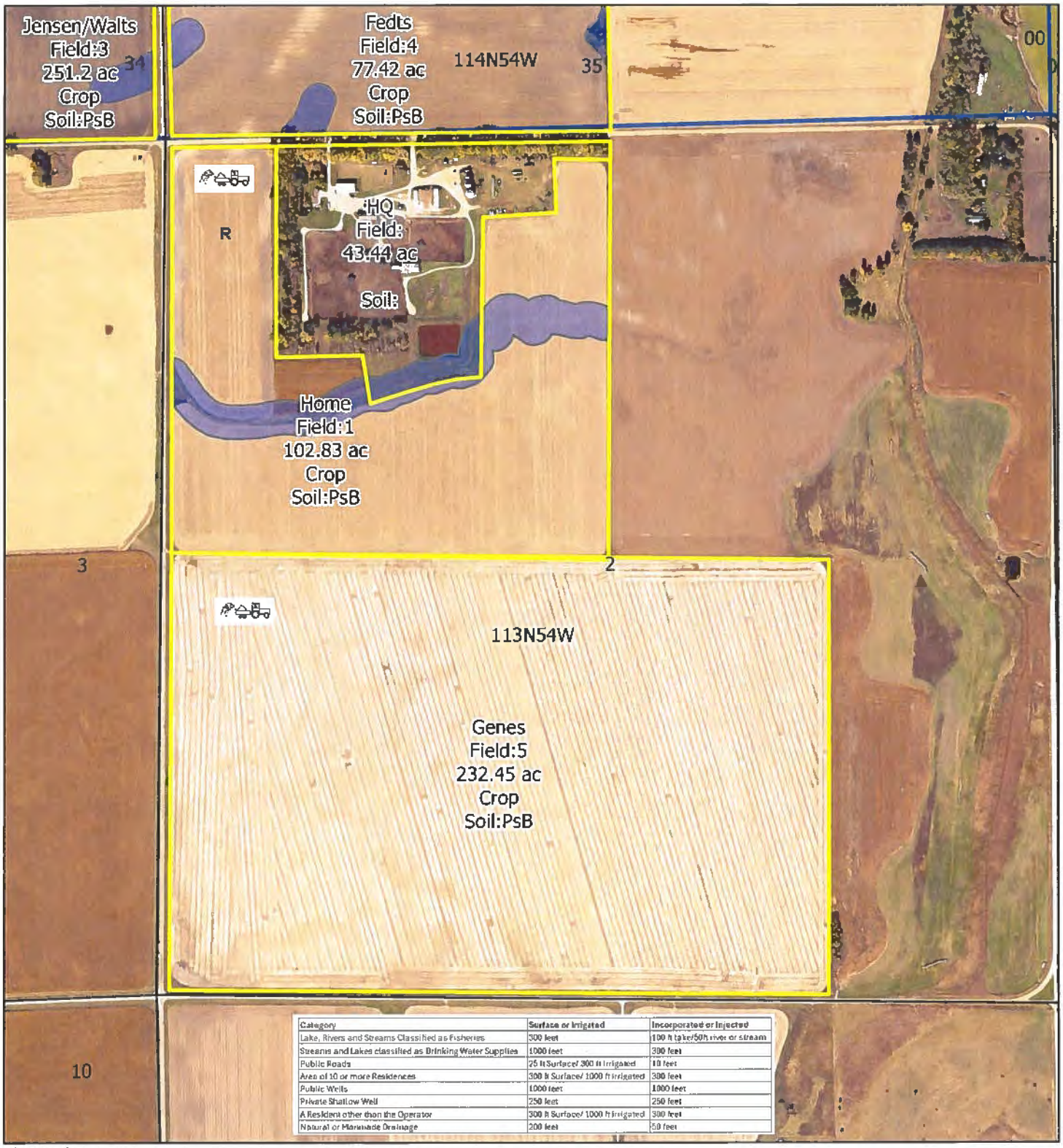
2.4 Predicted Soil Erosion (RUSLE/WEPS/Wind Erosion County Map)

Plat Map



Prepared with assistance from USDA-Natural Resources Conservation Service

Water Quality Risk Assessment Map
2-113N-54W



Category	Surface or Irrigated	Incoporated or Injected
Lake, Rivers and Streams Classified as Fisheries	300 feet	100 ft lake/50ft river or stream
Streams and Lakes classified as Drinking Water Supplies	1000 feet	300 feet
Public Roads	25 ft Surface/ 300 ft Irrigated	10 feet
Area of 10 or more Residences	300 ft Surface/ 1000 ft Irrigated	300 feet
Public Wells	1000 feet	1000 feet
Private Shallow Well	250 feet	250 feet
A Resident other than the Operator	300 ft Surface/ 1000 ft Irrigated	300 feet
Natural or Manmade Drainage	200 feet	50 feet

Legend
- NMP Fields
- Manure Application
- R runoff
- L Leaching
- Exclusions
- Residence_Buffer

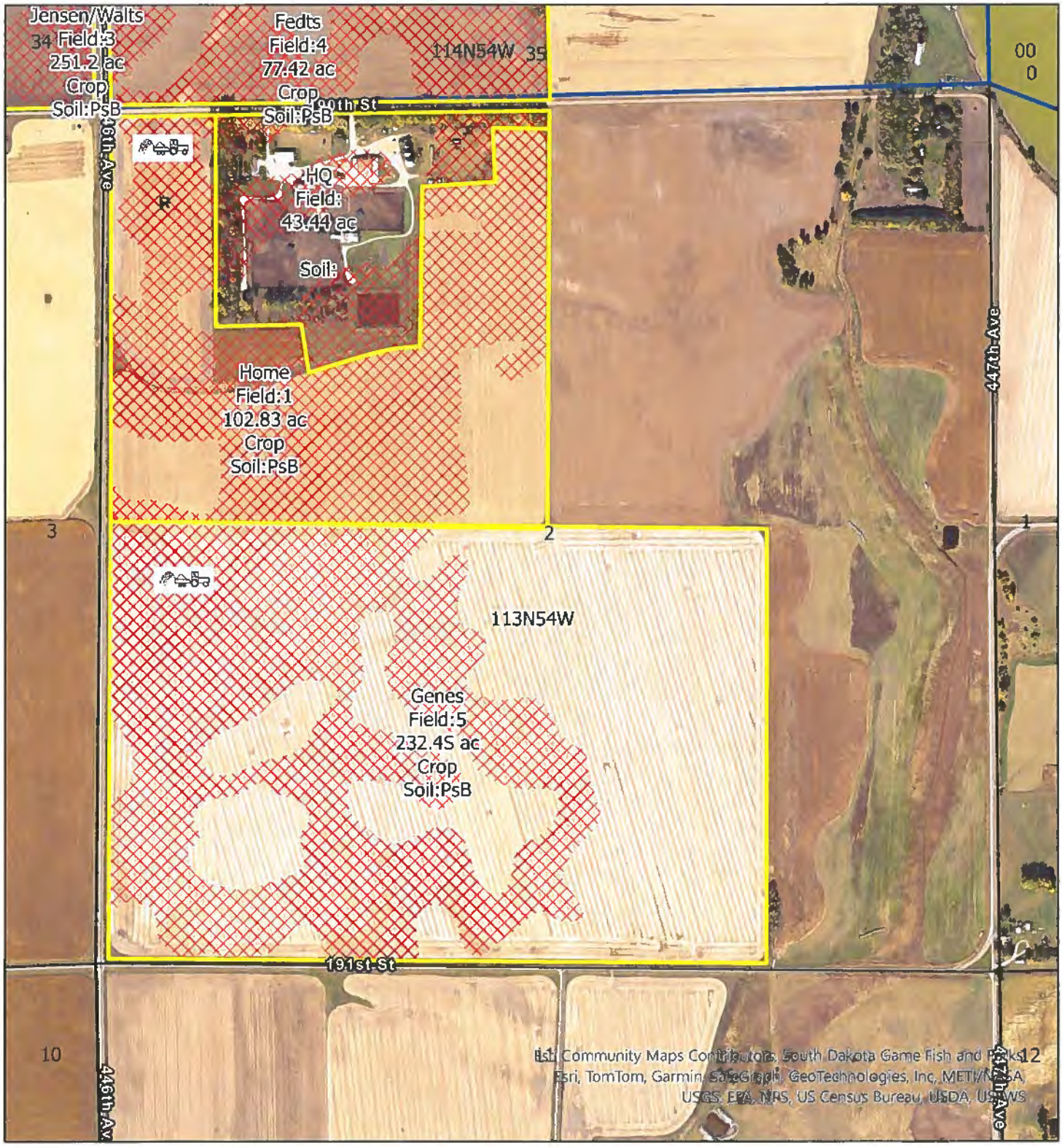
0 0.07 0.15 0.3 Miles

USDA

N W E S

Prepared with assistance from USDA-Natural Resources Conservation Service

Winter Water Quality Risk Assessment Map
2-113N-54W



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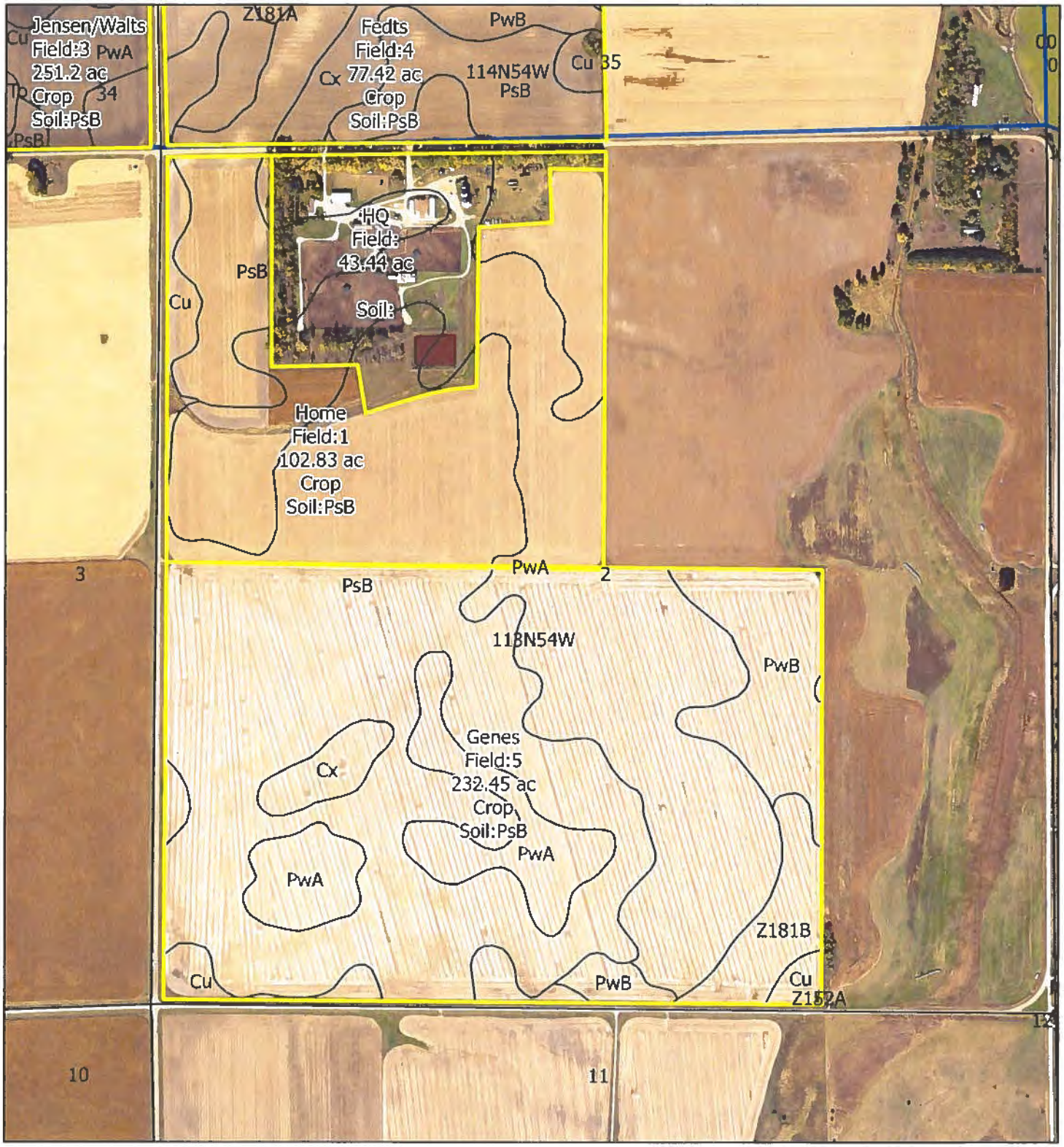
Prepared with assistance from USDA-Natural Resources Conservation Service

Soils Map
2-113N-54W



Legend

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0 0.07 0.15 0.3 Miles

USDA

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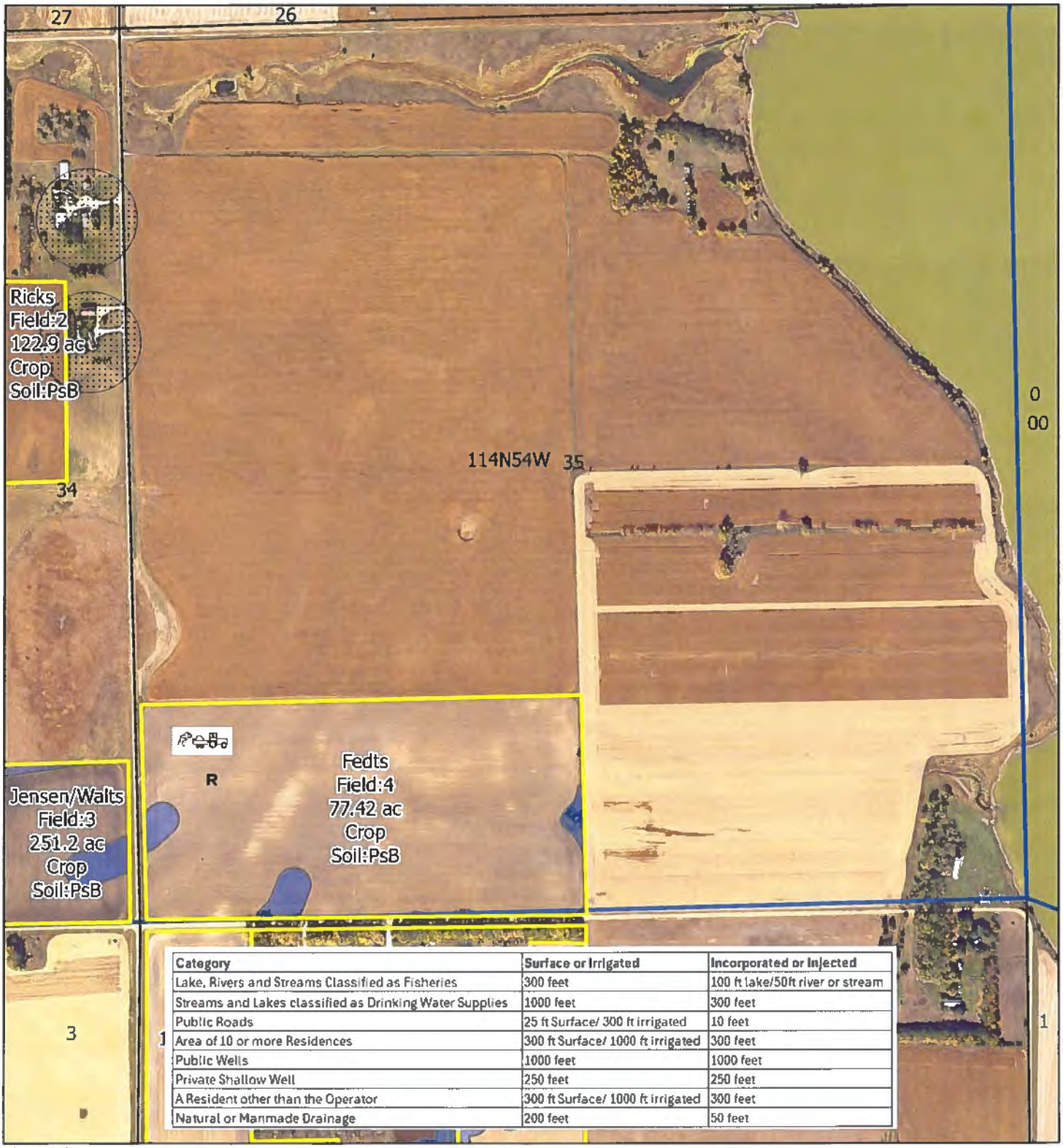
Prepared with assistance from USOA-Natural Resources Conservation Service

Water Quality Risk Assessment Map
35-114N-54W



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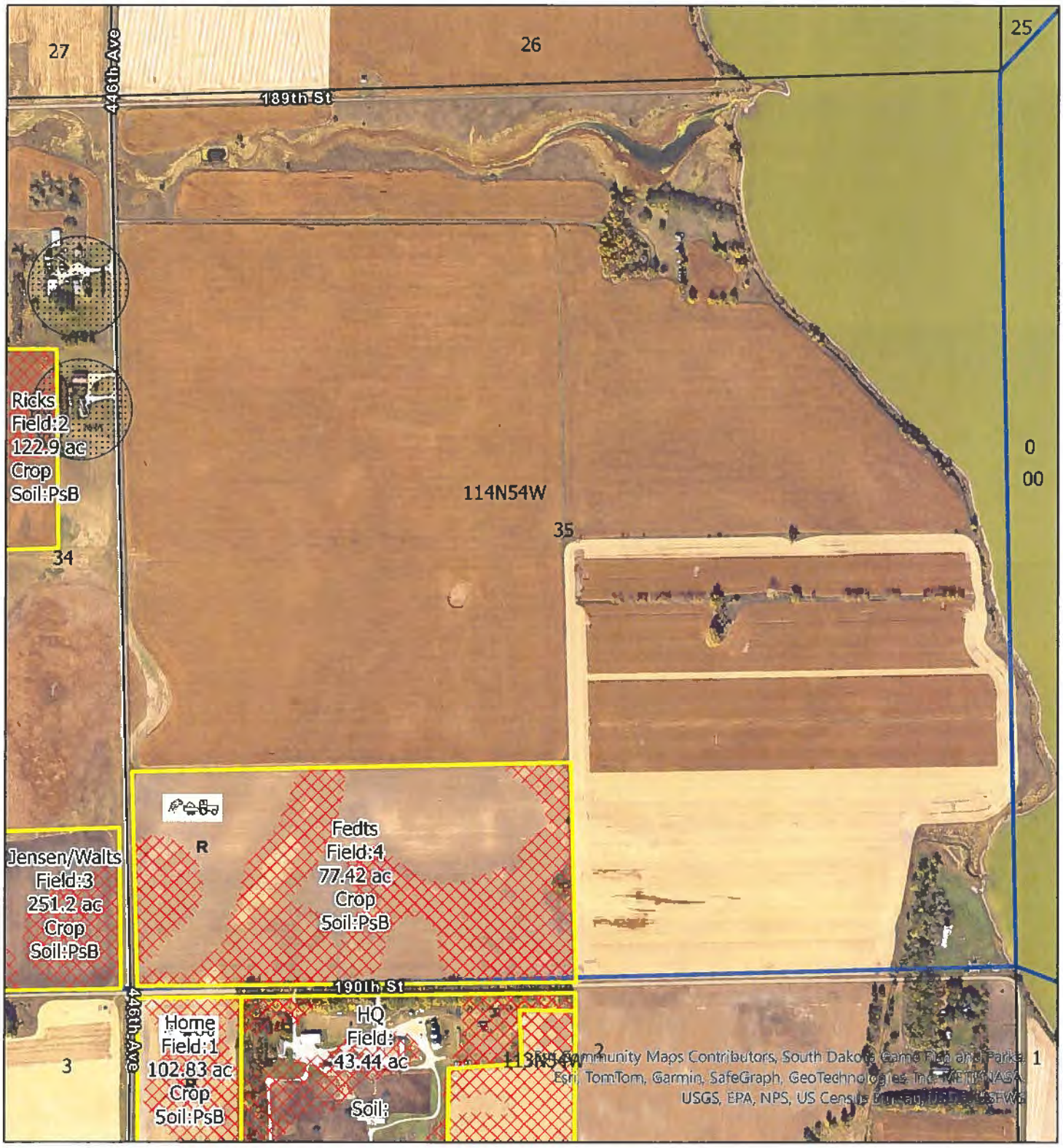
Winter Water Quality Risk Assessment Map
35-113N-54W



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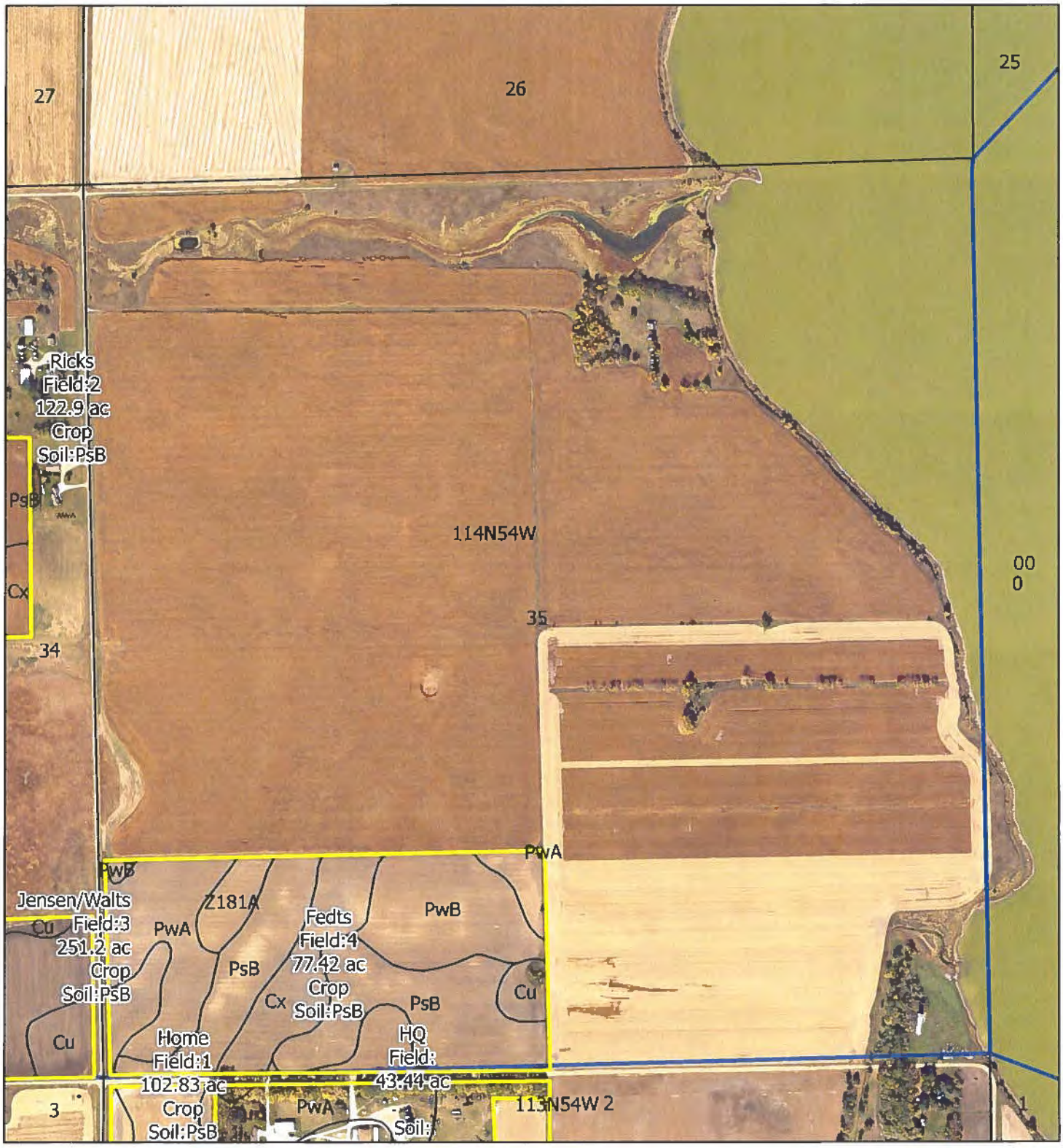
Soils Map
35-114N-54W



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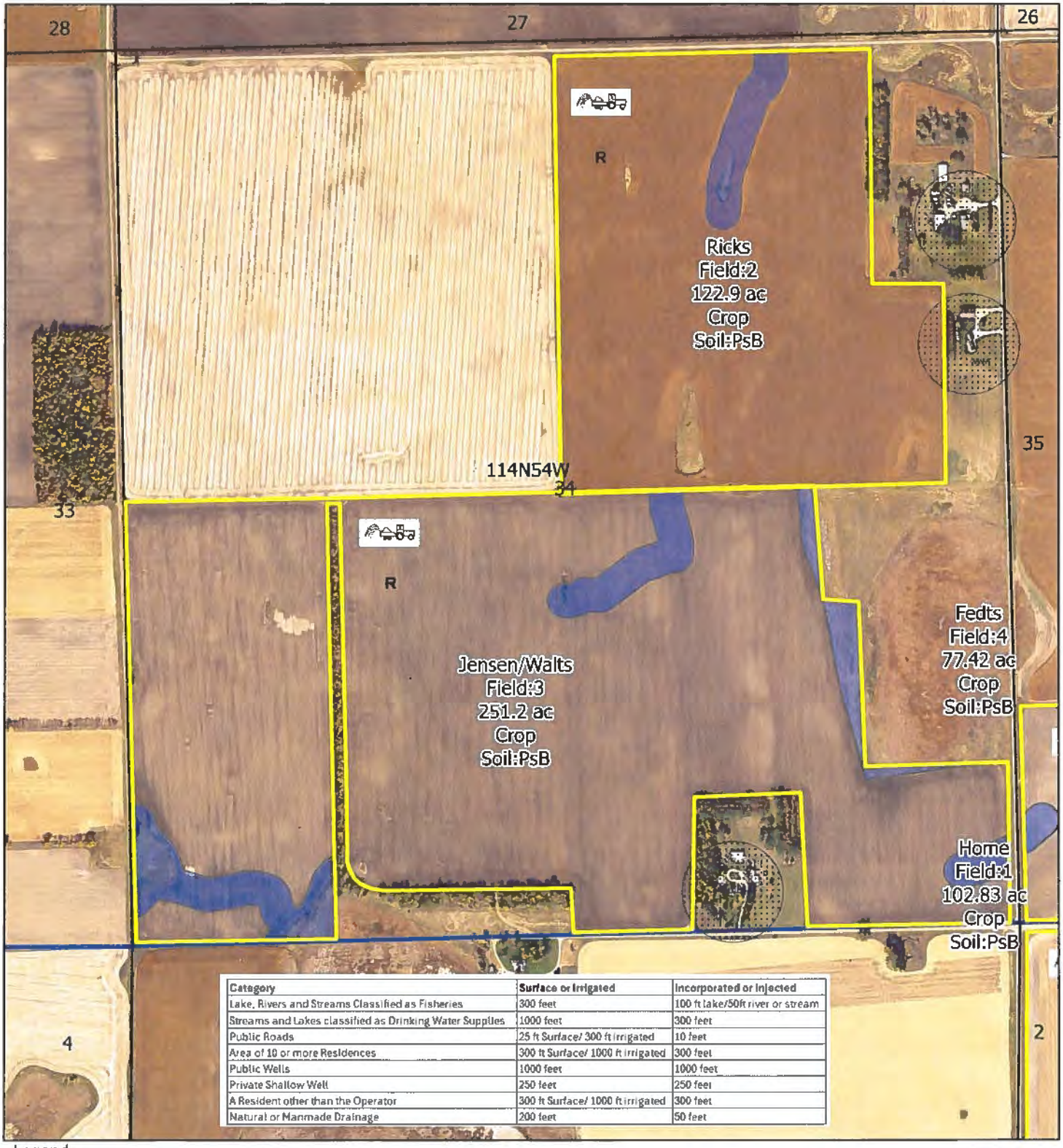

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Winter Water Quality Risk Assessment Map
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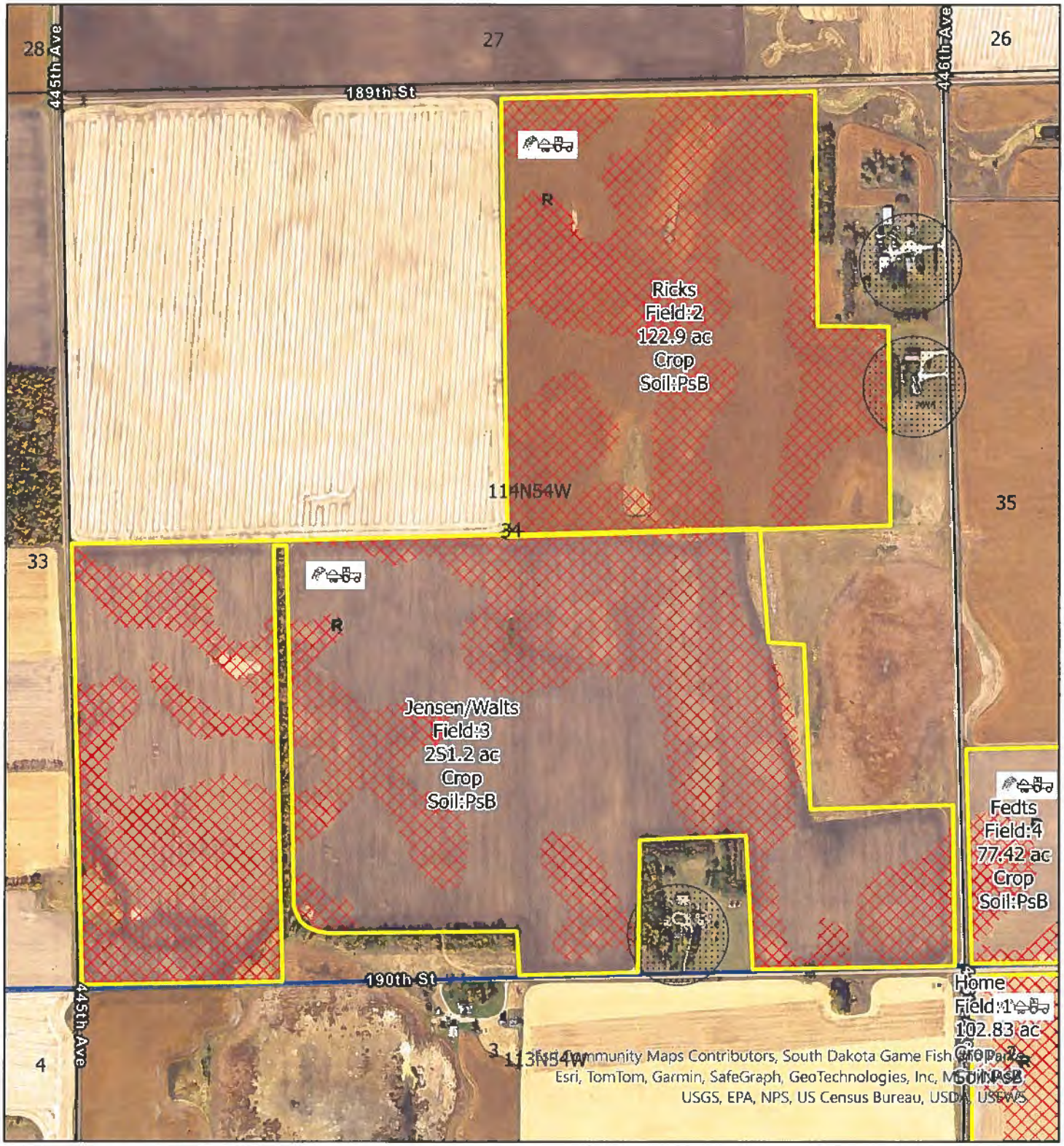

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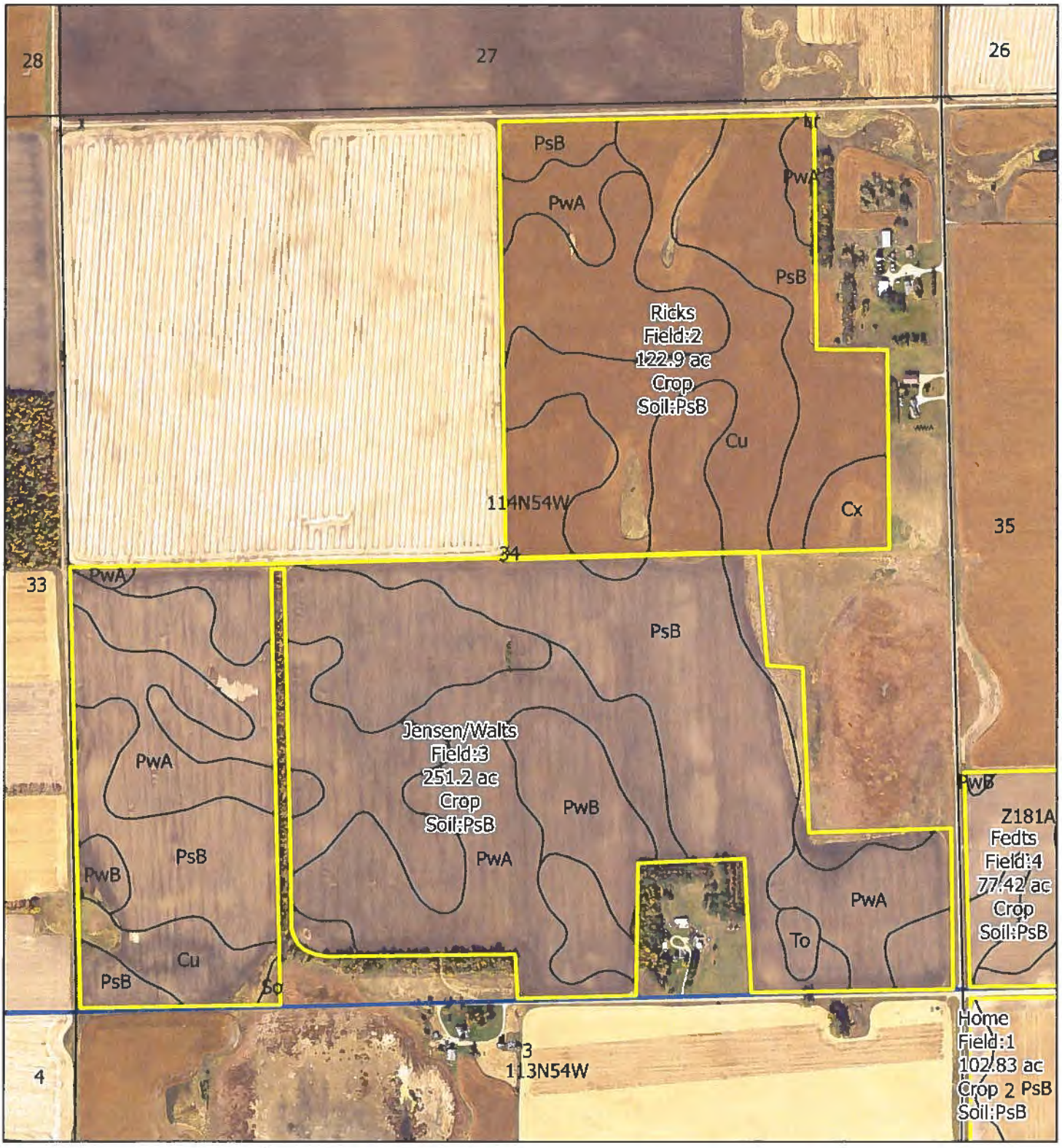

Legend

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USDA

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Prepared with assistance from USDA-Natural Resources Conservation Service

Water Quality Risk Assessment Map
14-114N-54W

Category	Surface or Irrigated	Incorporated or Injected
Lake, Rivers and Streams Classified as Fisheries	300 feet	100 ft lake/50ft river or stream
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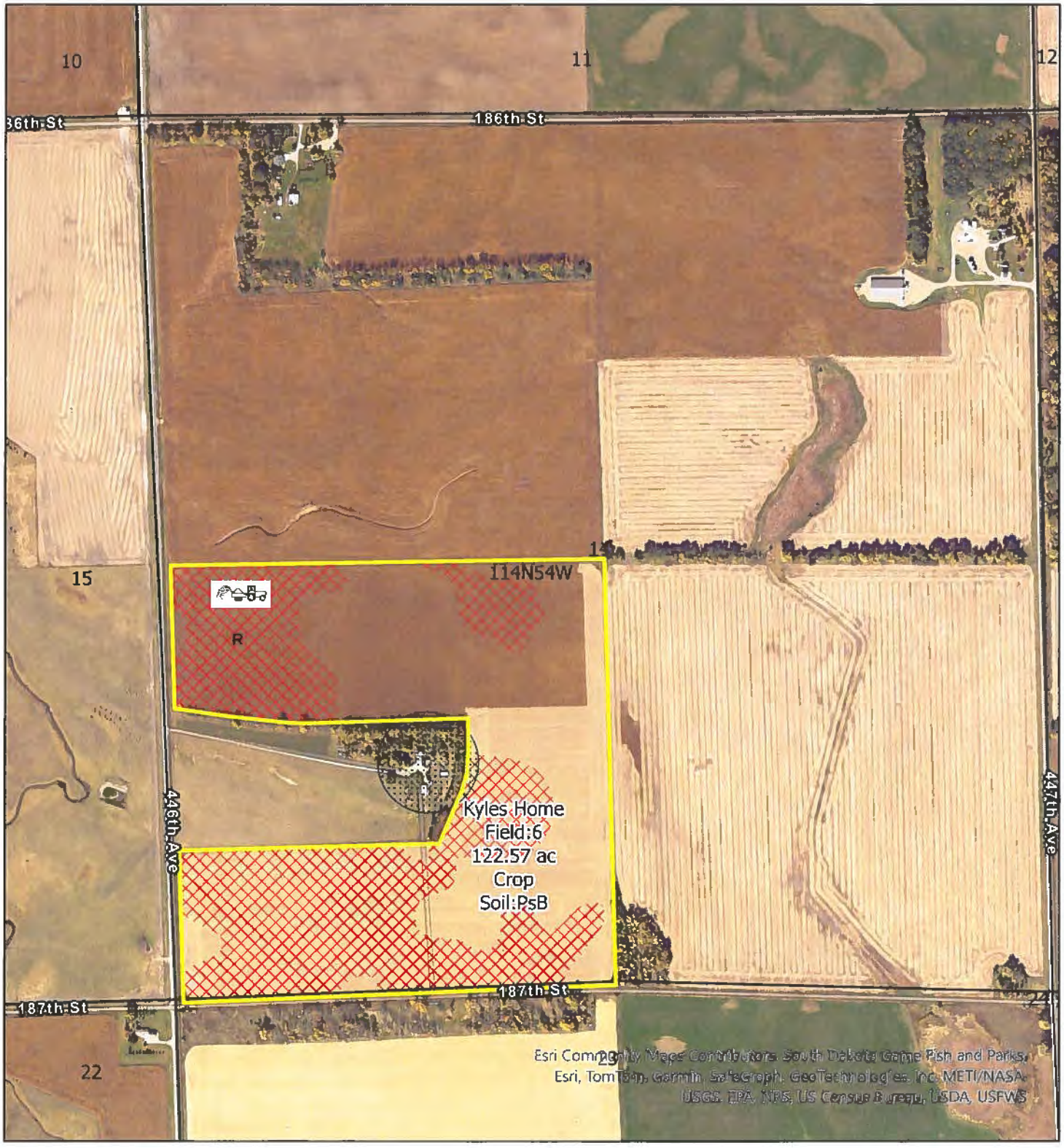

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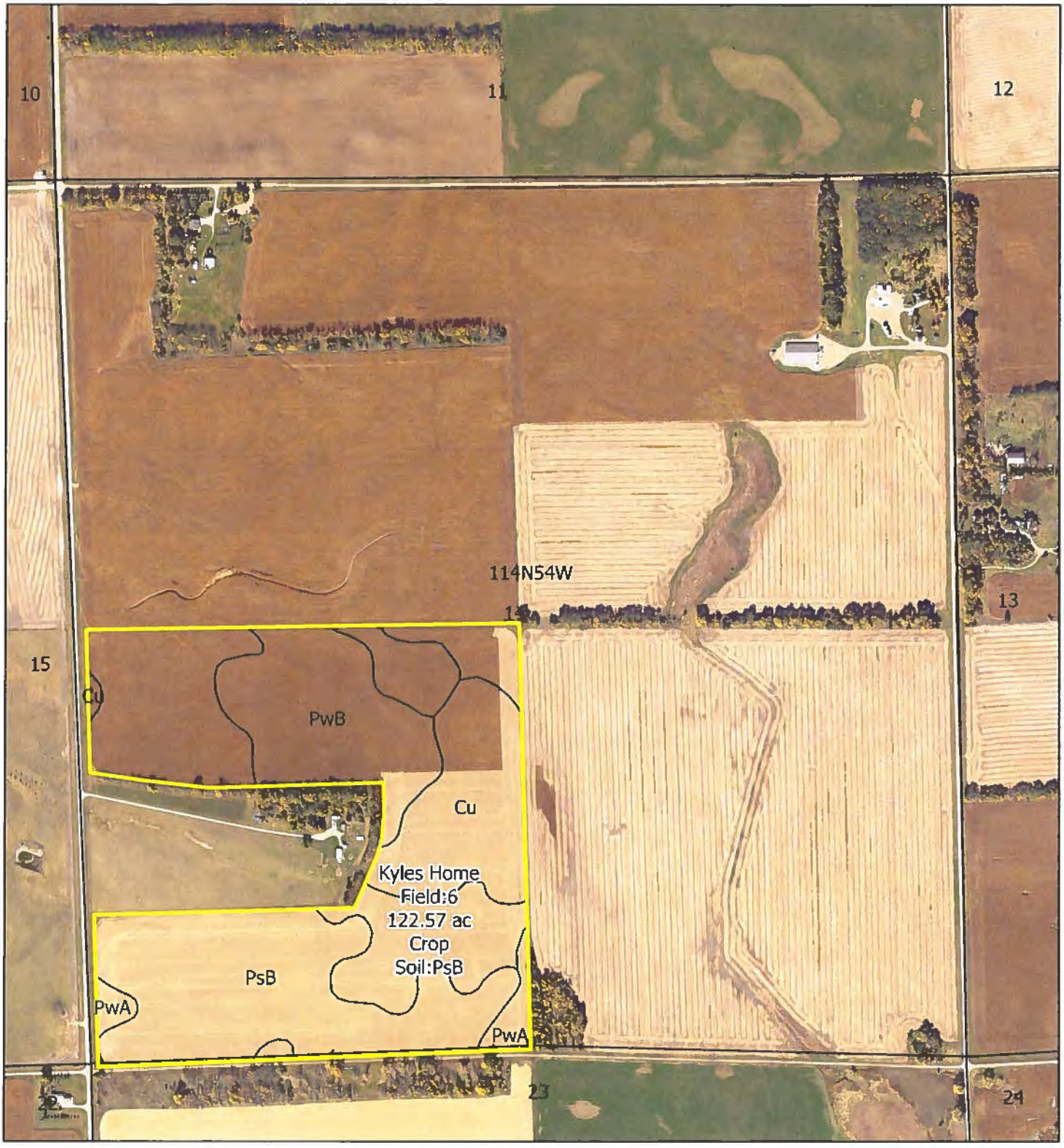
Soils Map
14-114N-54W



Legend

NMP Fields

Soils Map

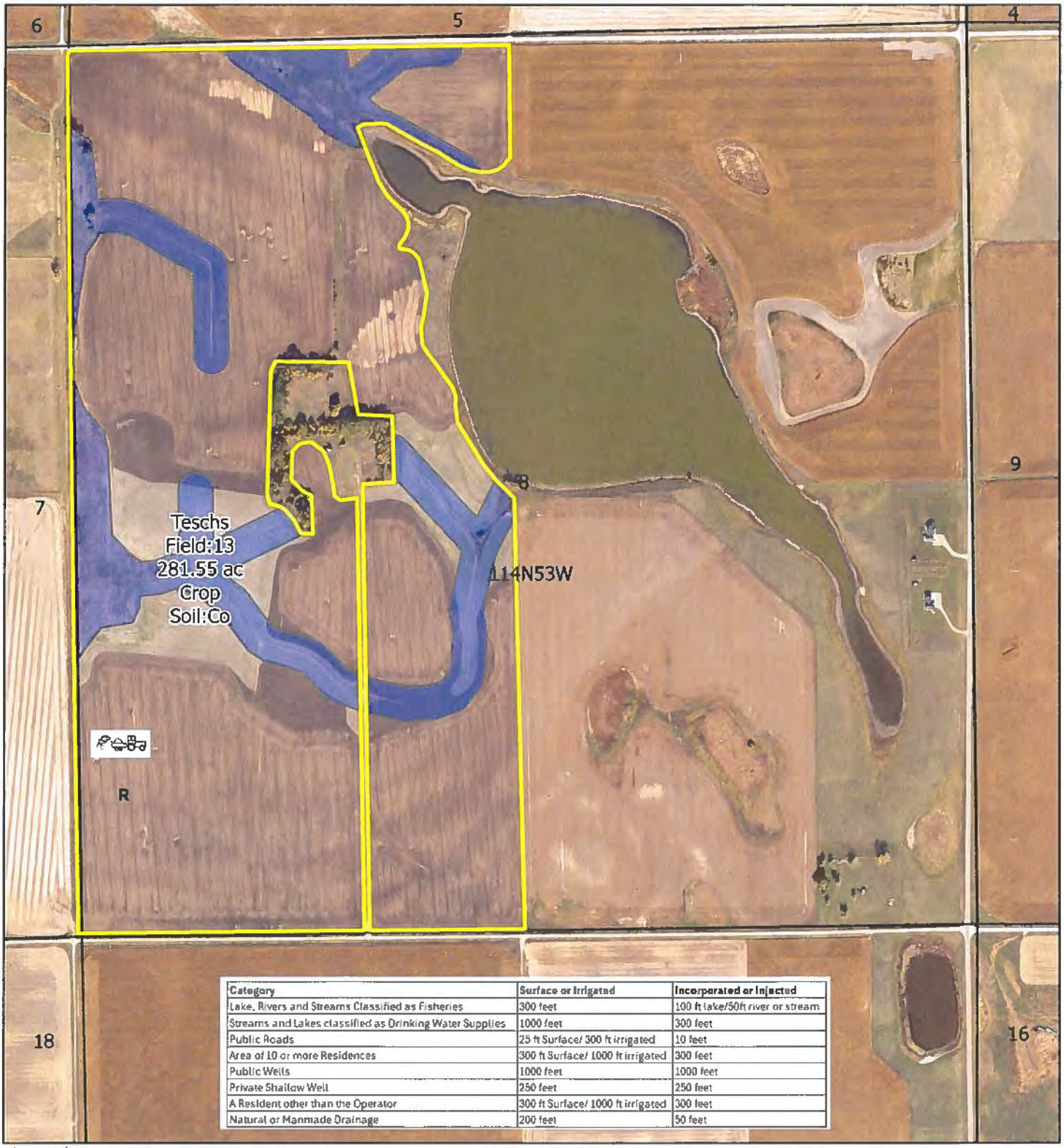
0 0.07 0.15 0.3 Miles

USDA

N
W E
S

Prepared with assistance from USDA-Natural Resources Conservation Service

Water Quality Risk Assessment Map
8-114N-53W



Category	Surface or Irrigated	Incorporated or Injected
Lake, Rivers and Streams Classified as Fisheries	300 feet	100 ft lake/50ft river or stream
Streams and Lakes classified as Drinking Water Supplies	1000 feet	300 feet
Public Roads	25 ft Surface/ 300 ft irrigated	10 feet
Area of 10 or more Residences	300 ft Surface/ 1000 ft irrigated	300 feet
Public Wells	1000 feet	1000 feet
Private Shallow Well	250 feet	250 feet
A Resident other than the Operator	300 ft Surface/ 1000 ft irrigated	300 feet
Natural or Manmade Drainage	200 feet	50 feet

Legend

- NMP Fields
- Manure Application
- R runoff
- L Leaching
- Exclusions
- Residence_Buffer

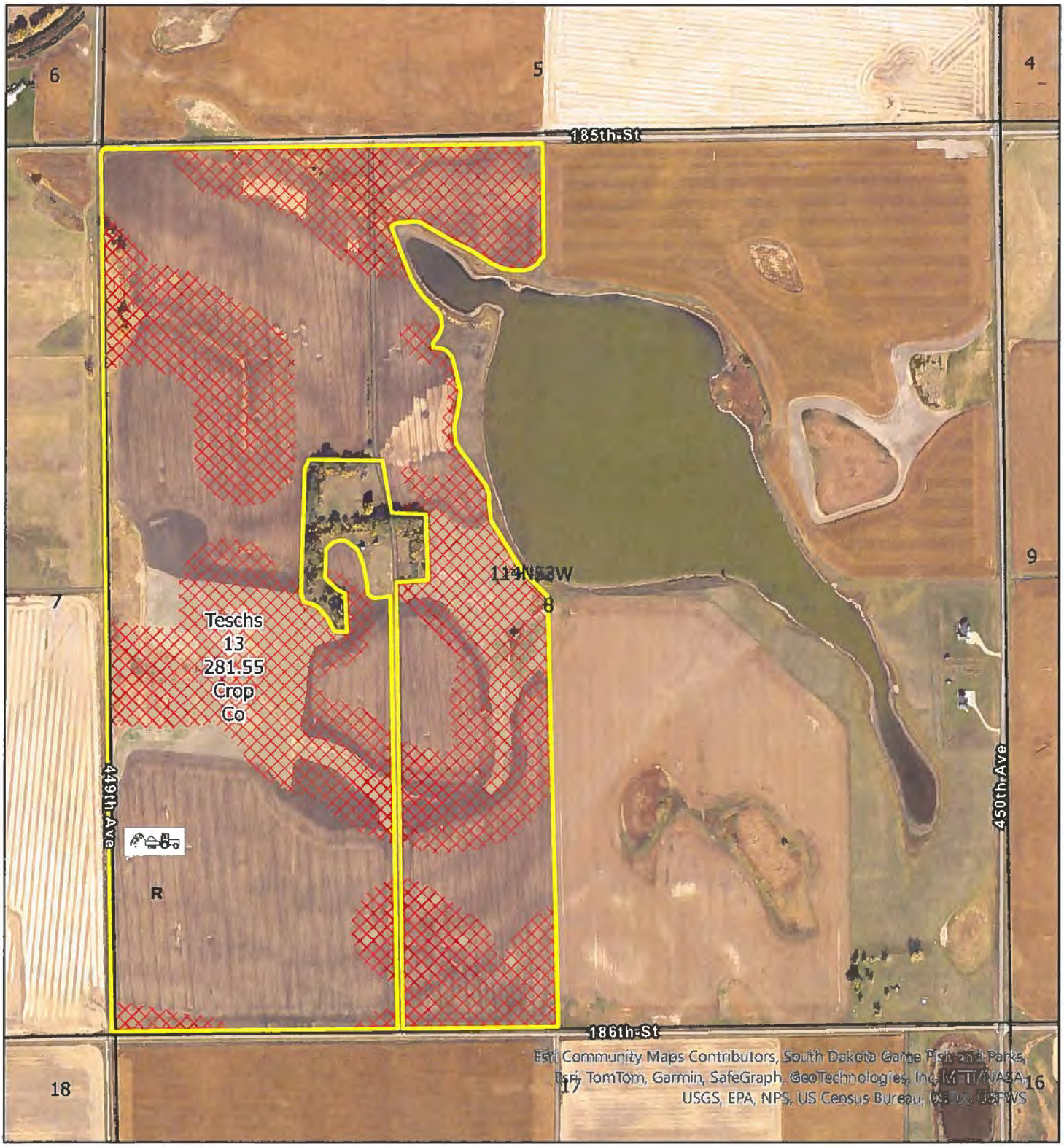
0 0.07 0.15 0.3 Miles

USDA

N W E S

Prepared with assistance from USDA-Natural Resources Conservation Service

Winter Water Quality Risk Assessment Map
8-114N-53W



Legend

- Manure Application
- R runoff
- NMP Fields
- Winter Exclusions

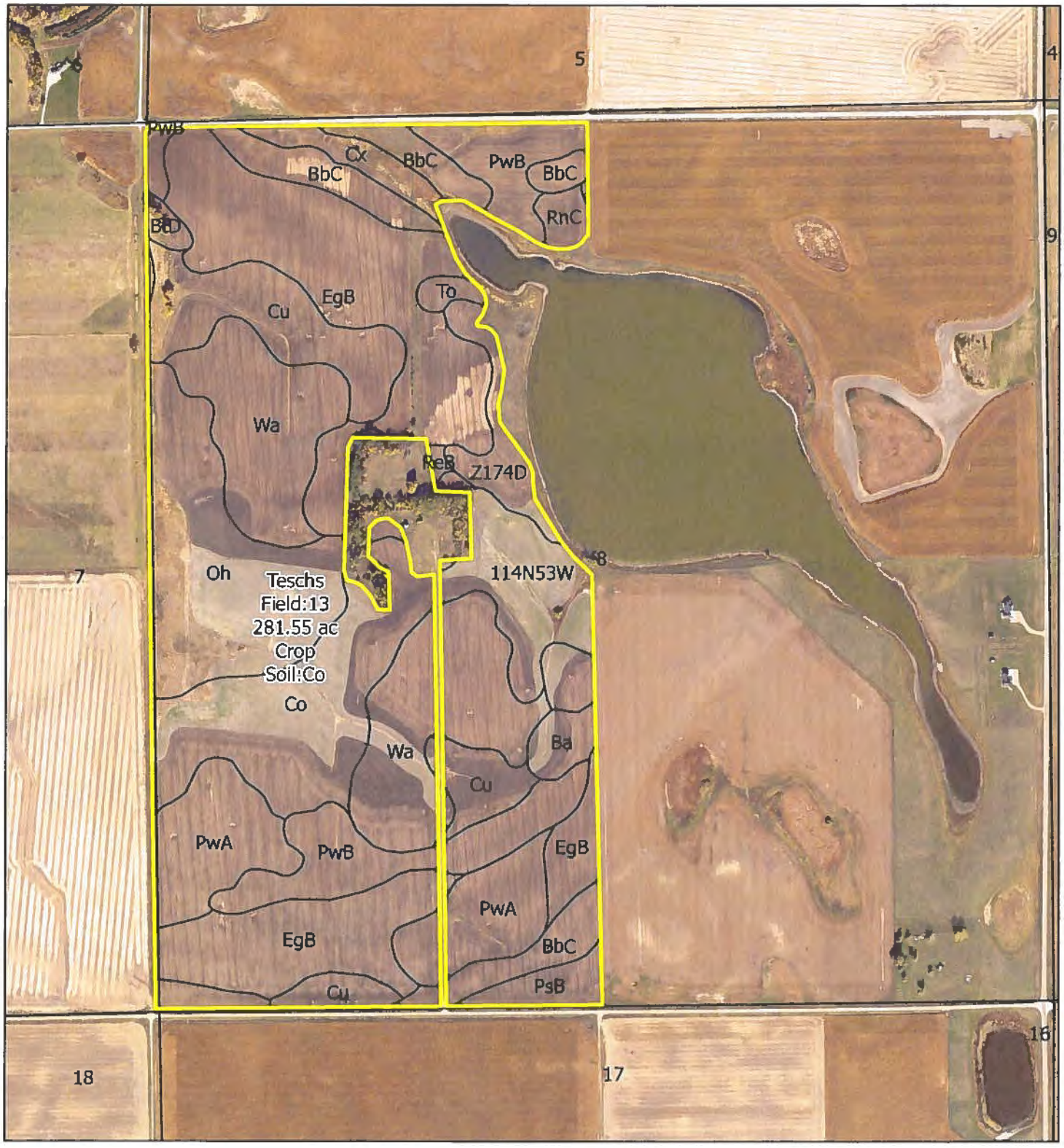
0 0.07 0.15 0.3 Miles

USDA

N W E S

Prepared with assistance from USDA-Natural Resources Conservation Service

Soils Map
8-114N-53W



Legend

NMP Fields

Soils Map

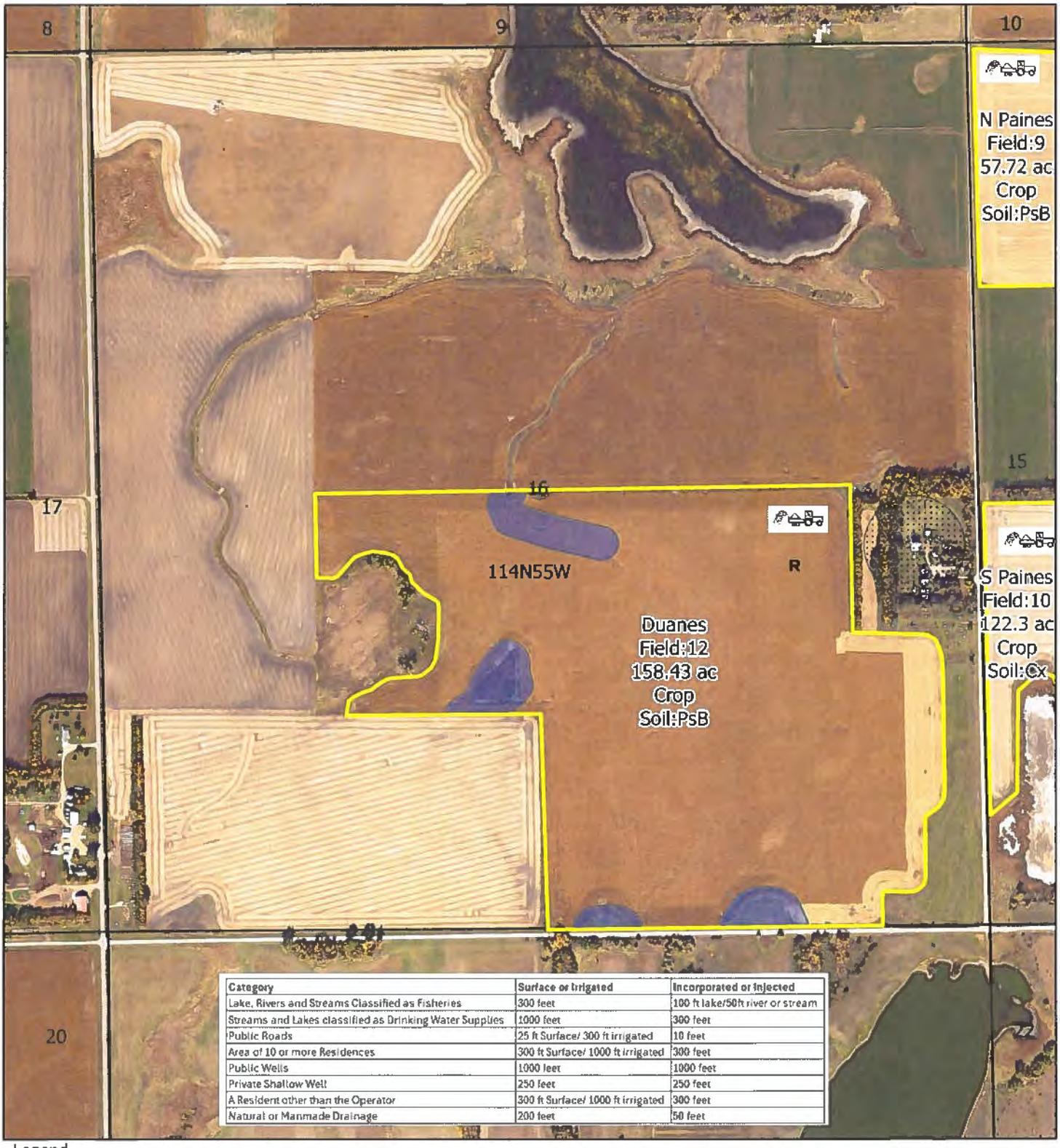
0 0.07 0.15 0.3 Miles

USDA

N
W E
S

Prepared with assistance from USDA-Natural Resources Conservation Service

Water Quality Risk Assessment Map
16-114N-55W



Category	Surface or Irrigated	Incorporated or Injected
Lake, Rivers and Streams Classified as Fisheries	300 feet	100 ft lake/50ft river or stream
Streams and Lakes classified as Drinking Water Supplies	1000 feet	300 feet
Public Roads	25 ft Surface/ 300 ft irrigated	10 feet
Area of 10 or more Residences	300 ft Surface/ 1000 ft irrigated	300 feet
Public Wells	1000 feet	1000 feet
Private Shallow Well	250 feet	250 feet
A Resident other than the Operator	300 ft Surface/ 1000 ft irrigated	300 feet
Natural or Manmade Drainage	200 feet	50 feet

Legend

- NMP Fields
- Manure Application
- R runoff
- L Leaching
- Exclusions
- Residence_Buffer

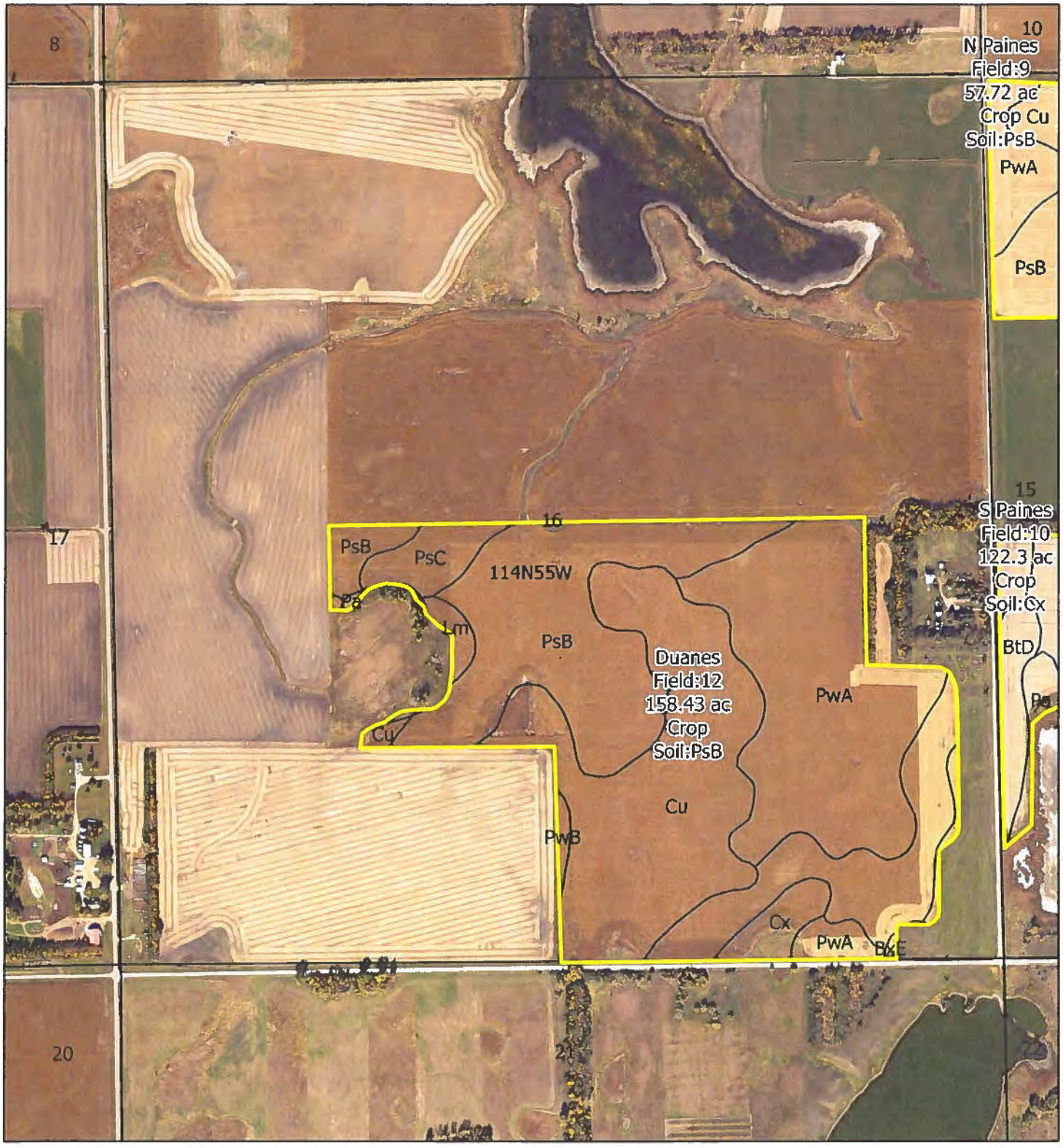
0 0.07 0.15 0.3 Miles

USDA

N
W E
S

Prepared with assistance from USDA-Natural Resources Conservation Service

Soils Map
16-114N-55W



Legend

NMP Fields

Soils Map

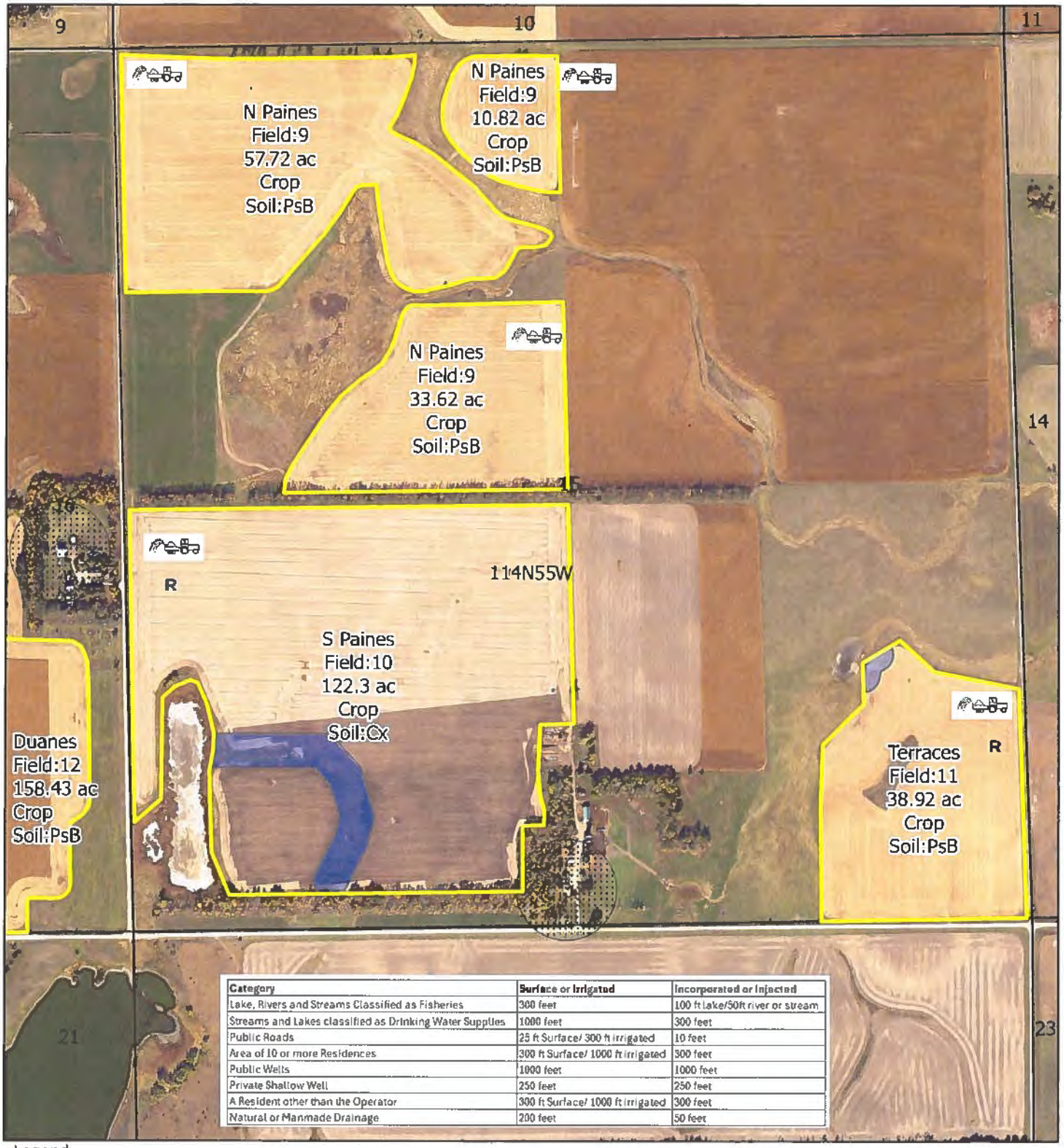
0 0.07 0.15 0.3 Miles

USDA

N
W E
S

Prepared with assistance from USDA-Natural Resources Conservation Service

Water Quality Risk Assessment Map
15-114N-55W



Category	Surface or Irrigated	Incorporated or Injected
Lake, Rivers and Streams Classified as Fisheries	300 feet	100 ft lake/50ft river or stream
Streams and Lakes classified as Drinking Water Supplies	1000 feet	300 feet
Public Roads	25 ft Surface/ 300 ft irrigated	10 feet
Area of 10 or more Residences	300 ft Surface/ 1000 ft irrigated	300 feet
Public Wells	1000 feet	1000 feet
Private Shallow Well	250 feet	250 feet
A Resident other than the Operator	300 ft Surface/ 1000 ft irrigated	300 feet
Natural or Manmade Drainage	200 feet	50 feet

Legend

- NMP Fields
- Manure Application
- R Runoff
- L Leaching
- Exclusions
- Residence_Buffer

0 0.07 0.15 0.3 Miles

USDA

N
W E
S

Prepared with assistance from USDA-Natural Resources Conservation Service

Soils Map
15-114N-55W

Legend

- NMP Fields
- Soils Map

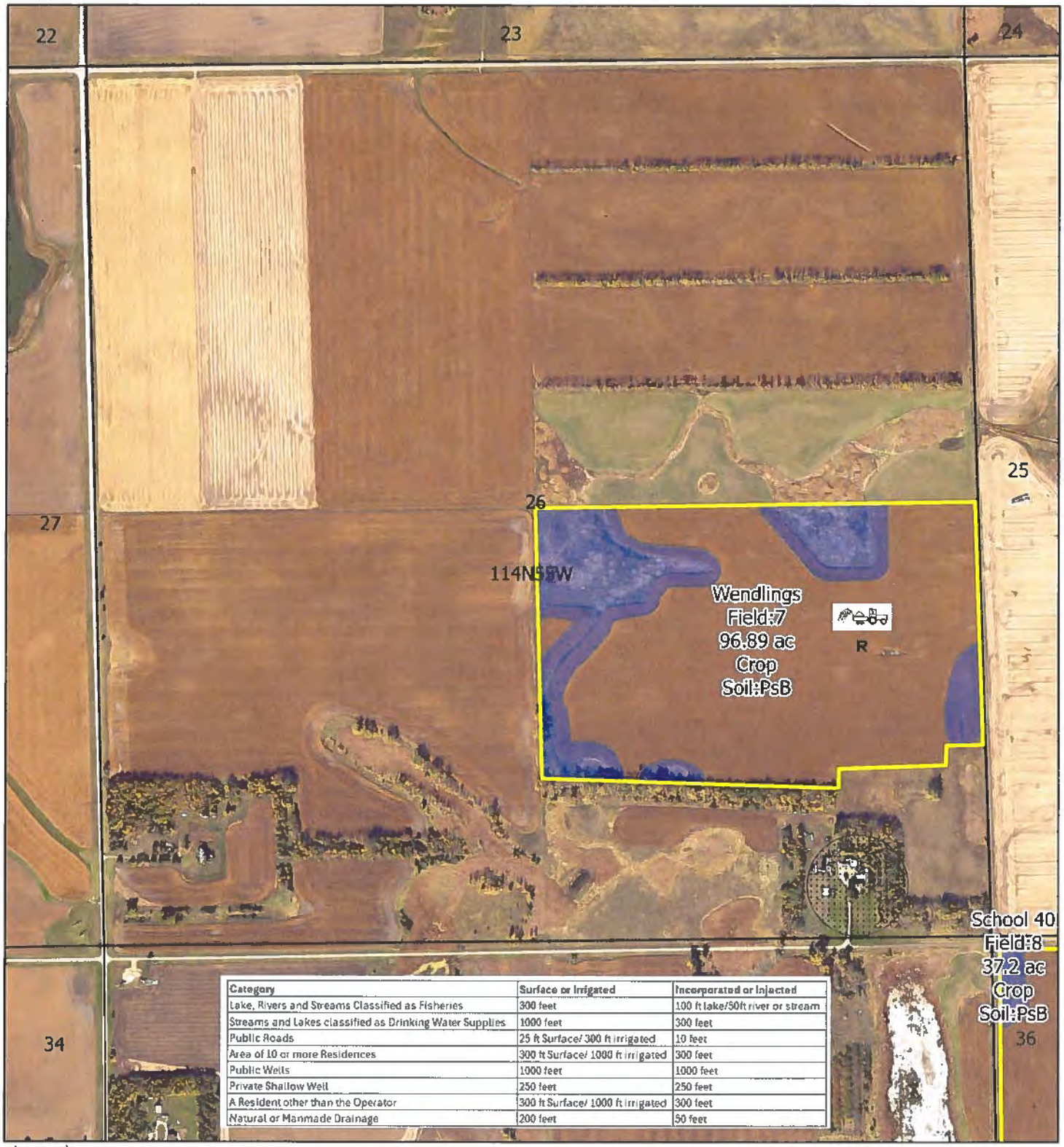
0 0.07 0.15 0.3 Miles

USDA

N
W E
S

Prepared with assistance from USDA-Natural Resources Conservation Service

Water Quality Risk Assessment Map
26-114N-55W



Category	Surface or Irrigated	Incorporated or Injected
Lake, Rivers and Streams Classified as Fisheries	300 feet	100 ft lake/50ft river or stream
Streams and Lakes classified as Drinking Water Supplies	1000 feet	300 feet
Public Roads	25 ft Surface/ 300 ft irrigated	10 feet
Area of 10 or more Residences	300 ft Surface/ 1000 ft irrigated	300 feet
Public Wells	1000 feet	1000 feet
Private Shallow Well	250 feet	250 feet
A Resident other than the Operator	300 ft Surface/ 1000 ft irrigated	300 feet
Natural or Manmade Drainage	200 feet	50 feet

Legend
- NMP Fields
- Manure Application
- R runoff
- L Leaching
- Exclusions
- Residence_Buffer

0 0.07 0.15 0.3 Miles

USDA

N
W E
S

Prepared with assistance from USDA-Natural Resources Conservation Service

Soils Map
26-114N-55W

Legend

NMP Fields

Soils Map

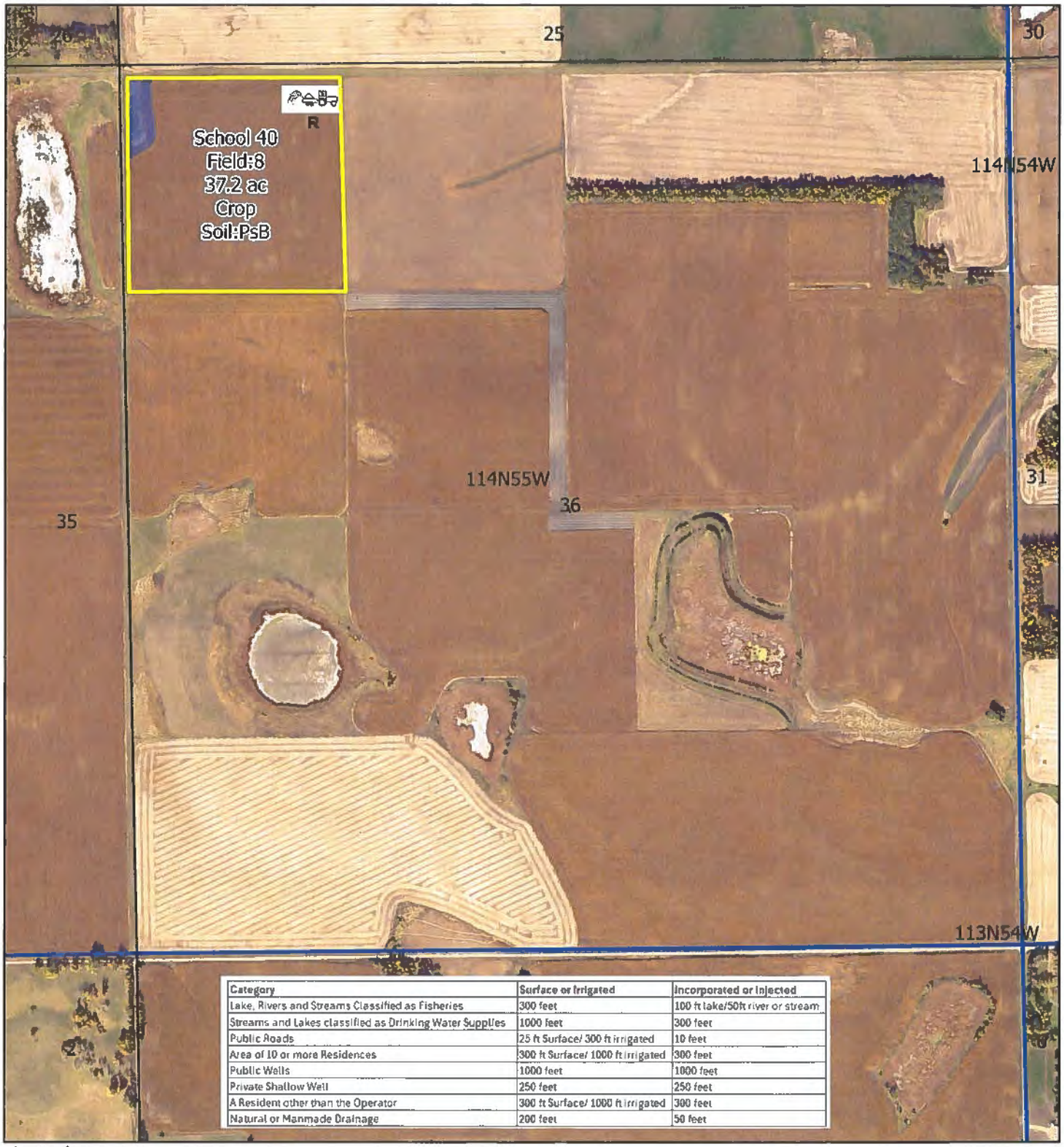
0 0.07 0.15 0.3 Miles

USDA

N W E S

Prepared with assistance from USDA-Natural Resources Conservation Service

Water Quality Risk Assessment Map
36-114N-55W



Category	Surface or Irrigated	Incorporated or Injected
Lake, Rivers and Streams Classified as Fisheries	300 feet	100 ft lake/50ft river or stream
Streams and Lakes classified as Drinking Water Supplies	1000 feet	300 feet
Public Roads	25 ft Surface/ 300 ft irrigated	10 feet
Area of 10 or more Residences	300 ft Surface/ 1000 ft irrigated	300 feet
Public Wells	1000 feet	1000 feet
Private Shallow Well	250 feet	250 feet
A Resident other than the Operator	300 ft Surface/ 1000 ft irrigated	300 feet
Natural or Manmade Drainage	200 feet	50 feet

Legend

- NMP Fields
- Manure Application
- R runoff
- L Leaching
- Exclusions
- Residence_Buffer

0 0.07 0.15 0.3 Miles

USDA

N W E S

Prepared with assistance from USDA-Natural Resources Conservation Service

Soils Map
36-114N-55W

Legend

NMP Fields

Soils Map

0 0.07 0.15 0.3 Miles

USDA

N
W E
S

Prepared with assistance from USDA-Natural Resources Conservation Service

NRCS
Natural
Resources
Conservation
Service

MITCHELL SERVICE CENTER
1820 N KIMBALL ST, Suite 4
MITCHELL, SD 57301-1114
(605) 996-1564 Ext 5

Record Of Decision

Conservation Practice Standard & Code:	590 - Nutrient Management

Annually plan nutrient applications according to South Dakota State University (SDSU) guidelines in order to obtain optimum nutrient utilization by crops and minimize leaching and runoff of nutrients to ground and surface waters and/or to properly utilize manure or organic byproducts as a plant nutrient source. Fields highly vulnerable for nitrates to leach into an aquifer are labeled with an "L" on the Water Quality Risk Assessment (WQRA) Map. Those highly vulnerable for phosphorus loss to surface waters are labeled with an "R" on the WQRA map. ALL FIELDS: Nutrient applications will be based on realistic yield goals. Take soil samples as recommended on the back of the SDSU Soil Sampling Information Sheet. If organic waste will be applied as fertilizer, sample and analyze the waste to determine the amount of N, P2O5 and K2O. FIELDS LABELED "L": A soil test must include a 0-4 ft. nitrate N sample prior to the application of nitrogen above starter application rates, OR take an annual 0-2 ft. sample within 4 weeks after crop harvest. Apply no nitrogen in the fall with the exception of starter applications, incidental N in commercial phosphorus applications or organic waste. FIELDS LABELED "R": Soil samples will be taken and analyzed for phosphorus at least every two years at a depth of 0-6 inches. Place P2O5 below the soil surface. Do not apply nutrients to frozen, snow-covered, or saturated soil if the potential exists for runoff. Control soil erosion below the soil loss tolerance. Do not apply manure or organic by-products within 100 feet of a surface water or conveyance; 35 feet if a perennial grass filter strip is established and maintained. Maintain filter strips at least 35 feet wide on the side of the field bordering a lake, river or stream. See SD CPA-63 for details of the annual nutrient management plan. For complete standards and specifications see: http://www.nrcs.usda.gov/technical/efotg/ or contact the local USDA-NRCS office.

Field Identifier	Planned Amount	Planned Date
Home	102.83	8/12/2025
Rick	122.9	8/12/2025
Jensen/Walts	251.2	8/12/2025
Fedts	77.42	8/12/2025
Genes	232.45	8/12/2025
Kyles Home	122.57	8/12/2025
Wendlings	96.89	8/12/2025
School 40	37.2	8/12/2025
N Paines	102.16	8/12/2025
S Paines	123.98	8/12/2025
Terraces	38.92	8/12/2025
Duanes	158.43	8/12/2025
Teschs35	281.6	8/12/2025

Producer Signature Date

CNMP Planner Signuture Date

Management Considerations for Nitrogen

Groundwater Concerns

The groundwater concern comes primarily from nitrogen. If not captured by plant roots, it can move down below the root zone and may enter the groundwater. The speed at which nitrate moves depends on the amount of precipitation and soil texture. Water moves through sandy soil much more rapidly than a clay soil.

Because nitrate moves through soil with water, it is extremely important that the rate applied, either as manure or fertilizer, does not exceed that which can be used by crops. Any nitrate remaining in the soil profile at the end of the season is subject to leaching.

Water Quality Risk Assessment Maps will be labeled with the symbol "L" on fields that are Vulnerable to N leaching.

If a field is determined highly vulnerable for nitrate leaching to an aquifer, all of the following management activities will be implemented:

1. Prior to the application of nitrogen above starter application rates, a nitrate nitrogen test **(zero to two foot and two to four foot sample)** will be taken and analyzed. **Or** an acceptable alternative to the zero to four feet sampling method would be to take a **zero to two foot sample every year within four weeks after crop harvest** prior to nitrogen applications above starter rates as recommended by SDSU.
2. Soil samples (zero to six inches) should also be included and analyzed for P and K. Soil samples will be taken as per land grant university recommendations found on the back of the SDSU Soil Testing Laboratory Soil Sample Information Sheet, or SDSU-FS935, "Recommended Soil Sampling Methods for South Dakota."

Nitrogen Best Management Practices

- Match manure nutrient applications to crop needs.
- Apply manure as close to the time of crop utilization as possible. If fields are located on soils that have a high leaching potential then no commercial fertilizer application is allowed more than 45 days prior to planting.
- Whenever possible try to split apply nitrogen.
- Use nitrification inhibitors if applicable.
- Delay fall manure applications until soil temperatures drop below 50°F to minimize nitrate leaching and ammonia volatilization.
- Avoid applying manure on wet soils to minimize soil compaction, runoff, nitrate leaching and denitrification.
- Inject or incorporate the manure into the soil preferably within 24 hours for maximum nutrient-use efficiency and to reduce odor and runoff problems. Significant volatilization losses will occur when manure is left on the surface for several days.

Nitrogen Recommendations Using Manure

Crops can contain large amounts of nitrogen (Table 4-1). In most cases only the grain is removed and the straw is returned to the soil, supplying nitrogen through mineralization in subsequent years. Because of this and the other sources of N such as nitrate N already in soil, soil organic matter, precipitation and legumes, crop removal alone is not a good estimate of the amount of N to apply.

Table 4-1 Nitrogen Contained in Crops

Crop	Plant Part		
	Grain	Straw	Total
	----------pounds N----------		
Corn (bu)	0.9	0.5	1.4
Soybeans (bu)	3.7	0.8	4.5
Wheat (bu)	1.6	0.8	2.6
Oats (bu)	0.9	0.4	1.3
Barley (bu)	1.1	0.4	1.5
Sunflowers (cwt)	2.8	2.4	5.2
Alfalfa (ton)	----	----	55
Grass (ton)	----	----	30

Table 4.2 Nitrogen Requirements of Crops

Crop	Unit	Nitrogen Required[1/]
Wheat	bu	2.5 x yield[2/]
Oats	bu	1.3 x yield
Barley		
malting	bu	1.5 x yield
feed	bu	1.7 x yield
Rye	bu	2.5 x yield
Flax	bu	3.0 x yield
Corn (grain)	bu	1.0 x yield
Corn (silage)	ton	8.9 x yield
Sorghum (grain)	bu	1.1 x yield
Sorghum, sudan (hay)	ton	25 x yield
Grass hay	ton	25 x yield
Sunflowers	lb	0.05 x yield
Edible beans	lb	0.05 x yield
Millet	lb	0.035 x yield
Rape	cwt	6.5 x yield
Mustard	cwt	6.5 x yield
Safflower	lb	0.05 x yield
Buckwheat	bu	2.2 x yield
Potatoes	cwt	0.4 x yield

1/ Available manure nitrogen or fertilizer nitrogen to apply is equal to the nitrogen requirement minus soil NO3-N to a 2-ft depth minus any legume credits.
2/ Yield goal

Management Considerations for Phosphorus

Surface Water Concerns
Surface water concerns focus primarily on Phosphorus. Phosphorus acts very differently in soils than nitrogen. It attaches tightly to soils and does not generally move down through the soil profile. This lack of movement through soils results in accumulations of phosphorus in soil if phosphorus rates, either from manure or fertilizer, are greater than crop removal.

Increases in phosphorus concentrations in soil can result in more phosphorus moving off the field either attached to soil particles lost by erosion or dissolved in the runoff water. In some situations phosphorus could move into surface waters with manure itself if the manure is applied in such a manner that it moves directly into waterways.

Water Quality Risk Assessment Maps will be labeled with the symbol "R" on fields that are vulnerable to Phosphorus runoff.

1. In no case shall manure or organic byproduct applications (broadcast or incorporated/injected) be made within 100 feet of a surface water or conveyance; 35 feet if a perennial grass filter strip is established and maintained.
2. A minimum of a 35-foot wide perennial grass filter strip is required in all cases on the edges of fields that border a lake, river, or intermittent/perennial stream.
3. In selected cases based on **SD Phosphorus Loss Risk Assessment**, depending on soil test phosphorus and estimated soil loss in a field, a perennial grass filter strip may be required within 100 feet of surface water or conveyance if manure is applied based on nitrogen needs of a crop and not crop removal of phosphorus.

Phosphorus Based Manure Application
If the manure application is required to be based on phosphorus crop removal, the application rate shall be based on phosphorus removed in the harvested portion of the crop.

Application can be based on multi-year phosphorus crop removal, but cannot exceed the one year nitrogen crop need, and no manure may be applied to that field again until the applied phosphorus has been removed from the field via harvest and crop removal.
***(See SD Phosphorus Loss Risk Assessment* for additional information)**
Usually fields with High soil test P and/or high runoff potential.

Phosphorus Best Management Practices

- Establish and maintain grass filter strips at the point where water leaves the field to trap sediment and nutrients.
- Control sheet and rill erosion by installing conservation practices including conservation tillage, contour farming, strip cropping, terraces and cover crops.
- Control ephemeral erosion by installing grassed waterways, diversions and sediment retention structures.
- Incorporate or inject manure and commercial fertilizer where possible while maintaining sufficient crop residue levels for erosion control.
- Grow high yielding, high phosphorus removing crops on fields with already high soil test phosphorus to reduce test levels.

How Phosphorus affects Soils Tests

Phosphorus rate recommendations are based on the phosphorus soil test. This test is an index of availability of phosphorus to plants. It is not a measure of total available phosphorus or total phosphorus in soil. However, as total phosphorus levels increase in soils, the soil test index usually increases also. These categories represent a decreasing probability of a yield response to broadcast fertilizer or manure. The probability of response is from about 80 percent at the very low soil test level to less than a 20 percent chance when soil tests are in the very high range.

Table 4.3 Soil Test Calibration Levels Used for Phosphorus and Potassium in SD

Nutrient	Name of Soil Test	Categories				
		Very Low	Low	Medium	High	Very High
		----------ppm extractable (0-6 inch sample)----------				
Phosphorus	Bray P-1	0 - 5	6 - 10	11 - 15	16 - 20	21+
Phosphorus	Olsen	0 – 3	4 – 7	8 – 11	12 – 15	16+
Potassium	NH_4Ac	0 – 40	41 – 80	81 – 120	121 – 160	161+

If phosphorus is applied at rates greater than crop removal (Table 4-4), phosphorus soil test levels will increase. As a very general rule of thumb, **for every 20 pounds of phosphorus (P_2O_2) applied and not removed by crops, the soil test index will increase by 1 part per million (ppm)**.

Following a good nitrogen application plan with manure in South Dakota can often result in a one to three ppm increase per year in the phosphorus soil test.

As the phosphorus soil test index increases, the possibility of moving significant amounts of phosphorus off the field to surface water usually increases. The movement is both phosphorus attached to soil particles lost with erosion and phosphorus dissolved in the runoff water.

From 60 to 80 percent of the phosphorus in most manure is available to plants within the first year of application. After several years of application, the amount of phosphorus available to plants from manure is equal to that applied with the manure each year.

1/ Source: Jim Gerwing, Extension Soil Specialist Ron Gelderman, Director, Soil Testing Lab, South Dakota State University

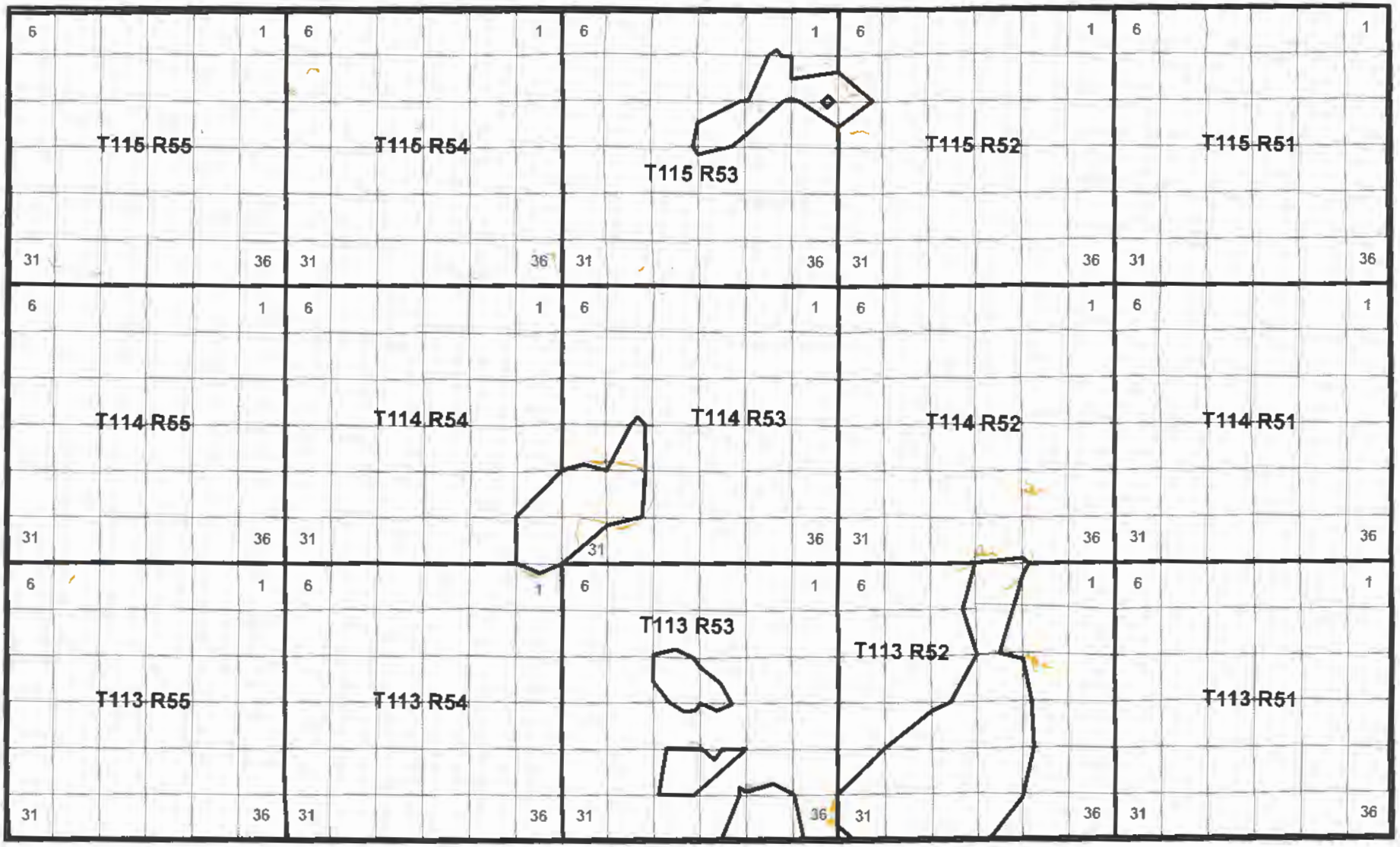
Table 4-4 Phosphorus Content of the Harvest Portion of Crops

Crop	P2O2 (lbs)
Alfalfa (per ton)	12
Buckwheat (per bu)	0.53
Canola (per cwt)	1.5
Corn Grain (per bu)	0.35
Corn Silage (per ton)	4.3
Edible Beans (per cwt)	1.25
Feed Barley (per bu)	0.41
Flax (per bu)	0.7
Forage Sorghum (per ton)	5.8
Grass (per ton)	10
Malting Barley (per bu)	0.41
Millet (per cwt)	0.83
Mustard (per cwt)	1.5
Oats (per bu)	0.25
Potatoes (per cwt)	0.09
Rapeseed (per cwt)	1.5
Rye (per bu)	0.48
Safflower (per cwt)	1.14
Sorghum (per bu)	0.27
Soybean (per bu)	0.77
Sudan Grass (per ton)	5.8
Sunflowers (per cwt)	1.14
Wheat (per bu)	0.56

U.S Department of Agriculture

Natural Resources Conservation Service

Hamlin County WEI 134 or Greater



Legend

- Hamlin County WEI 134 or greater
- Township boundaries
- Sections

0 2.5 5 10

Miles

N

Map Produced by USDA/NRCS
South Dakota State Office
Geographic Information System, Sept 2015

Producer:

Explanation: RUSLE2 were ran per field and soils types. When the model is ran per field with same management in the same county RUSLE 2 values will be the same. Below is a table listing the soil type, RULSE2 value, and the corresponding fields.

Soil Type	Rotation	RUSLE 2 (T/ac/yr)	Fields													
PsB	C-Silage -SB	2.4	1	2	3	4	5									
PsB	C-SB	1.7	6	7	8	9	11	12								
Cx	C-SB	1.7	10													
Co	C-SB	1.4	13													

RUSLE2 Profile Erosion Calculation Record

Info: Popham; PsB, C-SB

Inputs: **File:** profiles\Hamlin
Location: USA\South Dakota\Hamlin County
Soil: SSURGO\Hamlin County, South Dakota\PsB Poinsett-Buse-Waubay complex, 1 to 6 percent slopes\Poinsett Silty clay loam 40%
T value: 5.0 t/ac/yr
Slope length (horiz): 400 ft
Avg. slope steepness: 3.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\b.Mullti-year Rotation Templates\Corn-Soybeans\CB mulch till\corn grain; Sfcult, soybean, wr, FC, st pt, fcult z4	vegetations\Corn, grain	bushels	112.00
managements\CMZ 04\b.Mullti-year Rotation Templates\Corn-Soybeans\CB mulch till\corn grain; Sfcult, soybean, wr, FC, st pt, fcult z4	vegetations\Soybean, rnw 30 in rows	bu	30.000

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Adjust res. burial level: Normal res. burial

Outputs:
Soil loss for cons. plan: 1.7 t/ac/yr Sediment delivery: 1.7 t/ac/yr
Net C factor: 0.12
Net K factor: 0.27 US
Net LS factor: 0.53

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
11/1/1	Fert applic. surface broadcast		74
5/1/2	Cultivator, field 6-12 in sweeps		48
5/1/2	Sprayer, pre-emergence		48
5/1/2	planter, double disk opnr	Corn, grain	48
6/7/2	Sprayer, post emergence and fert. tank mix		44
10/20/2	Harvest, killing crop 50pct standing stubble		73
11/1/2	Chisel, st. pt.		47
5/1/3	Cultivator, field 6-12 in sweeps		47

5/10/3	Sprayer, pre-emergence		51
5/10/3	planter, double disk opnr	Soybean, mw 30 in rows	51
6/7/3	Sprayer, post emergence		56
8/1/3	Sprayer, insecticide post emergence		43
10/10/3	Harvest, killing crop 20pct standing stubble		77

Soil conditioning index (SCI): 0.388
Wind & irrigation-induced erosion for SCI: 0 t/ac/yr
SCI OM subfactor: 0.31
SCI FO subfactor: 0.49
SCI ER subfactor: 0.34
Avg. annual slope STIR: 51.8

The SCI is the Soil Conditioning Index rating. If the calculated index is a negative value, soil organic matter levels are predicted to decline under that production system. If the index is a positive value, soil organic matter levels are predicted to increase under that system.

The STIR value is the Soil Tillage Intensity Rating. It utilizes the speed, depth, surface disturbance percent and tillage type parameters to calculate a tillage intensity rating for the system used in growing a crop or a rotation. STIR ratings tend to show the differences in the degree of soil disturbance between systems. The kind, severity and number of ground disturbing passes are evaluated for the entire cropping rotation as shown in the management description.

RUSLE2 Profile Erosion Calculation Record

Info: Popham; Cx, C-SB

Inputs: **File:** profiles\Hamlin
Location: USA\South Dakota\Hamlin County
Soil: SSURGO\Hamlin County, South Dakota\Cx Cubden-Tonka silty clay loams, coteau, 0 to 2 percent slopes\Cubden Silty clay loam 55%
T value: 5.0 t/ac/yr
Slope length (horiz): 400 ft
Avg. slope steepness: 3.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\b.Mullti-year Rotation Templates\Corn-Soybeans\CB mulch till\corn grain; Sfcult, soybean, wr, FC, st pt, fcult z4	vegetations\Corn, grain	bushels	112.00
managements\CMZ 04\b.Mullti-year Rotation Templates\Corn-Soybeans\CB mulch till\corn grain; Sfcult, soybean, wr, FC, st pt, fcult z4	vegetations\Soybean, mw 30 in rows	bu	30.000

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Adjust res. burial level: Normal res. burial

Outputs:
Soil loss for cons. plan: 1.7 t/ac/yr Sediment delivery: 1.7 t/ac/yr
Net C factor: 0.12
Net K factor: 0.27 US
Net LS factor: 0.53

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
11/1/1	Fert applic. surface broadcast		74
5/1/2	Cultivator, field 6-12 in sweeps		48
5/1/2	Sprayer, pre-emergence		48
5/1/2	planter, double disk opnr	Corn, grain	48
6/7/2	Sprayer, post emergence and fert. tank mix		44
10/20/2	Harvest, killing crop 50pct standing stubble		73
11/1/2	Chisel, st. pt.		47
5/1/3	Cultivator, field 6-12 in sweeps		47

5/10/3	Sprayer, pre-emergence		51
5/10/3	planter, double disk opnr	Soybean, mw 30 in rows	51
6/7/3	Sprayer, post emergence		56
8/1/3	Sprayer, insecticide post emergence		43
10/10/3	Harvest, killing crop 20pct standing stubble		77

Soil conditioning index (SCI): 0.388
Wind & irrigation-induced erosion for SCI: 0 t/ac/yr
SCI OM subfactor: 0.31
SCI FO subfactor: 0.49
SCI ER subfactor: 0.34
Avg. annual slope STIR: 51.8

The SCI is the Soil Conditioning Index rating. If the calculated index is a negative value, soil organic matter levels are predicted to decline under that production system. If the index is a positive value, soil organic matter levels are predicted to increase under that system.

The STIR value is the Soil Tillage Intensity Rating. It utilizes the speed, depth, surface disturbance percent and tillage type parameters to calculate a tillage intensity rating for the system used in growing a crop or a rotation. STIR ratings tend to show the differences in the degree of soil disturbance between systems. The kind, severity and number of ground disturbing passes are evaluated for the entire cropping rotation as shown in the management description.

RUSLE2 Profile Erosion Calculation Record

Info: Popham; Co, C-SB

Inputs: **File:** profiles\Hamlin
Location: USA\South Dakota\Hamlin County
Soil: SSURGO\Hamlin County, South Dakota\Co Colvin-Oldham silty clay loams\Colvin Silty clay loam 50%
T value: 5.0 t/ac/yr
Slope length (horiz): 400 ft
Avg. slope steepness: 3.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\CMZ 04\b.Mullti-year Rotation Templates\Corn-Soybeans\CB mulch till\corn grain; Sfcult, soybean, wr, FC, st pt, fcult z4	vegetations\Corn, grain	bushels	112.00
managements\CMZ 04\b.Mullti-year Rotation Templates\Corn-Soybeans\CB mulch till\corn grain; Sfcult, soybean, wr, FC, st pt, fcult z4	vegetations\Soybean, mw 30 in rows	bu	30.000

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Adjust res. burial level: Normal res. burial

Outputs:
Soil loss for cons. plan: 1.4 t/ac/yr Sediment delivery: 1.4 t/ac/yr
Net C factor: 0.12
Net K factor: 0.24 US
Net LS factor: 0.52

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
11/1/1	Fert applic. surface broadcast		74
5/1/2	Cultivator, field 6-12 in sweeps		48
5/1/2	Sprayer, pre-emergence		48
5/1/2	planter, double disk opnr	Corn, grain	48
6/7/2	Sprayer, post emergence and fert. tank mix		44
10/20/2	Harvest, killing crop 50pct standing stubble		73
11/1/2	Chisel, st. pt.		47
5/1/3	Cultivator, field 6-12 in sweeps		47

5/10/3	Sprayer, pre-emergence		51
5/10/3	planter, double disk opnr	Soybean, mw 30 in rows	51
6/7/3	Sprayer, post emergence		56
8/1/3	Sprayer, insecticide post emergence		43
10/10/3	Harvest, killing crop 20pct standing stubble		77

Soil conditioning index (SCI): 0.406
Wind & irrigation-induced erosion for SCI: 0 t/ac/yr
SCI OM subfactor: 0.31
SCI FO subfactor: 0.49
SCI ER subfactor: 0.43
Avg. annual slope STIR: 51.8

The SCI is the Soil Conditioning Index rating. If the calculated index is a negative value, soil organic matter levels are predicted to decline under that production system. If the index is a positive value, soil organic matter levels are predicted to increase under that system.

The STIR value is the Soil Tillage Intensity Rating. It utilizes the speed, depth, surface disturbance percent and tillage type parameters to calculate a tillage intensity rating for the system used in growing a crop or a rotation. STIR ratings tend to show the differences in the degree of soil disturbance between systems. The kind, severity and number of ground disturbing passes are evaluated for the entire cropping rotation as shown in the management description.

RUSLE2 Profile Erosion Calculation Record

Info: Popham; PsB, C-CSilage-SB

Inputs: **File:** profiles\Hamlin
Location: USA\South Dakota\Hamlin County
Soil: SSURGO\Hamlin County, South Dakota\PsB Poinsett-Buse-Waubay complex, 1 to 6 percent slopes\Poinsett Silty clay loam 40%
T value: 5.0 t/ac/yr
Slope length (horiz): 400 ft
Avg. slope steepness: 3.0 %

Management	*Vegetation*	*Yield units*	*# yield units, #/ac*
managements\temp\corn grain;Sdisk, fcult, soybean, wr, FC, st pt, disk, fcult z4#2;corn silage	vegetations\Corn, silage	tons	23.000
managements\temp\corn grain;Sdisk, fcult, soybean, wr, FC, st pt, disk, fcult z4#2;corn silage	vegetations\Corn, grain	bushels	112.00
managements\temp\corn grain;Sdisk, fcult, soybean, wr, FC, st pt, disk, fcult z4#2;corn silage	vegetations\Soybean, mw 30 in rows	bu	30.000

Contouring: a. rows up-and-down hill
Strips/barriers: (none)
Diversion/terrace, sediment basin: (none)
Adjust res. burial level: Normal res. burial

Outputs:
Soil loss for cons. plan: 2.4 t/ac/yr Sediment delivery: 2.4 t/ac/yr
Net C factor: 0.17
Net K factor: 0.27 US
Net LS factor: 0.55

Date	*Operation*	*Vegetation*	*Surf. res. cov. after op, %*
11/1/1	Fert applic. surface broadcast		74
11/2/1	Chisel, st. pt.		33
4/28/2	Disk, tandem light finishing		12
5/1/2	Sprayer, pre-emergence		12
5/2/2	planter, double disk opnr	Corn, silage	12
6/7/2	Sprayer, post emergence and fert. tank mix		8.1

9/15/2	Harvest, silage		27
11/1/2	Fert applic. surface broadcast		28
4/28/3	Disk, tandem secondary op.		17
4/30/3	Cultivator, field 6-12 in sweeps		15
5/1/3	Sprayer, pre-emergence		15
5/2/3	planter, double disk opnr	Corn, grain	15
6/7/3	Sprayer, post emergence and fert. tank mix		24
10/20/3	Harvest, killing crop 50pct standing stubble		72
11/1/3	Chisel, st. pt.		47
5/1/4	Cultivator, field 6-12 in sweeps		47
5/10/4	Sprayer, pre-emergence		47
5/11/4	planter, double disk opnr	Soybean, mw 30 in rows	51
6/7/4	Sprayer, post emergence		55
8/1/4	Sprayer, insecticide post emergence		43
10/10/4	Harvest, killing crop 20pct standing stubble		77

Soil conditioning index (SCI): 0.187
Wind & irrigation-induced erosion for SCI: 0 t/ac/yr
SCI OM subfactor: 0.12
SCI FO subfactor: 0.33
SCI ER subfactor: 0.039
Avg. annual slope STIR: 68.0

The SCI is the Soil Conditioning Index rating. If the calculated index is a negative value, soil organic matter levels are predicted to decline under that production system. If the index is a positive value, soil organic matter levels are predicted to increase under that system.

The STIR value is the Soil Tillage Intensity Rating. It utilizes the speed, depth, surface disturbance percent and tillage type parameters to calculate a tillage intensity rating for the system used in growing a crop or a rotation. STIR ratings tend to show the differences in the degree of soil disturbance between systems. The kind, severity and number of ground disturbing passes are evaluated for the entire cropping rotation as shown in the management description.

Section 3
Nutrient Management Plan (590)

- ☐ 3.1 Nitrogen and Phosphorus Risk Analysis Results (Leaching Map, Floodplain Map, Soil >4% Map, SD Phosphorus Index, Well Inventory)
- ☐ 3.2 Manure Application Setback Distance
- ☐ 3.3 Soil Test Result Data
- ☐ 3.4 Manure Nutrient Analysis
- ☐ 3.5 - 3.10 Planned Crops, Fertilizer Recommendations, Nutrient Applications, Field Nutrient Balance, Manure Inventory, Fertilizer Summary, and Plan Nutrient Balance (SD-CPA-63)
- ☐ Alternative System Guide (If DENR Permit)
- ☐

South Dakota Phosphorus Loss Risk Assessment						
Soil Test Phosphorus (ppm)		Predicted annual erosion = sum of wind and water				
		<6 *tons per acre per year*		6 - 8 *tons per acre per year*		>8 *tons per acre per year*
		100' vegetative buffer		100' vegetative buffer		
Olson	Bray-1	yes	no	yes	no	
0-25	0-35	Low	Low	Low	Low	Moderate
26-50	36-75	Low	Low	Low	Moderate	High
51-75	76-110	Low	Moderate	Moderate	Moderate	High
76-100	111-150	High	High	High	High	No application
>100	>150	No application	No application	No application	No application	No application

Low Risk - Phosphorus can be applied at rates greater than crop phosphorus removal not to exceed the nitrogen requirement for the succeeding crop.

Moderate Risk - Phosphorus can be applied not to exceed crop phosphorus removal for up to a 5 year crop sequence. Application cannot exceed the nitrogen requirement for the succeeding crop.

High Risk - Phosphorus can be applied not to exceed one year crop phosphorus removal. Application cannot exceed the nitrogen requirement for the succeeding crop. The following requirements must also be met: 1. A soil phosphorus drawdown strategy has been implemented. 2. A site assessment for nutrients & soil loss has been conducted to determine if mitigation practices are required to protect water quality. 3. Any deviation from these high risk requirements must have the approval of the Chief of the NRCS.

Planning Considerations:

Wind erosion (WEPS) should be completed for all fields with predominate soils of I =>134 or if a wind erosion resource concern exists.

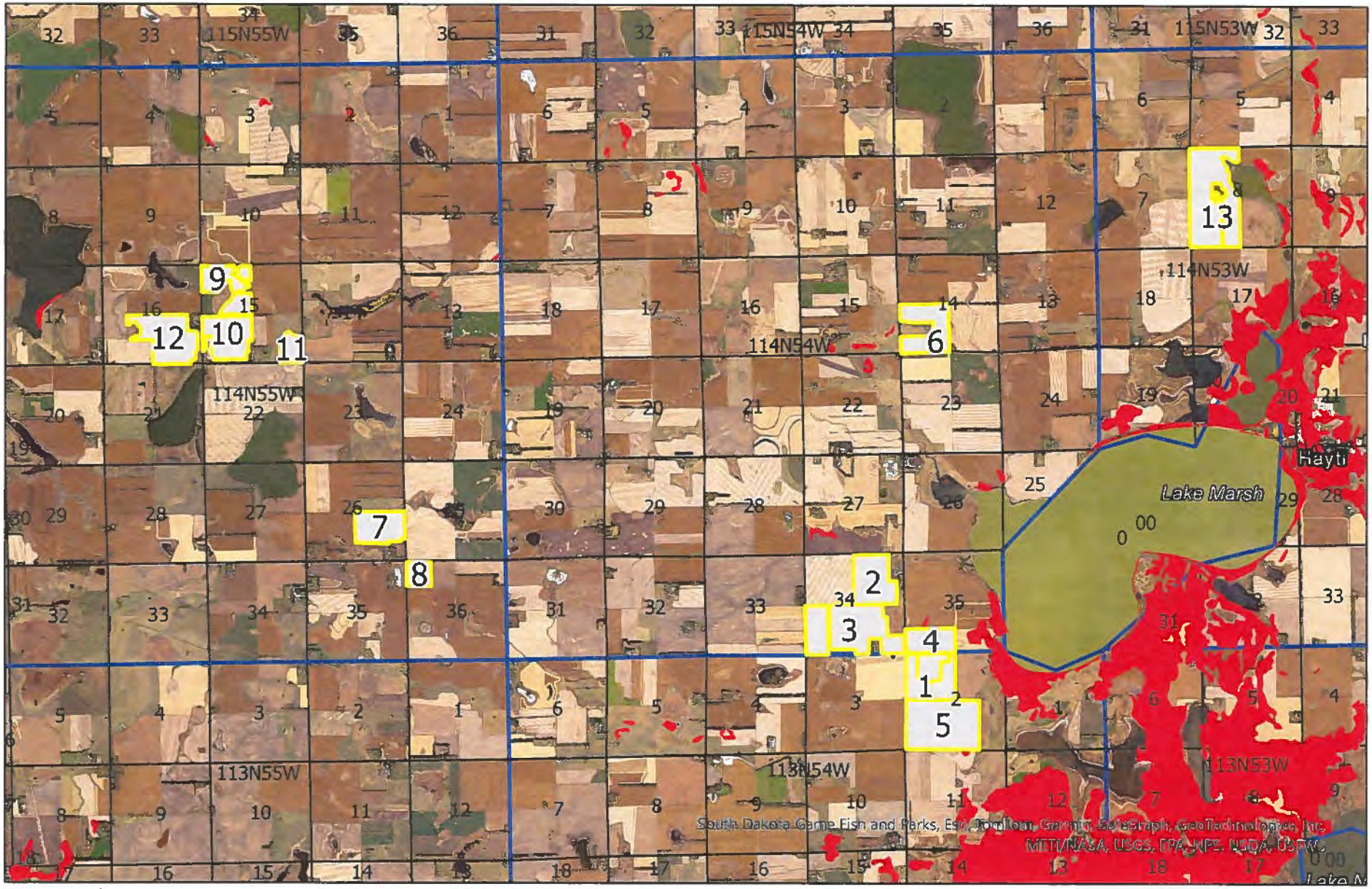
Crop removal is the amount of phosphorus used in one crop year according to SDSU-Extra 8009, "Quantities of Nutrients Contained in Crops."

All fertilizer phosphorus sources should be placed below the soil surface. However, surface application is permitted on no-till cropland, pastureland, or hayland. In all other cropland tillage systems, phosphorus sources will be placed below the soil surface.

Winter manure applications are allowed only when all of the following conditions are met: 1. When incidental amounts of manure is collected during feedlot snow removal or cleaning of feed bunks or enclosed pens to facilitate livestock feeding and handling. 2. Winter manure applications will not exceed the rate per acre calculated in the nutrient budget for the application field based on fall soil test results. 3. Set back distances from surface waters or water conveyances will be 300 ft and 1,000 ft from named lakes, rivers, and perennial streams. 4. Winter manure applications are prohibited on floodplains with soils classified as frequently or occasionally flooded as listed in National Cooperative Soil Survey. 5. Applications will only be allowed on fields with slopes less than 4 % slope and be prioritized based on the water erosion prediction technology as listed in the SD tech guide. 6. Fields with lowest predicted soil loss (water erosion) will generally have the highest priority for winter applications. 7. Manure will be uniformly spread.

December 2012

Leaching Map



Prepared with assistance from USDA-Natural Resources Conservation Service

Section 3.1 Inventory of Water Wells

Field ID	Location (Legal)	Well Depth (Ft.)	Use of Well	Required Setback Distance From Well For Manure Application (Ft.)	
				County Rule	State Rule
HQ	NW 2-113-54		Producer Owned	250	25

County Rule

Refer to the following website:
http://sdda.sd.gov/farming-ranching-agribusiness/county-ordinances/

State Rule

DENR General Permit 1.4.3 3.v Surface Water Protection (page 22 & 23)
Wastewater and manure containment structures or the manure and wastewater application sites cannot be located closer than **1,000 feet from an existing public water well** or drinking water source nor **250 feet from an existing private water well** or drinking water source. Wastewater and manure containment structures and the manure and wastewater application sites shall not be located closer than **150 feet from a water well or drinking water source that is owned by the producer.**
These setback requirements do not apply to wastewater and manure containment structures constructed prior to August 14, 1996.

Buffer and Setback Requirements

Specific buffer zone and/or setback distances applicable to land application of manure are as follows:

Alternative Chosen by Producer

Option 1

■ • Do not apply manure (broadcast or incorporated) within **100-feet** of surface water or on either side of a conveyance.

-Or-

Option 2

☐ • Establish and maintain a minimum **35-foot wide (quality) perennial grass filter strip** next to surface water or on either side of a conveyance; an area within which manure will not be applied.

Option 3

☐ • The livestock operator may choose to maintain or establish a minimum **100-foot wide perennial grass filter strip** in select cases where the soil test phosphorus and potential soil erosion in the field are such as to allow application of manure based on multiple years of phosphorus crop removal (not to exceed N needs of crop). See Table I in the Manure Application Planning section of this plan.

Review and comply with other specific setback requirements in the current South Dakota **General Livestock Permit** regulations or your **local county zoning ordinance** when dealing with state and locally permitted facilities.

Popham Agronomics

Analysis by AGVISE Laboratories
www.agvise.com
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

Field ID: **Fedts**
Field Name:
Sample ID:
County: Section: **0**
Township: Quarter:
Range: Acres:
Previous Crop: **Corn-Silage**

N W E S

SUBMITTED FOR:

Bob Popham
Hayti, SD

SUBMITTED BY:

POPHAM AGRONOMICS **P05356**
18668 446TH AVE
HAYTI, SD 57241

Ref #: **4176865**
Box #: **4320**
Lab #: **BN114905**

Date Sampled: Date Received: **9/22/2023** Date Reported: **9/23/2023**

Nutrient In The Soil		Interpretation			
		VLow	Low	Med	High
0-6"	10 lb/acre				
6-24"	21 lb/acre				
0-24"	31 lb/acre	•••••	•••••	•••••	
Nitrate					
Olsen	27 ppm	•••••	•••••	•••••	•••••
Phosphorus					
Potassium	196 ppm	•••••	•••••	•••••	•••••
Chloride					
0-6"	36 lb/acre	•••••	•••••	•••••	••
6-24"	120 lb/acre	•••••	•••••	•••••	•••••
Sulfur					
Boron					
Zinc	3.27 ppm	•••••	•••••	•••••	•••••
Iron					
Manganese					
Copper					
Magnesium	682 ppm	•••••	•••••	•••••	•••••
Calcium	4847 ppm	•••••	•••••	•••••	•••••
Sodium	21 ppm	•••			
Org. Matter	4.4 %	•••••	•••••	•••••	
Carbonate (CCE)					
0-6"	0.35 mmho/cm	•••••	••		
6-24"	0.4 mmho/cm	•••••	••••		
Sol. Salts					

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Corn-Grain			Corn-Grain			Corn-Grain		
YIELD GOAL			YIELD GOAL			YIELD GOAL		
195 BU			195 BU			195 BU		
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Broadcast			Broadcast/Maint.			University		
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	184	Customized	N	242	Customized	N	205	
P_2O_5	0		P_2O_5	72	Broadcast	P_2O_5	15	Band (2x2) *
K_2O	39	Broadcast	K_2O	45	Broadcast	K_2O	10	Band (2x2) *
Cl			Cl			Cl		
S	0		S	0		S	0	
B			B			B		
Zn	0		Zn	0		Zn	0	
Fe			Fe			Fe		
Mn			Mn			Mn		
Cu			Cu			Cu		
Mg	0		Mg	0		Mg	0	
Lime	0		Lime	0		Lime	0	

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 7.7 6-24" 8.1		30.5 meq	(65-75) 79.4	(15-20) 18.6	(1-7) 1.6	(0-5) 0.3	(0-5) 0.0

General Comments: Soil texture is not estimated on high pH soils.

Crop 1: Nitrogen guideline customized by the submitter. Crop nutrient removal: P2O5 = 72 K2O = 45 AGVISE Broadcast guideline will build P & K test levels to the high range over several years.

Crop 2: Nitrogen guideline customized by the submitter. Crop nutrient removal: P2O5 = 72 K2O = 45 AGVISE Broadcast/Maintenance guideline will build P & K test levels to the high range over several years and then maintain them.

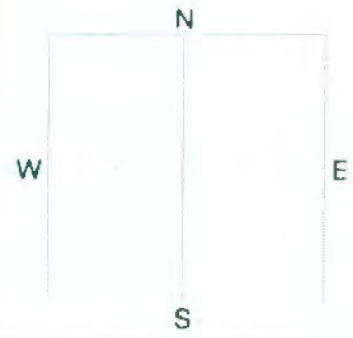
Crop 3: *CAUTION: Seed-placed fertilizer can cause injury.* Crop nutrient removal: P2O5 = 72 K2O = 45 University guideline will build P & K soil test levels to the medium range over several years.

Popham Agronomics

Analysis by AGVISE Laboratories
www.agvise.com
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

Field ID: **Duanes Home**
Field Name:
Sample ID:
County: Section: **0**
Township: Quarter:
Range: Acres:
Previous Crop: **Corn-Grain**



SUBMITTED FOR:
Popham Farms n Livestock
Hayti, SD

SUBMITTED BY:
POPHAM AGRONOMICS **PO5356**
18668 446TH AVE
HAYTI, SD 57241

Ref #: **5398847**
Box #: **761**
Lab #: **BN210557**

Date Sampled:
Date Received: **10/23/2024**
Date Reported: **10/28/2024**

Nutrient In The Soil		Interpretation			
		VLow	Low	Med	High
0-6" / 6-24" Nitrate	7 lb/acre / 24 lb/acre 0-24": 31 lb/acre	******	******	*****	
Olsen Phosphorus	7 ppm	******	******		
Potassium	175 ppm	******	******	******	***
Chloride					
0-6" / 6-24" Sulfur	120 +lb/acre / 360 +lb/acre	******	******	******	******
Boron					
Zinc	0.67 ppm	******	******	*	
Iron					
Manganese					
Copper					
Magnesium	875 ppm	******	******	******	******
Calcium	5955 ppm	******	******	******	******
Sodium	45 ppm	******	*		
Org. Matter	3.6 %	******	******	**	
Carbonate (CCE)					
0-6" / 6-24" Soil Salts	1.27 mmho/cm / 1.6 mmho/cm	******	******	******	** / ***

1st Crop Choice		
Soybeans		
YIELD GOAL		
50 BU		
SUGGESTED GUIDELINES		
Broadcast		
LB/ACRE		APPLICATION
N	***	
P_2O_5	72	Broadcast
K_2O	34	Broadcast
Cl		
S	0	
B		
Zn	1	Broadcast
Fe		
Mn		
Cu		
Mg	0	
Lime	0	

2nd Crop Choice		
Soybeans		
YIELD GOAL		
50 BU		
SUGGESTED GUIDELINES		
Broadcast/Maint		
LB/ACRE		APPLICATION
N	***	
P_2O_5	72	Broadcast
K_2O	59	Broadcast
Cl		
S	0	
B		
Zn	1	Broadcast
Fe		
Mn		
Cu		
Mg	0	
Lime	0	

3rd Crop Choice		
Soybeans		
YIELD GOAL		
50 BU		
SUGGESTED GUIDELINES		
University		
LB/ACRE		APPLICATION
N	***	
P_2O_5	30	Broadcast
K_2O	25	Broadcast
Cl		
S	0	
B		
Zn		Not Available
Fe		
Mn		
Cu		
Mg	0	
Lime	0	

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 7.3 6-24" 7.6		37.7 meq	(65-75) 78.9	(15-20) 19.3	(1-7) 1.2	(0-5) 0.5	(0-5) 0.0

General Comments: Fine-textured (CEC: 31+ meq) Percent hydrogen is estimated from water pH, CEC corrected for exchangeable acidity.
Crop 1: Crop nutrient removal: P2O5 = 38 K2O = 59 AGVISE Broadcast guideline will build P & K test levels to the high range over several years.
Crop 2: Crop nutrient removal: P2O5 = 38 K2O = 59 AGVISE Broadcast/Maintenance guideline will build P & K test levels to the high range over several years and then maintain them.
Crop 3: Crop nutrient removal: P2O5 = 38 K2O = 59 University guideline will build P & K soil test levels to the medium range over several years.

Popham Agronomics

Analysis by AGVISE Laboratories
www.agvise.com
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

Field ID: **Paines North Trees**
Field Name:
Sample ID:
County: Section: **0**
Township: Quarter:
Range: Acres:
Previous Crop: **Corn-Grain**

N W E S

SUBMITTED FOR:
Popham Farms n Livestock
Hayti, SD

SUBMITTED BY:
POPHAM AGRONOMICS **P05356**
18668 446TH AVE
HAYTI, SD 57241

Ref #: **4325727**
Box #: **4233**
Lab #: **BN185692**

Date Sampled: Date Received: **10/18/2023** Date Reported: **10/20/2023**

Nutrient In The Soil		Interpretation			
		VLow	Low	Med	High
0-6"	23 lb/acre				
6-24"	9 lb/acre				
0-24" Nitrate	32 lb/acre	•••••	•••••	•••••	
Bray Phosphorus	21 ppm	•••••	•••••	•••••	•••••
Potassium	232 ppm	•••••	•••••	•••••	•••••
Chloride					
0-6"	6 lb/acre	•••••			
6-24" Sulfur	66 lb/acre	•••••	•••••	•••••	•••••
Boron					
Zinc	1.28 ppm	•••••	•••••	•••••	••
Iron					
Manganese					
Copper					
Magnesium	510 ppm	•••••	•••••	•••••	•••••
Calcium	3325 ppm	•••••	•••••	•••••	•••••
Sodium	16 ppm	••			
Org. Matter	4.8 %	•••••	•••••	•••••	•
Carbonate (CCE)					
0-6"	0.32 mmho/cm	•••••	••		
6-24" Sol. Salts	0.25 mmho/cm	•••••			

1st Crop Choice		
Corn-Grain		
YIELD GOAL		
195 BU		
SUGGESTED GUIDELINES		
Broadcast		
LB/ACRE		APPLICATION
N	144	Customized
P_2O_5	75	Broadcast
K_2O	0	
Cl		
S	15	Broadcast
B		
Zn	1	Broadcast
Fe		
Mn		
Cu		
Mg	0	
Lime	0	

2nd Crop Choice		
Corn-Grain		
YIELD GOAL		
195 BU		
SUGGESTED GUIDELINES		
Broadcast/Maint.		
LB/ACRE		APPLICATION
N	163	Customized
P_2O_5	75	Broadcast
K_2O	45	Broadcast
Cl		
S	15	Broadcast
B		
Zn	1	Broadcast
Fe		
Mn		
Cu		
Mg	0	
Lime	0	

3rd Crop Choice		
Corn-Grain		
YIELD GOAL		
195 BU		
SUGGESTED GUIDELINES		
University		
LB/ACRE		APPLICATION
N	200	
P_2O_5	15	Band (2x2) *
K_2O	0	
Cl		
S	0	
B		
Zn	0	
Fe		
Mn		
Cu		
Mg	0	
Lime	0	

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 6.7 6-24" 7.8		22.6 meq	(65-75) 73.6	(15-20) 18.8	(1-7) 2.6	(0-5) 0.3	(0-5) 4.6

General Comments: Medium-textured (CEC: 11-30 meq) Percent hydrogen is estimated from water pH, CEC corrected for exchangeable acidity.

Crop 1: Nitrogen guideline customized by the submitter. Crop nutrient removal: P2O5 = 72 K2O = 45 AGVISE Broadcast guideline will build P & K test levels to the high range over several years.

Crop 2: Nitrogen guideline customized by the submitter. Crop nutrient removal: P2O5 = 72 K2O = 45 AGVISE Broadcast/Maintenance guideline will build P & K test levels to the high range over several years and then maintain them.

Crop 3: *CAUTION: Seed-placed fertilizer can cause injury.* Crop nutrient removal: P2O5 = 72 K2O = 45 University guideline will build P & K soil test levels to the medium range over several years.

Popham Agronomics

Analysis by AGVISE Laboratories
www.agvise.com
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

Field ID: **Wendlings Home**
Field Name:
Sample ID:
County:
Section: **0**
Township:
Quarter:
Range:
Acres:
Previous Crop: **Corn-Grain**

N
W E
S

SUBMITTED FOR:
Popham Farms n Livestock
Hayti, SD

SUBMITTED BY:
POPHAM AGRONOMICS **P05356**
18668 446TH AVE
HAYTI, SD 57241

Ref #: **4325729**
Box #: **4234**
Lab #: **BN185693**

Date Sampled:
Date Received: **10/18/2023**
Date Reported: **10/20/2023**

Nutrient In The Soil		Interpretation			
		VLow	Low	Med	High
0-6"	10 lb/acre				
6-24"	9 lb/acre				
0-24" Nitrate	19 lb/acre	•••••	•		
Olsen Phosphorus	7 ppm	•••••	•••••		
Potassium	130 ppm	•••••	•••••	••••	
Chloride					
0-6"	18 lb/acre	•••••	•••••	•	
6-24" Sulfur	174 lb/acre	•••••	•••••	•••••	•••••
Boron					
Zinc	1.39 ppm	•••••	•••••	•••••	••
Iron					
Manganese					
Copper					
Magnesium	471 ppm	•••••	•••••	•••••	•••••
Calcium	3740 ppm	•••••	•••••	•••••	•••••
Sodium	16 ppm	••			
Org. Matter	3.8 %	•••••	•••••	•••	
Carbonate (CCE)					
0-6"	0.32 mmho/cm	•••••	••		
6-24" Sol. Salts	0.35 mmho/cm	•••••	••		

1st Crop Choice		
Corn-Grain		
YIELD GOAL		
195 BU		
SUGGESTED GUIDELINES		
Broadcast		
LB/ACRE		APPLICATION
N	157	Customized
P_2O_5	136	Broadcast
K_2O	109	Broadcast
Cl		
S	0	
B		
Zn	1	Broadcast
Fe		
Mn		
Cu		
Mg	0	
Lime	0	

2nd Crop Choice		
Corn-Grain		
YIELD GOAL		
195 BU		
SUGGESTED GUIDELINES		
Broadcast/Maint.		
LB/ACRE		APPLICATION
N	176	Customized
P_2O_5	136	Broadcast
K_2O	109	Broadcast
Cl		
S	0	
B		
Zn	1	Broadcast
Fe		
Mn		
Cu		
Mg	0	
Lime	0	

3rd Crop Choice		
Corn-Grain		
YIELD GOAL		
195 BU		
SUGGESTED GUIDELINES		
University		
LB/ACRE		APPLICATION
N	215	
P_2O_5	75	Broadcast
K_2O	75	Broadcast
Cl		
S	0	
B		
Zn	0	
Fe		
Mn		
Cu		
Mg	0	
Lime	0	

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 7.0 6-24" 7.8		23.4 meq	(65-75) 79.9	(15-20) 16.8	(1-7) 1.4	(0-5) 0.3	(0-5) 1.6

General Comments: Medium-textured (CEC: 11-30 meq) Percent hydrogen is estimated from water pH, CEC corrected for exchangeable acidity.

Crop 1: Nitrogen guideline customized by the submitter. Crop nutrient removal: P2O5 = 72 K2O = 45 AGVISE Broadcast guideline will build P & K test levels to the high range over several years.

Crop 2: Nitrogen guideline customized by the submitter. Crop nutrient removal: P2O5 = 72 K2O = 45 AGVISE Broadcast/Maintenance guideline will build P & K test levels to the high range over several years and then maintain them.

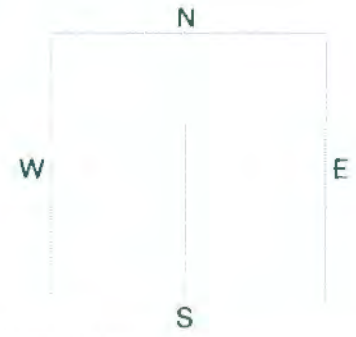
Crop 3: Crop nutrient removal: P2O5 = 72 K2O = 45 University guideline will build P & K soil test levels to the medium range over several years.

Popham Agronomics

Analysis by AGVISE Laboratories
www.agvise.com
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

Field ID: **PAINES NORTH**
Field Name:
Sample ID:
County: Section: **0**
Township: Quarter:
Range: Acres:
Previous Crop: **Soybeans**



SUBMITTED FOR:
Popham Farms

SUBMITTED BY:
POPHAM AGRONOMICS **PO5356**
18668 446TH AVE
HAYTI, SD 57241

Ref #: **21452006**
Box #: **3888**
Lab #: **BN191471**

Date Sampled: Date Received: **10/17/2024** Date Reported: **10/22/2024**

Nutrient In The Soil		Interpretation			
		VLow	Low	Med	High
Nitrate	0-6": 14 lb/acre 6-24": 18 lb/acre 0-24": 32 lb/acre	•••••	•••••	•••••	
Phosphorus	Olsen: 13 ppm	•••••	•••••	•••••	••
Potassium	187 ppm	•••••	•••••	•••••	••••
Chloride					
Sulfur	0-6": 6 lb/acre 6-24": 18 lb/acre	•••••	•••••	•	
Boron					
Zinc	1.77 ppm	•••••	•••••	•••••	•••••
Iron					
Manganese					
Copper					
Magnesium	490 ppm	•••••	•••••	•••••	•••••
Calcium	4192 ppm	•••••	•••••	•••••	•••••
Sodium	14 ppm	••			
Org. Matter	3.9 %	•••••	•••••	•••	
Carbonate (CCE)					
Sol. Salts	0-6": 0.41 mmho/cm 6-24": 0.26 mmho/cm	•••••	••••		

1st Crop Choice		
Corn-Grain		
YIELD GOAL		
185 BU		
SUGGESTED GUIDELINES		
Broadcast		
LB/ACRE		APPLICATION
N	123	Customized
P_2O_5	89	Broadcast
K_2O	46	Broadcast
Cl		
S	20	Broadcast
B		
Zn	1	Broadcast
Fe		
Mn		
Cu		
Mg	0	
Lime	0	

2nd Crop Choice		
Corn-Grain		
YIELD GOAL		
185 BU		
SUGGESTED GUIDELINES		
Broadcast/Maint.		
LB/ACRE		APPLICATION
N	197	Customized
P_2O_5	89	Broadcast
K_2O	46	Broadcast
Cl		
S	20	Broadcast
B		
Zn	1	Broadcast
Fe		
Mn		
Cu		
Mg	0	
Lime	0	

3rd Crop Choice		
Corn-Grain		
YIELD GOAL		
185 BU		
SUGGESTED GUIDELINES		
University		
LB/ACRE		APPLICATION
N	150	
P_2O_5	25	Broadcast
K_2O	15	Broadcast
Cl		
S	20	Broadcast
B		
Zn	0	
Fe		
Mn		
Cu		
Mg	0	
Lime	0	

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 7.0 6-24" 7.8		26 meq	(65-75) 80.7	(15-20) 15.7	(1-7) 1.8	(0-5) 0.2	(0-5) 1.6

General Comments: Medium-textured (CEC: 11-30 meq) Percent hydrogen is estimated from water pH, CEC corrected for exchangeable acidity.

Crop 1: Nitrogen guideline customized by the submitter. Previous crop nitrogen credit: 30 lb/acre N. Previous crop nitrogen credit may be adjusted for local conditions. Crop nutrient removal: P2O5 = 68 K2O = 43 AGVISE Broadcast guideline will build P & K test levels to the high range over several years.

Crop 2: Nitrogen guideline customized by the submitter. Previous crop nitrogen credit: 30 lb/acre N. Previous crop nitrogen credit may be adjusted for local conditions. Crop nutrient removal: P2O5 = 68 K2O = 43 AGVISE Broadcast/Maintenance guideline will build P & K test levels to the high range over several years and then maintain them.

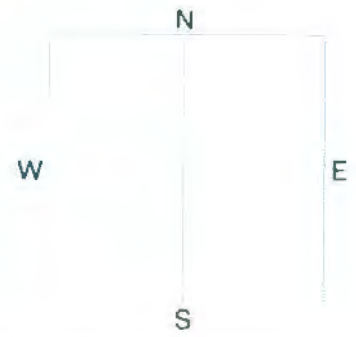
Crop 3: Previous crop nitrogen credit: 40 lb/acre N, university guideline. Previous crop nitrogen credit may be adjusted for local conditions. Crop nutrient removal: P2O5 = 68 K2O = 43 University guideline will build P & K soil test levels to the medium range over several years.

Popham Agronomics

Analysis by AGVISE Laboratories
www.agvise.com
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

Field ID: **Palnes South Trees**
Field Name:
Sample ID:
County: Section: **0**
Township: Quarter:
Range: Acres:
Previous Crop: **Corn-Grain**



SUBMITTED FOR:
Popham Farms n Livestock
Hayti, SD

SUBMITTED BY:
POPHAM AGRONOMICS **PO5356**
18668 446TH AVE
HAYTI, SD 57241

Rel #: **5398857**
Box #: **761**
Lab #: **BN210556**

Date Sampled: Date Received: **10/23/2024** Date Reported: **10/28/2024**

Nutrient In The Soil		Interpretation			
		VLow	Low	Med	High
0-6"	10 lb/acre				
6-24"	21 lb/acre				
0-24"	31 lb/acre				
Nitrate		•••••	•••••	••••	
Olsen	10 ppm	•••••	•••••	••••	
Phosphorus					
Potassium	160 ppm	•••••	•••••	•••••	•
Chloride					
0-6"	120 +lb/acre	•••••	•••••	•••••	•••••
6-24"	360 +lb/acre	•••••	•••••	•••••	•••••
Sulfur					
Boron					
Zinc	1.28 ppm	•••••	•••••	•••••	••
Iron					
Manganese					
Copper					
Magnesium	741 ppm	•••••	•••••	•••••	•••••
Calcium	5356 ppm	•••••	•••••	•••••	•••••
Sodium	37 ppm	•••••			
Org. Matter	3.7 %	•••••	•••••	•••	
Carbonate (CCE)					
0-6"	0.91 mmho/cm	•••••	•••••	•••••	•
6-24"	1.09 mmho/cm	•••••	•••••	•••••	••
Sol. Salts					

1st Crop Choice		
Soybeans		
YIELD GOAL		
50 BU		
SUGGESTED GUIDELINES		
Broadcast		
LB/ACRE		APPLICATION
N	***	
P_2O_5	60	Broadcast
K_2O	42	Broadcast
Cl		
S	0	
B		
Zn	0	
Fe		
Mn		
Cu		
Mg	0	
Lime	0	

2nd Crop Choice		
Soybeans		
YIELD GOAL		
50 BU		
SUGGESTED GUIDELINES		
Broadcast/Maint.		
LB/ACRE		APPLICATION
N	***	
P_2O_5	60	Broadcast
K_2O	59	Broadcast
Cl		
S	0	
B		
Zn	0	
Fe		
Mn		
Cu		
Mg	0	
Lime	0	

3rd Crop Choice		
Soybeans		
YIELD GOAL		
50 BU		
SUGGESTED GUIDELINES		
University		
LB/ACRE		APPLICATION
N	***	
P_2O_5	0	
K_2O	30	Broadcast
Cl		
S	0	
B		
Zn		Not Available
Fe		
Mn		
Cu		
Mg	0	
Lime	0	

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 7.3 6-24" 7.6		33.5 meq	(65-75) 79.8	(15-20) 18.4	(1-7) 1.2	(0-5) 0.5	(0-5) 0.0

General Comments: Fine-textured (CEC: 31+ meq) Percent hydrogen is estimated from water pH, CEC corrected for exchangeable acidity.

Crop 1: Crop nutrient removal: P2O5 = 38 K2O = 59 AGVISE Broadcast guideline will build P & K test levels to the high range over several years.

Crop 2: Crop nutrient removal: P2O5 = 38 K2O = 59 AGVISE Broadcast/Maintenance guideline will build P & K test levels to the high range over several years and then maintain them.

Crop 3: Crop nutrient removal: P2O5 = 38 K2O = 59 University guideline will build P & K soil test levels to the medium range over several years.

Popham Agronomics

Analysis by AGVISE Laboratories
www.agvise.com
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

Field ID: **WALTS**
Field Name:
Sample ID:
County: Section: **0**
Township: Quarter:
Range: Acres:
Previous Crop: **Corn-Grain**

SUBMITTED FOR:
Bob Popham
Hayti, SD

SUBMITTED BY:
POPHAM AGRONOMICS **P05356**
18668 446TH AVE
HAYTI, SD 57241

Ref #: **21452012**
Box #: **4000**
Lab #: **BN191477**

Date Sampled: Date Received: **10/17/2024** Date Reported: **10/22/2024**

Nutrient In The Soil		Interpretation			
		VLow	Low	Med	High
0-6"	27 lb/acre				
6-24"	27 lb/acre				
0-24"	54 lb/acre				
Nitrate					
Olsen	20 ppm				
Phosphorus					
Potassium	175 ppm				
Chloride					
0-6"	78 lb/acre				
6-24"	360 +lb/acre				
Sulfur					
Boron					
Zinc	2.31 ppm				
Iron					
Manganese					
Copper					
Magnesium	740 ppm				
Calcium	4894 ppm				
Sodium	29 ppm				
Org. Matter	4.5 %				
Carbonate (CCE)					
0-6"	0.39 mmho/cm				
6-24"	0.99 mmho/cm				
Sol. Salts					

1st Crop Choice		
Millet-Grain		
YIELD GOAL		
1800 LBS		
SUGGESTED GUIDELINES		
Broadcast		
LB/ACRE		APPLICATION
N	18	
P_2O_5	0	
K_2O	0	
Cl		
S	0	
B		
Zn	0	
Fe		
Mn		
Cu		
Mg	0	
Lime	0	

2nd Crop Choice		
Corn-Grain		
YIELD GOAL		
215 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE		APPLICATION
N	247	Customized
P_2O_5	80	Band *
K_2O	49	Band *
Cl		
S	0	
B		
Zn	0	
Fe		
Mn		
Cu		
Mg	0	
Lime	0	

3rd Crop Choice		
Corn-Grain		
YIELD GOAL		
215 BU		
SUGGESTED GUIDELINES		
University		
LB/ACRE		APPLICATION
N	205	
P_2O_5	15	Band (2x2) *
K_2O	30	Broadcast
Cl		
S	0	
B		
Zn	0	
Fe		
Mn		
Cu		
Mg	0	
Lime	0	

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 7.4 6-24" 7.8		31.2 meq	(65-75) 78.4	(15-20) 19.8	(1-7) 1.4	(0-5) 0.4	(0-5) 0.0

General Comments: Fine-textured (CEC: 31+ meq) Percent hydrogen is estimated from water pH, CEC corrected for exchangeable acidity.

Crop 1: Crop nutrient removal: P2O5 = 14 K2O = 11 AGVISE Broadcast guideline will build P & K test levels to the high range over several years

Crop 2: Nitrogen guideline customized by the submitter. *CAUTION: Seed-placed fertilizer can cause injury.* Crop nutrient removal: P2O5 = 80 K2O = 49 AGVISE Band/Maintenance guideline will build P & K test levels to the medium range over several years and then maintain them.

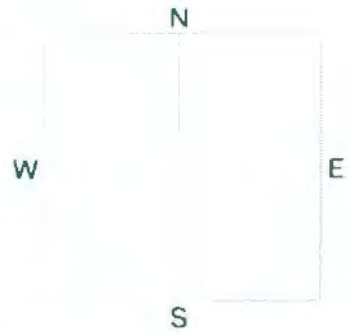
Crop 3: *CAUTION: Seed-placed fertilizer can cause injury.* Crop nutrient removal: P2O5 = 80 K2O = 49 University guideline will build P & K soil test levels to the medium range over several years.

Popham Agronomics

Analysis by AGVISE Laboratories
www.agvise.com
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

Field ID: TERRACED
Field Name:
Sample ID:
County
Section 0
Township:
Quarter
Range.
Acres:
Previous Crop: **Soybeans**



SUBMITTED FOR:
Popham Farms

SUBMITTED BY:
POPHAM AGRONOMICS **P05356**
18668 446TH AVE
HAYTI, SD 57241

Ref #: **21452009**
Box #: **4000**
Lab #: **BN191474**

Date Sampled:
Date Received: **10/17/2024**
Date Reported: **10/22/2024**

Nutrient In The Soll		Interpretation			
		VLow	Low	Med	High
0-6"	14 lb/acre				
6-24"	9 lb/acre				
0-24"	23 lb/acre	******	***		
Nitrate					
Olsen	9 ppm	******	******	**	
Phosphorus					
Potassium	140 ppm	******	******	*****	
Chloride					
0-6"	120 +lb/acre	******	******	******	******
6-24"	360 +lb/acre	******	******	******	******
Sulfur					
Boron					
Zinc	1.08 ppm	******	******	******	
Iron					
Manganese					
Copper					
Magnesium	798 ppm	******	******	******	******
Calcium	5229 ppm	******	******	******	******
Sodium	37 ppm	******			
Org. Matter	4.3 %	******	******	*****	
Carbonate (CCE)					
0-6"	0.83 mmho/cm	******	******	******	
6-24"	1.4 mmho/cm	******	******	******	***
Sol. Salts					

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Corn-Grain			Corn-Grain			Corn-Grain		
YIELD GOAL			YIELD GOAL			YIELD GOAL		
195 BU			185 BU			185 BU		
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Broadcast/Maint.			Broadcast			University		
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	220	Customized	N	132	Customized	N	160	
P_2O_5	122	Broadcast	P_2O_5	116	Broadcast	P_2O_5	55	Broadcast
K_2O	98	Broadcast	K_2O	93	Broadcast	K_2O	60	Broadcast
Cl			Cl			Cl		
S	0		S	0		S	0	
B			B			B		
Zn	1	Broadcast	Zn	1	Broadcast	Zn	0	
Fe			Fe			Fe		
Mn			Mn			Mn		
Cu			Cu			Cu		
Mg	0		Mg	0		Mg	0	
Lime	0		Lime	0		Lime	0	

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 7.5 6-24" 7.9		33.3 meq	(65-75) 78.5	(15-20) 20.0	(1-7) 1.1	(0-5) 0.5	(0-5) 0.0

General Comments: Fine-textured (CEC: 31+ meq)

Crop 1: Nitrogen guideline customized by the submitter. Previous crop nitrogen credit: 30 lb/acre N. Previous crop nitrogen credit may be adjusted for local conditions. Crop nutrient removal: P2O5 = 72 K2O = 45 AGVISE Broadcast/Maintenance guideline will build P & K test levels to the high range over several years and then maintain them.

Crop 2: Nitrogen guideline customized by the submitter. Previous crop nitrogen credit: 30 lb/acre N. Previous crop nitrogen credit may be adjusted for local conditions. Crop nutrient removal: P2O5 = 68 K2O = 43 AGVISE Broadcast guideline will build P & K test levels to the high range over several years.

Crop 3: Previous crop nitrogen credit: 40 lb/acre N, university guideline. Previous crop nitrogen credit may be adjusted for local conditions. Crop nutrient removal: P2O5 = 68 K2O = 43 University guideline will build P & K soil test levels to the medium range over several years.

Popham Agronomics

Analysis by AGVISE Laboratories
www.agvise.com
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

Field ID: Home Qtr
Field Name:
Sample ID:
County: Section: 0
Township: Quarter:
Range Acres:
Previous Crop: Corn-Silage

N W E S

SUBMITTED FOR:
Bob Popham
Hayti, SD

SUBMITTED BY:
POPHAM AGRONOMICS P05356
18668 446TH AVE
HAYTI, SD 57241

Ref #: 5233281
Box #: 2876
Lab #: BN103947

Date Sampled: Date Received: 9/18/2024 Date Reported: 9/19/2024

Nutrient In The Soil		Interpretation			
		VLow	Low	Med	High
0-6"	16 lb/acre				
6-24"	21 lb/acre				
0-24" Nitrate	37 lb/acre	•••••	•••••	•••••	
Olsen Phosphorus	25 ppm	•••••	•••••	•••••	•••••
Potassium	283 ppm	•••••	•••••	•••••	•••••
Chloride					
0-6"	6 lb/acre	•••••			
6-24" Sulfur	174 lb/acre	•••••	•••••	•••••	•••••
Boron					
Zinc	2.07 ppm	•••••	•••••	•••••	•••••
Iron					
Manganese					
Copper					
Magnesium	1014 ppm	•••••	•••••	•••••	•••••
Calcium	5425 ppm	•••••	•••••	•••••	•••••
Sodium	19 ppm	•••			
Org. Matter	4.7 %	•••••	•••••	•••••	
Carbonate (CCE)					
0-6"	0.45 mmho/cm	•••••	•••••		
6-24" Sol. Salts	0.47 mmho/cm	•••••	•••••		

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Corn-Grain			Corn-Grain			Corn-Grain		
YIELD GOAL			YIELD GOAL			YIELD GOAL		
195 BU			195 BU			195 BU		
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Broadcast			Broadcast/Maint			University		
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	158	Customized	N	236	Customized	N	195	
P_2O_5	0		P_2O_5	72	Broadcast	P_2O_5	15	Band (2x2) *
K_2O	0		K_2O	0		K_2O	0	
Cl			Cl			Cl		
S	15	Broadcast	S	15	Broadcast	S	0	
B			B			B		
Zn	0		Zn	0		Zn	0	
Fe			Fe			Fe		
Mn			Mn			Mn		
Cu			Cu			Cu		
Mg	0		Mg	0		Mg	0	
Lime	0		Lime	0		Lime	0	

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 7.3 6-24" 8.1		36.4 meq	(65-75) 74.5	(15-20) 23.2	(1-7) 2.0	(0-5) 0.2	(0-5) 0.0

General Comments: Fine-textured (CEC: 31+ meq) Percent hydrogen is estimated from water pH, CEC corrected for exchangeable acidity.

Crop 1: Nitrogen guideline customized by the submitter. Crop nutrient removal: P2O5 = 72 K2O = 45 AGVISE Broadcast guideline will build P & K test levels to the high range over several years.

Crop 2: Nitrogen guideline customized by the submitter. Crop nutrient removal: P2O5 = 72 K2O = 45 AGVISE Broadcast/Maintenance guideline will build P & K test levels to the high range over several years and then maintain them.

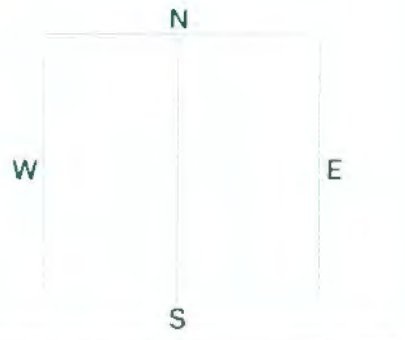
Crop 3: *CAUTION: Seed-placed fertilizer can cause injury.* Crop nutrient removal: P2O5 = 72 K2O = 45 University guideline will build P & K soil test levels to the medium range over several years.

Popham Agronomics

Analysis by AGVISE Laboratories
www.agvise.com
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

Field ID: **Kyle's Home Qtr**
Field Name:
Sample ID:
County: Section: **0**
Township: Quarter:
Range: Acres:
Previous Crop: **Soybeans**



SUBMITTED FOR:
Bob Popham
Hayti, SD

SUBMITTED BY:
POPHAM AGRONOMICS **P05356**
18668 446TH AVE
HAYTI, SD 57241

Ref #: **5305337**
Box #: **4099**
Lab #: **BN124142**

Date Sampled:
Date Received: **10/2/2024**
Date Reported: **10/3/2024**

Nutrient In The Soil		Interpretation			
		VLow	Low	Med	High
0-6"	9 lb/acre				
6-24"	3 lb/acre				
0-24" Nitrate	12 lb/acre	*****			
Olsen Phosphorus	12 ppm	*****	*****	*****	
Potassium	166 ppm	*****	*****	*****	**
Chloride					
0-6"	120 +lb/acre	*****	*****	*****	*****
6-24" Sulfur	360 +lb/acre	*****	*****	*****	*****
Boron					
Zinc	1.02 ppm	*****	*****	*****	
Iron					
Manganese					
Copper					
Magnesium	830 ppm	*****	*****	*****	*****
Calcium	4935 ppm	*****	*****	*****	*****
Sodium	35 ppm	*****			
Org. Matter	3.8 %	*****	*****	***	
Carbonate (CCE)					
0-6"	0.76 mmho/cm	*****	*****	*****	
6-24" Sol. Salts	1.75 mmho/cm	*****	*****	*****	*****

1st Crop Choice		
Corn-Grain		
YIELD GOAL		
195 BU		
SUGGESTED GUIDELINES		
Broadcast		
LB/ACRE		APPLICATION
N	153	Customized
P_2O_5	101	Broadcast
K_2O	71	Broadcast
Cl		
S	0	
B		
Zn	1	Broadcast
Fe		
Mn		
Cu		
Mg	0	
Lime	0	

2nd Crop Choice		
Corn-Grain		
YIELD GOAL		
195 BU		
SUGGESTED GUIDELINES		
Broadcast/Maint.		
LB/ACRE		APPLICATION
N	231	Customized
P_2O_5	101	Broadcast
K_2O	71	Broadcast
Cl		
S	0	
B		
Zn	1	Broadcast
Fe		
Mn		
Cu		
Mg	0	
Lime	0	

3rd Crop Choice		
Corn-Grain		
YIELD GOAL		
195 BU		
SUGGESTED GUIDELINES		
University		
LB/ACRE		APPLICATION
N	180	
P_2O_5	35	Broadcast
K_2O	35	Broadcast
Cl		
S	0	
B		
Zn	0	
Fe		
Mn		
Cu		
Mg	0	
Lime	0	

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 7.1 6-24" 7.7		32.5 meq	(65-75) 76.0	15-20) 21.3	(1-7) 1.3	(0-5) 0.5	(0-5) 0.9

General Comments: Fine-textured (CEC: 31+ meq) Percent hydrogen is estimated from water pH, CEC corrected for exchangeable acidity.

Crop 1: Nitrogen guideline customized by the submitter. Previous crop nitrogen credit: 30 lb/acre N. Previous crop nitrogen credit may be adjusted for local conditions. Crop nutrient removal: P2O5 = 72 K2O = 45 AGVISE Broadcast guideline will build P & K test levels to the high range over several years.

Crop 2: Nitrogen guideline customized by the submitter. Previous crop nitrogen credit: 30 lb/acre N. Previous crop nitrogen credit may be adjusted for local conditions. Crop nutrient removal: P2O5 = 72 K2O = 45 AGVISE Broadcast/Maintenance guideline will build P & K test levels to the high range over several years and then maintain them.

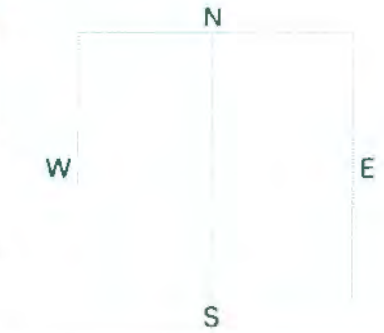
Crop 3: Previous crop nitrogen credit: 40 lb/acre N, university guideline. Previous crop nitrogen credit may be adjusted for local conditions. Crop nutrient removal: P2O5 = 72 K2O = 45 University guideline will build P & K soil test levels to the medium range over several years.

Popham Agronomics

Analysis by AGVISE Laboratories
www.agvise.com
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

Field ID: **Teschs**
Field Name:
Sample ID:
County: Section: **0**
Township: Quarter:
Range: Acres:
Previous Crop: **Corn-Grain**



SUBMITTED FOR:
Popham Farms n Livestock
Hayti, SD

SUBMITTED BY:
POPHAM AGRONOMICS **P05356**
18668 446TH AVE
HAYTI, SD 57241

Ref #: **5443001**
Box #: **3067**
Lab #: **8N240153**

Date Sampled: Date Received: **11/4/2024** Date Reported: **11/7/2024**

Nutrient In The Soil			Interpretation			
			VLow	Low	Med	High
Nitrate	0-6"	8 lb/acre				
	6-24"	18 lb/acre				
	0-24"	26 lb/acre	•••••	••••		
Phosphorus	Bray	35 ppm	•••••	•••••	•••••	•••••
Potassium		139 ppm	•••••	•••••	••••	
Chloride						
Sulfur	0-6"	34 lb/acre	•••••	•••••	•••••	•
	6-24"	42 lb/acre	•••••	•••••	•••••	••••
Boron						
Zinc		1.20 ppm	•••••	•••••	•••••	•
Iron						
Manganese						
Copper						
Magnesium		393 ppm	•••••	•••••	•••••	•••••
Calcium		3573 ppm	•••••	•••••	•••••	•••••
Sodium		26 ppm	••••			
Org. Matter		2.8 %	•••••	••••		
Carbonate (CCE)						
Sol. Salts	0-6"	0.47 mmho/cm	•••••	••••		
	6-24"	0.24 mmho/cm	•••••			

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Corn-Grain			Corn-Grain			Corn-Grain		
YIELD GOAL			YIELD GOAL			YIELD GOAL		
185 BU			185 BU			185 BU		
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Broadcast			Broadcast/Maint.			University		
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	233	Customized	N	233	Customized	N	195	
P_2O_5	0		P_2O_5	68	Broadcast	P_2O_5	15	Band (2x2) *
K_2O	94	Broadcast	K_2O	94	Broadcast	K_2O	65	Broadcast
Cl			Cl			Cl		
S	0		S	0		S	0	
B			B			B		
Zn	1	Broadcast	Zn	1	Broadcast	Zn	0	
Fe			Fe			Fe		
Mn			Mn			Mn		
Cu			Cu			Cu		
Mg	0		Mg	0		Mg	0	
Lime	0		Lime	0		Lime	0	

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 6.8 6-24" 7.7		22.4 meq	(65-75) 79.9	(15-20) 14.6	(1-7) 1.6	(0-5) 0.5	(0-5) 3.4

General Comments: Medium-textured (CEC: 11-30 meq) Percent hydrogen is estimated from water pH, CEC corrected for exchangeable acidity.

Crop 1: Nitrogen guideline customized by the submitter. Crop nutrient removal: P2O5 = 68 K2O = 43 AGVISE Broadcast guideline will build P & K test levels to the high range over several years.

Crop 2: Nitrogen guideline customized by the submitter. Crop nutrient removal: P2O5 = 68 K2O = 43 AGVISE Broadcast/Maintenance guideline will build P & K test levels to the high range over several years and then maintain them.

Crop 3: *CAUTION: Seed-placed fertilizer can cause injury.* Crop nutrient removal: P2O5 = 68 K2O = 43 University guideline will build P & K soil test levels to the medium range over several years.

Popham Agronomics

Analysis by AGVISE Laboratories
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Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

Field ID: **Wendlings Home**
Field Name:
Sample ID: **3**
County: Section: **0**
Township: Quarter:
Range: Acres:
Previous Crop: **Soybeans**

N / W / E / S

SUBMITTED FOR:

Bob Popham
Hayti, SD

SUBMITTED BY:

POPHAM AGRONOMICS **P05356**
18668 446TH AVE
HAYTI, SD 57241

Ref #: **5378652**
Box #: **3811**
Lab #: **BN190231**

Date Sampled: Date Received: **10/16/2024** Date Reported: **10/22/2024**

Nutrient In The Soil		Interpretation			
		VLow	Low	Med	High
0-6"	9 lb/acre				
6-24"	6 lb/acre				
0-24" Nitrate	15 lb/acre	******			
Olsen Phosphorus	6 ppm	******	****		
Potassium	187 ppm	******	******	******	****
Chloride					
0-6"	14 lb/acre	******	******		
6-24" Sulfur	138 lb/acre	******	******	******	******
Boron					
Zinc					
Iron					
Manganese					
Copper					
Magnesium	605 ppm	******	******	******	******
Calcium	4028 ppm	******	******	******	******
Sodium	24 ppm	****			
Org. Matter	4.5 %	******	******	******	
Carbonate (CCE)					
0-6"	0.19 mmho/cm	****			
6-24" Sol. Salts	0.37 mmho/cm	******	***		

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Corn-Grain			Corn-Grain			Corn-Grain		
YIELD GOAL			YIELD GOAL			YIELD GOAL		
195 BU			195 BU			195 BU		
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Broadcast			Broadcast/Maint.			University		
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	**150**	**Customized**	N	**228**	**Customized**	N	**180**	
P_2O_5	**143**	**Broadcast**	P_2O_5	**143**	**Broadcast**	P_2O_5	**85**	**Broadcast**
K_2O	**49**	**Broadcast**	K_2O	**49**	**Broadcast**	K_2O	**15**	**Broadcast**
Cl			Cl			Cl		
S	**10**	**Broadcast**	S	**10**	**Broadcast**	S	**0**	
B			B			B		
Zn			Zn			Zn		
Fe			Fe			Fe		
Mn			Mn			Mn		
Cu			Cu			Cu		
Mg	**0**		Mg	**0**		Mg	**0**	
Lime	**0**		Lime	**0**		Lime	**0**	

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" **7.0**		**26.2 meq**	(65-75)	(15-20)	(1-7)	(0-5)	(0-5)
6-24" **7.8**			**77.0**	**19.3**	**1.8**	**0.4**	**1.6**

General Comments: Medium-textured (CEC: 11-30 meq) Percent hydrogen is estimated from water pH, CEC corrected for exchangeable acidity.

Crop 1: Nitrogen guideline customized by the submitter. Previous crop nitrogen credit: 30 lb/acre N. Previous crop nitrogen credit may be adjusted for local conditions. Crop nutrient removal: P2O5 = 72 K2O = 45 AGVISE Broadcast guideline will build P & K test levels to the high range over several years.

Crop 2: Nitrogen guideline customized by the submitter. Previous crop nitrogen credit: 30 lb/acre N. Previous crop nitrogen credit may be adjusted for local conditions. Crop nutrient removal: P2O5 = 72 K2O = 45 AGVISE Broadcast/Maintenance guideline will build P & K test levels to the high range over several years and then maintain them.

Crop 3: Previous crop nitrogen credit: 40 lb/acre N, university guideline. Previous crop nitrogen credit may be adjusted for local conditions. Crop nutrient removal: P2O5 = 72 K2O = 45 University guideline will build P & K soil test levels to the medium range over several years.

Popham Agronomics

Analysis by AGVISE Laboratories
www.agvise.com
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

Field ID: School 40
Field Name:
Sample ID: 3
County: Section: 0
Township: Quarter:
Range: Acres:
Previous Crop: Soybeans

N W E S

SUBMITTED FOR:
Bob Popham
Hayti, SD

SUBMITTED BY:
POPHAM AGRONOMICS P05356
18668 446TH AVE
HAYTI, SD 57241

Ref # 5378647
Box # 3814
Lab #: BN190265

Date Sampled: Date Received: 10/16/2024 Date Reported: 10/22/2024

Nutrient In The Soil		Interpretation			
		VLow	Low	Med	High
0-6" / 6-24" Nitrate	5 lb/acre / 6 lb/acre				
0-24" Nitrate	11 lb/acre	••••			
Olsen Phosphorus	8 ppm	•••••••	•••••••		
Potassium	185 ppm	•••••••	•••••••	•••••••	••••
Chloride					
0-6" Sulfur	20 lb/acre	•••••••	•••••••	••	
6-24" Sulfur	36 lb/acre	•••••••	•••••••	•••••••	••
Boron					
Zinc					
Iron					
Manganese					
Copper					
Magnesium	554 ppm	•••••••	•••••••	•••••••	•••••••
Calcium	4652 ppm	•••••••	•••••••	•••••••	•••••••
Sodium	23 ppm	•••			
Org. Matter	4.1 %	•••••••	•••••••	••••	
Carbonate (CCE)					
0-6" Sol. Salts	0.42 mmho/cm	•••••••	••••		
6-24" Sol. Salts	0.28 mmho/cm	•••••••	•		

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Corn-Grain			Corn-Grain			Corn-Grain		
YIELD GOAL			YIELD GOAL			YIELD GOAL		
195 BU			195 BU			195 BU		
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Broadcast			Broadcast/Maint.			University		
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	154	Customized	N	232	Customized	N	185	
P_2O_5	129	Broadcast	P_2O_5	129	Broadcast	P_2O_5	70	Broadcast
K_2O	51	Broadcast	K_2O	51	Broadcast	K_2O	15	Broadcast
Cl			Cl			Cl		
S	10	Broadcast (Trial)	S	10	Broadcast (Trial)	S	0	
B			B			B		
Zn			Zn			Zn		
Fe			Fe			Fe		
Mn			Mn			Mn		
Cu			Cu			Cu		
Mg	0		Mg	0		Mg	0	
Lime	0		Lime	0		Lime	0	

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 7.0 6-24" 7.8		28.9 meq	(65-75) 80.5	(15-20) 16.0	(1-7) 1.6	(0-5) 0.3	(0-5) 1.6

General Comments: Medium-textured (CEC: 11-30 meq) Percent hydrogen is estimated from water pH, CEC corrected for exchangeable acidity.

Crop 1: Nitrogen guideline customized by the submitter. Previous crop nitrogen credit: 30 lb/acre N. Previous crop nitrogen credit may be adjusted for local conditions. Crop nutrient removal: P2O5 = 72 K2O = 45 AGVISE Broadcast guideline will build P & K test levels to the high range over several years.

Crop 2: Nitrogen guideline customized by the submitter. Previous crop nitrogen credit: 30 lb/acre N. Previous crop nitrogen credit may be adjusted for local conditions. Crop nutrient removal: P2O5 = 72 K2O = 45 AGVISE Broadcast/Maintenance guideline will build P & K test levels to the high range over several years and then maintain them.

Crop 3: Previous crop nitrogen credit: 40 lb/acre N, university guideline. Previous crop nitrogen credit may be adjusted for local conditions. Crop nutrient removal: P2O5 = 72 K2O = 45 University guideline will build P & K soil test levels to the medium range over several years.

Popham Agronomics

Analysis by AGVISE Laboratories
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Benson: (320) 843-4109

SOIL TEST REPORT

Field ID: **Ricks**
Field Name:
Sample ID: **3**
County:
Section: **0**
Township:
Quarter:
Range:
Acres:
Previous Crop: **Soybeans**

N
W E
S

SUBMITTED FOR:

Scott Popham
Hayti

SUBMITTED BY:

POPHAM AGRONOMICS **P05356**
18668 446TH AVE
HAYTI, SD 57241

Ref #: **5378540**
Box #: **3813**
Lab #: **BN190255**

Date Sampled:
Date Received: **10/16/2024**
Date Reported: **10/22/2024**

Nutrient In The Soil		Interpretation			
		VLow	Low	Med	High
0-6"	7 lb/acre				
6-24"	6 lb/acre				
0-24" Nitrate	13 lb/acre	*****			
Olsen/Bray Phosphorus	14 ppm	******	******	******	****
	2 ppm	**			
Potassium	188 ppm	******	******	******	****
Chloride					
0-6"	26 lb/acre	******	******	****	
6-24" Sulfur	66 lb/acre	******	******	******	******
Boron					
Zinc					
Iron					
Manganese					
Copper					
Magnesium	809 ppm	******	******	******	******
Calcium	5350 ppm	******	******	******	******
Sodium	26 ppm	****			
Org. Matter	4.1 %	******	******	****	
Carbonate (CCE)					
0-6"	0.36 mmho/cm	******	**		
6-24" Sol. Salts	0.27 mmho/cm	******			

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Corn-Grain			Corn-Grain			Corn-Grain		
YIELD GOAL			YIELD GOAL			YIELD GOAL		
210 BU			210 BU			210 BU		
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band			Band/Maint.			University		
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	**167**	**Customized**	N	**251**	**Customized**	N	**200**	
P_2O_5	**41**	**Band ***	P_2O_5	**78**	**Band ***	P_2O_5	**20**	**Broadcast**
K_2O	**30**	**Band ***	K_2O	**48**	**Band ***	K_2O	**15**	**Broadcast**
Cl			Cl			Cl		
S	**0**		S	**0**		S	**0**	
B			B			B		
Zn			Zn			Zn		
Fe			Fe			Fe		
Mn			Mn			Mn		
Cu			Cu			Cu		
Mg	**0**		Mg	**0**		Mg	**0**	
Lime	**0**		Lime	**0**		Lime	**0**	

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" **7.6** 6-24" **8.2**		**34.1 meq**	(65-75) **78.5**	(15-20) **19.8**	(1-7) **1.4**	(0-5) **0.3**	(0-5) **0.0**

General Comments: Fine-textured (CEC: 31+ meq)

Crop 1: Nitrogen guideline customized by the submitter. *CAUTION: Seed-placed fertilizer can cause injury.* Previous crop nitrogen credit: 30 lb/acre N. Previous crop nitrogen credit may be adjusted for local conditions. Crop nutrient removal: P2O5 = 78 K2O = 48 AGVISE Band guideline will build P & K test levels to the medium range over several years.

Crop 2: Nitrogen guideline customized by the submitter. *CAUTION: Seed-placed fertilizer can cause injury.* Previous crop nitrogen credit: 30 lb/acre N. Previous crop nitrogen credit may be adjusted for local conditions. Crop nutrient removal: P2O5 = 78 K2O = 48 AGVISE Band/Maintenance guideline will build P & K test levels to the medium range over several years and then maintain them.

Crop 3: Previous crop nitrogen credit: 40 lb/acre N, university guideline. Previous crop nitrogen credit may be adjusted for local conditions. Crop nutrient removal: P2O5 = 78 K2O = 48 University guideline will build P & K soil test levels to the medium range over several years.

Popham Agronomics

Analysis by AGVISE Laboratories
www.agvise.com
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

Field ID: CLV02SH1_MZ8
Field Name:
Sample ID: 7
County: Hamlin — Section: 2
Township: Cleveland — Quarter: 2S
Range: 54 — Acres: 24.6
Previous Crop:

SUBMITTED FOR:
P4 Cattle Company

SUBMITTED BY:
POPHAM AGRONOMICS — P05356
18668 446TH AVE
HAYTI, SD 57241

Rel #: 4260999
Box #: 2778
Lab #: SN161553

Date Sampled:
Date Received: 10/11/2023
Date Reported: 10/13/2023

Nutrient In The Soil		Interpretation			
		VLow	Low	Med	High
0-6"	13 lb/acre				
6-24"	9 lb/acre				
0-24"	22 lb/acre	******	***		
Nitrate					
Olsen/Bray Phosphorus	11 ppm	******	******	******	
	16 ppm	******	******	******	
Potassium	261 ppm	******	******	******	******
Chloride					
0-6"	120 +lb/acre	******	******	******	******
6-24"	360 +lb/acre	******	******	******	******
Sulfur					
Boron					
Zinc	1.23 ppm	******	******	******	*
Iron					
Manganese					
Copper					
Magnesium					
Calcium					
Sodium					
Org. Matter	3.6 %	******	******	**	
Carbonate (CCE)					
Sol. Salts					

1st Crop Choice		2nd Crop Choice		3rd Crop Choice	
YIELD GOAL		YIELD GOAL		YIELD GOAL	
0		0		0	
SUGGESTED GUIDELINES		SUGGESTED GUIDELINES		SUGGESTED GUIDELINES	
LB/ACRE	APPLICATION	LB/ACRE	APPLICATION	LB/ACRE	APPLICATION
N		N		N	
P_2O_5		P_2O_5		P_2O_5	
K_2O		K_2O		K_2O	
Cl		Cl		Cl	
S		S		S	
B		B		B	
Zn		Zn		Zn	
Fe		Fe		Fe	
Mn		Mn		Mn	
Cu		Cu		Cu	
Mg		Mg		Mg	
Lime		Lime		Lime	

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 7.5 6-24" 7.9							

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

NUTRIENT MANAGEMENT PLAN
FOR
SOUTH DAKOTA ANIMAL FEEDING OPERATIONS

SD-CPA-63B
Rev. 4/24

Field Information

Operator: Popham Livestock LLC **County:** Hamlin **Date:** 08/08/25

Line #	17. Field ID (Include maps to illustrate location) Name or Tract	Field #	18. Date added to Plan	19. Beginning acres in field	20. County	21. Soil map unit symbol	22. Field Location: (1/4 Section, Township, Range)						23. Predicted soil loss - Wind/Water (T/ac/yr)	24. Control of Land	25. 100' Vegetated Buffer	25. Excluded acres	26. Irrigated	27. Winter Application	28. No-Till	29. Current Soil Test Levels: N lb/ac 0-2'	N lb/ac 2-4'	Phosphorus (ppm) 0-6"	Phosphorus (ppm) P Test	K (ppm)	Organic Matter	Soil PH	Electric Conductivity (EC) Surface	Electric Conductivity (EC) Sub-surface	Soil Sample Date
1	Home	1	8/8/25	102.8	Hamlin	PsB	NE 1/4	Sec.	2	, T	113	, R 54	2.4	Leased		12.0		X		31		7	Olsen	175	3.6%	7.3	1.27	1.6	10/23/24
2	Rick	2	8/8/25	122.9	Hamlin	PsB	NE 1/4	Sec.	34	, T	114	, R 54	2.4	Leased		5.5		X		13		14	Olsen	188	4.1%	7.6	0.36	0.27	10/16/24
3	Jensen/Walts	3	8/8/25	251.2	Hamlin	PsB	S 1/2	Sec.	34	, T	114	, R 54	2.4	Leased		21.6		X		54		20	Olsen	175	4.5%	7.4	0.39	0.99	10/17/24
4	Fedts	4	8/8/25	77.4	Hamlin	PsB	SW 1/4	Sec.	35	, T	114	, R 54	2.4	Leased		3.6		X		31		27	Olsen	196	4.4%	7.7	0.35	0.4	09/22/23
5	Genes	5	8/8/25	232.5	Hamlin	PsB	S 1/2	Sec.	2	, T	113	, R 54	2.4	Leased		1.1		X		22		11	Olsen	261	3.6%	7.5			10/11/23
6	Kyles Home	6	8/8/25	122.6	Hamlin	PsB	SW 1/4	Sec.	14	, T	114	, R 54	1.7	Leased		2.5		X		12		12	Olsen	166	3.8%	7.1	0.76	1.75	10/02/24
7	Wendlings	7	8/8/25	96.9	Hamlin	PsB	SE 1/4	Sec.	26	, T	114	, R 55	1.7	Leased		27.5				15		6	Olsen	187	4.5%	7.0	0.19	0.37	10/16/24
8	School 40	8	8/8/25	37.2	Hamlin	PsB	NW 1/4	Sec.	36	, T	114	, R 55	1.7	Leased		1.9				11		8	Olsen	185	4.1%	7.0	0.42	0.28	10/16/24
9	N Paines	9	8/8/25	102.2	Hamlin	PsB	NW 1/4	Sec.	15	, T	114	, R 55	1.7	Leased		0.3				32		13	Olsen	187	3.9%	7.0	0.41	0.26	10/17/24
10	S Paines	10	8/8/25	124.0	Hamlin	Cx	SW 1/4	Sec.	15	, T	114	, R 55	1.7	Leased		7.7				31		10	Olsen	160	3.7%	7.3	0.91	1.09	10/23/24
11	Terraces	11	8/8/25	38.9	Hamlin	PsB	SE 1/4	Sec.	15	, T	114	, R 55	1.7	Leased		1.0				23		9	Olsen	140	4.3%	7.5	0.83	1.4	10/17/24
12	Duanes	12	8/8/25	158.4	Hamlin	PsB	S 1/2	Sec.	16	, T	114	, R 55	1.7	Leased		10.9				66		10	Olsen	201	4.7%	7.5	1.19	1.23	10/18/23
13	Teschs35	13	8/825	281.6	Hamlin	Co	W 1/2	Sec.	8	, T	114	, R 53	1.4	Leased		52.6				26		35	Bray1	139	2.8%	6.8	0.47	0.24	11/04/24
14								Sec.		, T		, R																	
15								Sec.		, T		, R																	
16								Sec.		, T		, R																	
17								Sec.		, T		, R																	
18								Sec.		, T		, R																	
19								Sec.		, T		, R																	
20								Sec.		, T		, R																	
21								Sec.		, T		, R																	
22								Sec.		, T		, R																	
23								Sec.		, T		, R																	
24								Sec.		, T		, R																	
25								Sec.		, T		, R																	
26								Sec.		, T		, R																	
27								Sec.		, T		, R																	

Total: 1,748.6

Comments:

NUTRIENT MANAGEMENT PLAN
FOR
SOUTH DAKOTA ANIMAL FEEDING OPERATIONS

Estimated Nutrient Requirement

17. 30.

○ Actual or Yield Goal
◉ Yields indexed by soil productivity (Productivity Index)
○ County Average Yields (SD Agricultural Statistics Service)

Line #	Field ID (Include maps to illustrate location) Name or Tract	Field #	Previous Year Crop	Previous Year PI Yield	Previous Year Actual Yield	Year 1 Crop	Year 1 PI Yield	Year 1 Yield Goal	Year 2 Crop	Year 2 PI Yield	Year 2 Yield Goal	Year 3 Crop	Year 3 PI Yield	Year 3 Yield Goal	Year 4 Crop	Year 4 PI Yield	Year 4 Yield Goal	Year 5 Crop	Year 5 PI Yield	Year 5 Yield Goal
1	Home	1	Corn Silage (ton)	26		Soybean (bu)	62		Corn (bu)	217		Corn Silage (ton)	26		Sorghum (bu)	59		Corn (bu)	217	
2	Rick	2	Corn (bu)	217		Corn (bu)	217		Soybean (bu)	62		Corn (bu)	217		Soybean (bu)	62		Corn (bu)	217	
3	Jensen/Walts	3	Soybean (bu)	62		Corn Silage (ton)	26		Corn (bu)	217		Soybean (bu)	62		Corn Silage (ton)	26		Corn (bu)	217	
4	Fedts	4	Corn (bu)	217		Soybean (bu)	62		Corn Silage (ton)	26		Corn (bu)	217		Soybean (bu)	62		Corn Silage (ton)	26	
5	Genes	5	Corn (bu)	217		Soybean (bu)	62		Soybean (bu)	62		Corn (bu)	217		Corn (bu)	217		Soybean (bu)	62	
6	Kyles Home	6	Soybean (bu)	62		Corn (bu)	217		Soybean (bu)	62		Corn (bu)	217		Soybean (bu)	62		Corn (bu)	217	
7	Wendlings	7	Soybean (bu)	62		Corn (bu)	217		Soybean (bu)	62		Corn (bu)	217		Soybean (bu)	62		Corn (bu)	217	
8	School 40	8	Soybean (bu)	62		Corn (bu)	217		Soybean (bu)	62		Corn (bu)	217		Soybean (bu)	62		Corn (bu)	217	
9	N Paines	9	Soybean (bu)	62		Corn (bu)	217		Soybean (bu)	62		Corn (bu)	217		Soybean (bu)	62		Corn (bu)	217	
10	S Paines	10	Corn (bu)	191		Soybean (bu)	55		Corn (bu)	191		Soybean (bu)	55		Corn (bu)	191		Soybean (bu)	55	
11	Terraces	11	Soybean (bu)	62		Corn (bu)	217		Soybean (bu)	62		Corn (bu)	217		Soybean (bu)	62		Corn (bu)	217	
12	Duanes	12	Corn (bu)	217		Soybean (bu)	62		Corn (bu)	217		Soybean (bu)	62		Corn (bu)	217		Soybean (bu)	62	
13	Teschs35	13	Soybean (bu)	31		Corn (bu)	110		Soybean (bu)	31		Corn (bu)	110		Soybean (bu)	31		Corn (bu)	110	
14																				
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UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

NUTRIENT MANAGEMENT PLAN
FOR
SOUTH DAKOTA ANIMAL FEEDING OPERATIONS

SD-CPA-63B
Rev. 4/24

Part 3: Planned Nutrient Application

Date: 08/08/25 **Operator:** **County:** Hamlin **Date:** 08/08/25

17.				31.	32.			33.	34.	35.	36.									37.
Line #	Field ID (Include maps to illustrate location) Name or Tract	Field #	Alternative crops for years 1 through 5	Initial Nutrient Mgt. Plan - N based fields (acres)	Nutrient Recommendation - *SDSU Extension Service EC-750*			Manure application based on:	Phosphorus Risk Assessment	Nitrogen Risk Assessment	Nutrients Applied									Estimated years to reapplication based on P_2O_5 rate
											Commercial lbs/acre			Manure lbs/acre			Total lbs/acre			
					N	P_2O_5	K_2O				N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	
1	Home	1	Alf., 4 ton; S.Wheat, 65 bu; Rye, 2.5 ton; Oats, 60 bu; Sorghum, 3 ton	90.9	0	35	0	Nitrogen need	Low	Low	0	0	0	0	0	0	0	0	0	N/A
2	Rick	2	Alf., 4 ton; S.Wheat, 65 bu; Rye, 2.5 ton; Oats, 60 bu; Sorghum, 3 ton	117.4	204	18	0	Nitrogen need	Low	Low	0	0	0	0	0	0	0	0	0	N/A
3	Jensen/Walts	3	Alf., 4 ton; S.Wheat, 65 bu; Rye, 2.5 ton; Oats, 60 bu; Sorghum, 3 ton	229.6	137	0	0	Nitrogen need	Low	Low	0	0	0	0	0	0	0	0	0	N/A
4	Fedts	4	Alf., 4 ton; S.Wheat, 65 bu; Rye, 2.5 ton; Oats, 60 bu; Sorghum, 3 ton	73.8	0	0	0	Nitrogen need	Low	Low	0	0	0	0	0	0	0	0	0	N/A
5	Genes	5	Alf., 4 ton; S.Wheat, 65 bu; Rye, 2.5 ton; Oats, 60 bu; Sorghum, 3 ton	231.4	0	1	0	Nitrogen need	Low	Low	0	0	0	0	0	0	0	0	0	N/A
6	Kyles Home	6	Alf., 4 ton; S.Wheat, 65 bu; Rye, 2.5 ton; Oats, 60 bu; Sorghum, 3 ton	120.1	165	37	0	Nitrogen need	Low	Low	0	0	0	0	0	0	0	0	0	N/A
7	Wendlings	7	Alf., 4 ton; S.Wheat, 65 bu; Rye, 2.5 ton; Oats, 60 bu; Sorghum, 3 ton	69.4	162	95	0	Nitrogen need	Low	Low	0	0	0	0	0	0	0	0	0	N/A
8	School 40	8	Alf., 4 ton; S.Wheat, 65 bu; Rye, 2.5 ton; Oats, 60 bu; Sorghum, 3 ton	35.3	166	76	0	Nitrogen need	Low	Low	0	0	0	0	0	0	0	0	0	N/A
9	N Paines	9	Alf., 4 ton; S.Wheat, 65 bu; Rye, 2.5 ton; Oats, 60 bu; Sorghum, 3 ton	101.8	145	28	0	Nitrogen need	Low	Low	0	0	0	0	0	0	0	0	0	N/A
10	S Paines	10	Alf., 4 ton; S.Wheat, 65 bu; Rye, 2.5 ton; Oats, 60 bu; Sorghum, 3 ton	116.3	0	8	0	Nitrogen need	Low	Low	0	0	0	0	0	0	0	0	0	N/A
11	Terraces	11	Alf., 4 ton; S.Wheat, 65 bu; Rye, 2.5 ton; Oats, 60 bu; Sorghum, 3 ton	37.9	154	66	60	Nitrogen need	Low	Low	0	0	0	0	0	0	0	0	0	N/A
12	Duanes	12	Alf., 4 ton; S.Wheat, 65 bu; Rye, 2.5 ton; Oats, 60 bu; Sorghum, 3 ton	147.6	0	9	0	Nitrogen need	Low	Low	0	0	0	0	0	0	0	0	0	N/A
13	Teschs35	13	Alf., 4 ton; S.Wheat, 65 bu; Rye, 2.5 ton; Oats, 60 bu; Sorghum, 3 ton	229.0	44	0	60	Nitrogen need	Low	Low	0	0	0	0	0	0	0	0	0	N/A
14											0	0	0	0	0	0	0	0	0	
15											0	0	0	0	0	0	0	0	0	
16											0	0	0	0	0	0	0	0	0	
17											0	0	0	0	0	0	0	0	0	
18											0	0	0	0	0	0	0	0	0	
19											0	0	0	0	0	0	0	0	0	
20											0	0	0	0	0	0	0	0	0	
21											0	0	0	0	0	0	0	0	0	
22											0	0	0	0	0	0	0	0	0	
23											0	0	0	0	0	0	0	0	0	
24											0	0	0	0	0	0	0	0	0	
25											0	0	0	0	0	0	0	0	0	
26											0	0	0	0	0	0	0	0	0	
27											0	0	0	0	0	0	0	0	0	

	1,600.2	N	P_2O_5
Total lbs of N and P2O5 available for crops:		**152,538**	**456,250**
Total lbs of N and P2O5 required by fields:		**252,790**	**98,276**

Comments:

Adequate acres are available based on Nitrogen analysis

However, P2O5 is in excess of removal. At this rate, it will take approximately 3 year(s) to build all listed fields up to 50 ppm P (Olsen).

MANURE APPLICATION LEASE AGREEMENT

This Lease Agreement, made and entered into this 13 **day of** August **, 20** 25
between Robert Popham **hereinafter described as Landowner, and** Travis Popham **hereinafter described as Tenant, agree as follows:**

1. Landowner leases to the Tenant the following described real property situated in Hamlin County, South Dakota for the sole purpose of spreading solid and/or liquid animal manure on the said premises.

Field Location (1/4 Section, Township, Range)	Acres Available	Landuse
	81	pl
	8	
	121	
	240	
NW		

Total Acres (more or less) 1201.03

2. Tenant shall be allowed to spread manure on the property owned by the Landowner described above at such regular intervals as are mutually agreeable by both parties. The spreading of manure, however, shall not interfere with the productivity, planting, growing and harvesting of crops on the above described premises.

3. Tenant and Landowner jointly agree to apply manure and/or commercial fertilizer at rates not to exceed crop nutrient needs using current soil and manure test results.

4. Tenant further agrees to comply with all local ordinances and state and federal environmental laws in the hauling and spreading of said animal manure.

5. This lease shall commence 13 August , 2025 and terminate in 3 years on 13 August , 2028 Upon expiration this lease shall automatically renew from year-to-year, upon the same terms and conditions, unless either party gives written notice to the other on or before 1st Jan of any given year of an election not to renew this Lease.

6. It is agreed that the Tenant listed above has sole authorization of spreading manure on the above described premises.

7. Other Conditions (Describe): _____

LANDOWNER Robert Popham (Signature)
Address: 44619 190th St
City State Zip: Hayti SD 57241
Phone: 605-881-9426

TENANT Travis Popham (Signature)
Address: 44619 190th St
City State Zip: Hayti SD 57241
Phone: 605-520-4023

MANURE APPLICATION LEASE AGREEMENT

This Lease Agreement, made and entered into this 13 **day of** August **, 20**25
between Chance Popham **hereinafter described as Landowner, and** Travis Popham **hereinafter described as Tenant, agree as follows:**

1. Landowner leases to the Tenant the following described real property situated in Hamlin County, South Dakota for the sole purpose of spreading solid and/or liquid animal manure on the said premises.

Field Location (1/4 Section, Township, Range)	Acres Available	Landuse
	X	

Total Acres (more or less) _____

2. Tenant shall be allowed to spread manure on the property owned by the Landowner described above at such regular intervals as are mutually agreeable by both parties. The spreading of manure, however, shall not interfere with the productivity, planting, growing and harvesting of crops on the above described premises.

3. Tenant and Landowner jointly agree to apply manure and/or commercial fertilizer at rates not to exceed crop nutrient needs using current soil and manure test results.

4. Tenant further agrees to comply with all local ordinances and state and federal environmental laws in the hauling and spreading of said animal manure.

5. This lease shall commence 13 August , 2025 and terminate in 3 years on 13 August , 2028. Upon expiration this lease shall automatically renew from year-to-year, upon the same terms and conditions, unless either party gives written notice to the other on or before 1st of Jan of any given year of an election not to renew this Lease.

6. It is agreed that the Tenant listed above has sole authorization of spreading manure on the above described premises.

7. Other Conditions (Describe): _____

LANDOWNER Chance Popham (Signature)
Address: 14291 447th AVE
City State Zip: Hayti SD 57241
Phone: 605-940-2717

TENANT Travis Popham (Signature)
Address: 44619 190th St
City State Zip: Hayti SD 57241
Phone: 605-520-4022

MANURE APPLICATION LEASE AGREEMENT

This Lease Agreement, made and entered into this 13 **day of** August **, 20** 25
between Clay Pyham **hereinafter described as Landowner, and** Travis Pyham **hereinafter described as Tenant, agree as follows:**

1. Landowner leases to the Tenant the following described real property situated in Hamlin County, South Dakota for the sole purpose of spreading solid and/or liquid animal manure on the said premises.

Field Location (1/4 Section, Township, Range)	Acres Available	Landuse

Total Acres (more or less) _____

2. Tenant shall be allowed to spread manure on the property owned by the Landowner described above at such regular intervals as are mutually agreeable by both parties. The spreading of manure, however, shall not interfere with the productivity, planting, growing and harvesting of crops on the above described premises.

3. Tenant and Landowner jointly agree to apply manure and/or commercial fertilizer at rates not to exceed crop nutrient needs using current soil and manure test results.

4. Tenant further agrees to comply with all local ordinances and state and federal environmental laws in the hauling and spreading of said animal manure.

5. This lease shall commence 13 August , 2025 and terminate in 3 years on 13 August , 2028 Upon expiration this lease shall automatically renew from year-to-year, upon the same terms and conditions, unless either party gives written notice to the other on or before 1st Jan of any given year of an election not to renew this Lease.

6. It is agreed that the Tenant listed above has sole authorization of spreading manure on the above described premises.

7. Other Conditions (Describe): _____

LANDOWNER Clay Pyham (Signature)
Address: 46297 447th Ave
City State Zip: Hayti, SD 57241
Phone: 605-880-1545

TENANT Travis Pyham (Signature)
Address: 44619 190th St
City State Zip: Hayti SD 57241
Phone: 605-520-4022

MANURE APPLICATION LEASE AGREEMENT

This Lease Agreement, made and entered into this 1 **day of** August **, 20**25
between Kyle Pgham **hereinafter described as Landowner, and** Travis Pgham **hereinafter described as Tenant, agree as follows:**

1. Landowner leases to the Tenant the following described real property situated in Hamlin County, South Dakota for the sole purpose of spreading solid and/or liquid animal manure on the said premises.

Field Location (1/4 Section, Township, Range)	Acres Available	Landuse
15-114N-		Cropland

Total Acres (more or less) 1

2. Tenant shall be allowed to spread manure on the property owned by the Landowner described above at such regular intervals as are mutually agreeable by both parties. The spreading of manure, however, shall not interfere with the productivity, planting, growing and harvesting of crops on the above described premises.

3. Tenant and Landowner jointly agree to apply manure and/or commercial fertilizer at rates not to exceed crop nutrient needs using current soil and manure test results.

4. Tenant further agrees to comply with all local ordinances and state and federal environmental laws in the hauling and spreading of said animal manure.

5. This lease shall commence 13 August , 2025 and terminate in 3 years on 13 August , 2028 Upon expiration this lease shall automatically renew from year-to-year, upon the same terms and conditions, unless either party gives written notice to the other on or before 1st Jan of any given year of an election not to renew this Lease.

6. It is agreed that the Tenant listed above has sole authorization of spreading manure on the above described premises.

7. Other Conditions (Describe): _____

LANDOWNER Kyle Pgham (Signature)
Address: 1864B 446 Ave
City State Zip: Hayti SD 57241
Phone: 605-881-2642

TENANT Travis Pgham (Signature)
Address: 44019 140th St
City State Zip: Hayti SD 57241
Phone: 605-520-4032

MANURE APPLICATION LEASE AGREEMENT

This Lease Agreement, made and entered into this 13 **day of** August , **20** 25
between Scott Popham **hereinafter described as Landowner, and** Travis Popham **hereinafter described as Tenant, agree as follows:**

1. Landowner leases to the Tenant the following described real property situated in Hamlin County, South Dakota for the sole purpose of spreading solid and/or liquid animal manure on the said premises.

Field Location (1/4 Section, Township, Range)	Acres Available	Landuse
	121	CLY
	80	C½

Total Acres (more or less) ____

2. Tenant shall be allowed to spread manure on the property owned by the Landowner described above at such regular intervals as are mutually agreeable by both parties. The spreading of manure, however, shall not interfere with the productivity, planting, growing and harvesting of crops on the above described premises.

3. Tenant and Landowner jointly agree to apply manure and/or commercial fertilizer at rates not to exceed crop nutrient needs using current soil and manure test results.

4. Tenant further agrees to comply with all local ordinances and state and federal environmental laws in the hauling and spreading of said animal manure.

5. This lease shall commence 13 August , 2025 and terminate in 3 years on 13 August , 2028. Upon expiration this lease shall automatically renew from year-to-year, upon the same terms and conditions, unless either party gives written notice to the other on or before 1st of January of any given year of an election not to renew this Lease.

6. It is agreed that the Tenant listed above has sole authorization of spreading manure on the above described premises.

7. Other Conditions (Describe): ____

LANDOWNER Scott Popham (Signature)
Address: 19297 447th AVE
City State Zip: Hayti SD 57241
Phone: 605-237-6345

TENANT Travis Popham (Signature)
Address: 44614 140th St
City State Zip: Hayti SD 57241
Phone: (605) 530-4023

MANURE APPLICATION LEASE AGREEMENT

This Lease Agreement, made and entered into this 13 **day of** August **, 20**25
between Travis Popham **hereinafter described as Landowner, and** Popham Livestock by Travis Popham **hereinafter described as Tenant, agree as follows:**

1. Landowner leases to the Tenant the following described real property situated in Hamlin County, South Dakota for the sole purpose of spreading solid and/or liquid animal manure on the said premises.

Field Location (1/4 Section, Township, Range)	Acres Available	Landuse
15 141 3	39	Crop
	60	Crop

Total Acres (more or less) _____

2. Tenant shall be allowed to spread manure on the property owned by the Landowner described above at such regular intervals as are mutually agreeable by both parties. The spreading of manure, however, shall not interfere with the productivity, planting, growing and harvesting of crops on the above described premises.

3. Tenant and Landowner jointly agree to apply manure and/or commercial fertilizer at rates not to exceed crop nutrient needs using current soil and manure test results.

4. Tenant further agrees to comply with all local ordinances and state and federal environmental laws in the hauling and spreading of said animal manure.

5. This lease shall commence 13 August , 2025 and terminate in 3 years on 13 August , 2025 Upon expiration this lease shall automatically renew from year-to-year, upon the same terms and conditions, unless either party gives written notice to the other on or before 1st Jan of any given year of an election not to renew this Lease.

6. It is agreed that the Tenant listed above has sole authorization of spreading manure on the above described premises.

7. Other Conditions (Describe): _____

LANDOWNER Travis Popham (Signature)
Address: 44019 190th St
City State Zip: Hayti SD 57241
Phone: _____

TENANT Popham Livestock by Travis Popham (Signature)
Address: 44014 190th St
City State Zip: Hayti SD 57241
Phone: 605-530-4022

Annual Record Keeping Documentation

Nutrient application should be documented each year with the following information.

☐ **Soil Test Results** (prior to manure application)
- Nitrate Nitrogen (0-6" + 6-24" or 48" if highly vulnerable to Leaching)
- Phosphorus (0-6")
- Potassium (0-6")

☐ **Manure Test Results** (lbs/ton or lbs/1,000 gal) (prior to manure application)

- **Also test holding / evaporation ponds** *(if applicable)*
  - Total Nitrogen Content of Manure
  - Inorganic Nitrogen (Ammonium N)
  - Phosphorus (P_2O_5)
  - Potassium (K_2O)

☐ **Application Maps** with application areas clearly identified

☐ **Nutrient Budget (SD-CPA-63 include both manure and commercial fertilizer)**

- **Rate calculation before application of nutrient**

☐ **Manure Equipment & Calibration Records**

Additional Requirements if Permitted by DENR

☐ **Land Application Inspections Record**

☐ **Daily Record of Precipitation (at site)**

☐ **Weekly Containment Inspection**

Manure Application On Frozen Ground

Liquid manure handling systems. Liquid manure is not to be applied to saturated, snow covered or frozen soil except in emergency situations, resulting from natural disaster, extraordinary weather events, or catastrophic equipment or structural failure.

Solid manure handling systems. Solid manure is not to be applied to saturated, snow covered or frozen soils, except in the following situations:

1. When incidental amounts of manure is collected during feedlot snow removal or cleaning of feed bunks or enclosed pens to facilitate livestock feeding and handling.
2. When a natural disaster or extraordinary weather (ie. excessive precipitation) prevent manure application during planned application periods.

General requirements for manure application on saturated, snow covered or frozen soil.

a. If a permitted facility, the producer is responsible to contact SD DENR prior to applying on saturated, snow-covered, or frozen soil.
b. The producer is required to provide documentation and updates to the existing nutrient management plan with dates, location(s), and volume of any emergency liquid manure or solid manure winter applications.
c. Application rates cannot exceed recommended rates based on fall soil test results.
d. Winter applications of nutrients must be set back a minimum of 300 feet from surface waters or water conveyances and a minimum of 1,000 feet from named lakes, rivers, and perennial streams.
e. No winter nutrient applications on floodplain soils classified as frequently or occasionally flooded on National Cooperative Soil Survey.
f. Winter applications only allowed on fields with slopes less than four percent.
g. Fields with lowest predicted soil loss (water erosion) will generally have the highest priority for winter applications.
h. Manure will be uniformly spread.
i. A manure nutrient test is recommended (if not available), to determine nutrient content.

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