# Ability of Wisconsin Dairy Farms to Conform to 590 Standards

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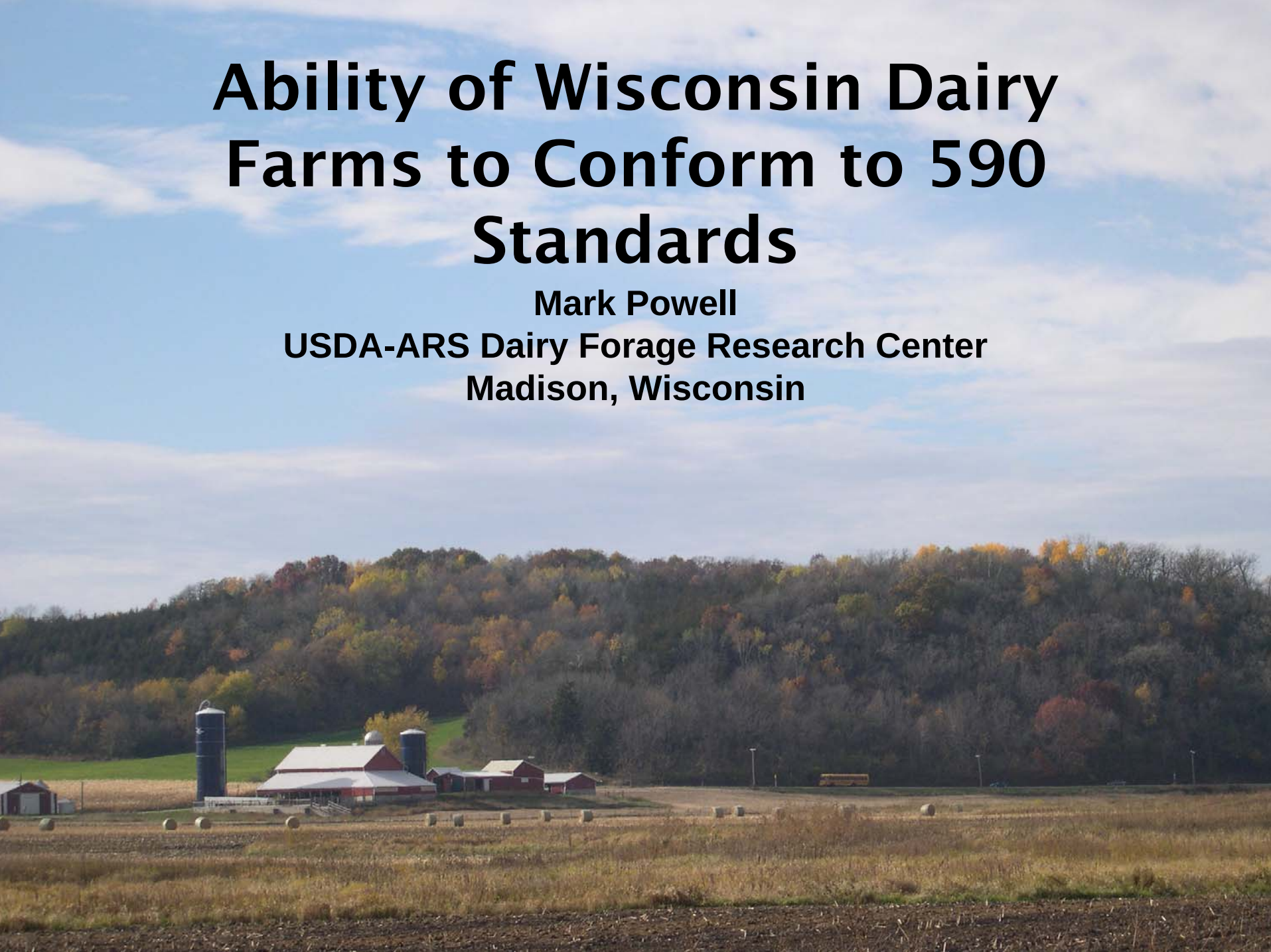


# The Standards guidance on N&P applications

*"Annual crop P recommendations may be combined into a single application that does not exceed the total P recommendation for the rotation (this high single application not permitted on frozen ground).*

*Available N from all sources shall not exceed the annual N requirement of non-legume crops…."*

http://www.datcp.state.wi.us/arm/agriculture/land-water/conservation/nutrient-mngmt/planning.jsp

# Also

*"When frozen or snow-covered soils prevent effective incorporation at the time of application and the nutrient application is allowed…..*

*…do not apply nutrients within the Water Quality Management Area (within 300' and draining to perennial streams and within 1000' of lakes or ponds), and*

*…do not exceed the P removal of the following growing season's crop when applying manure."*

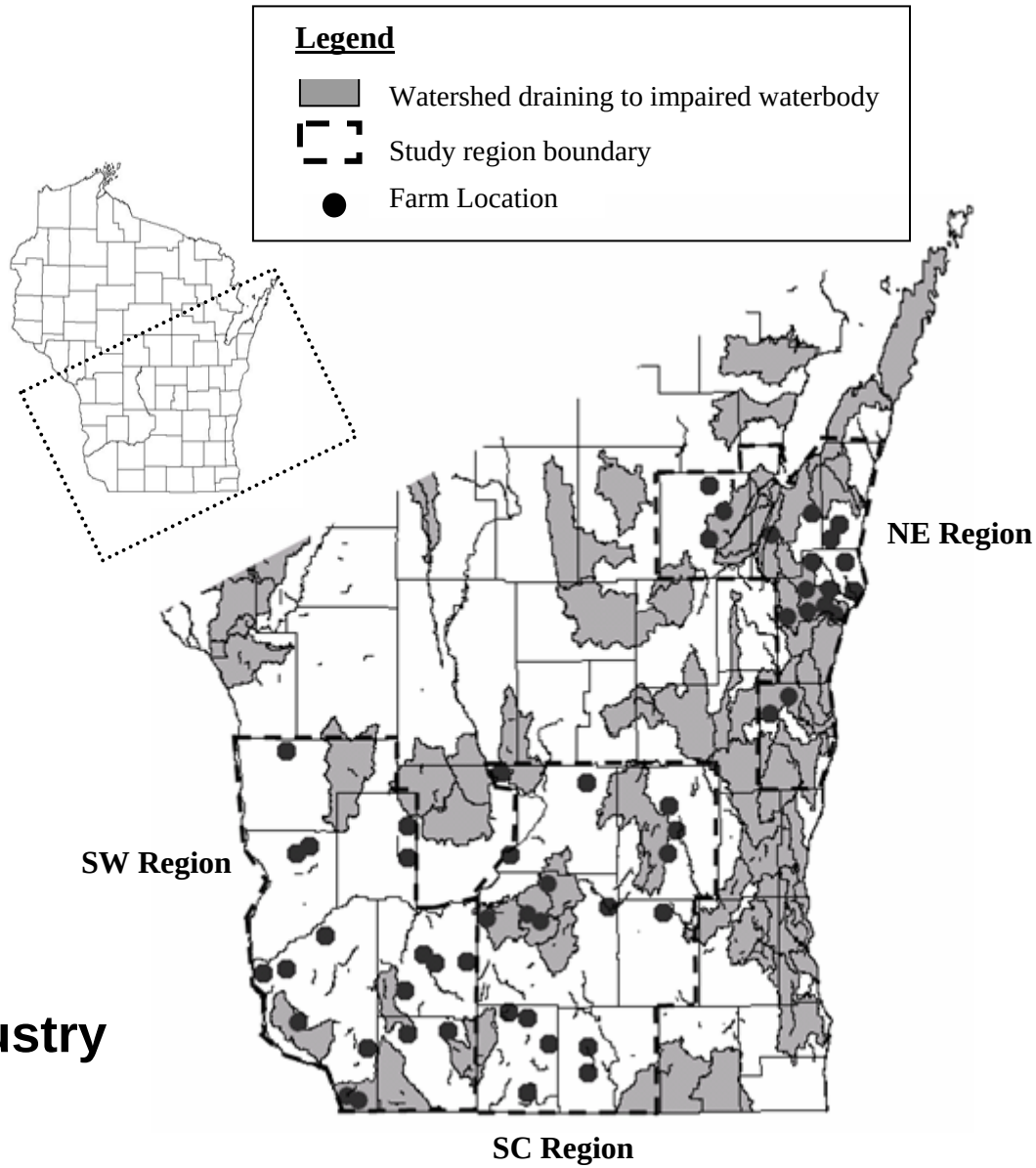
# On Farmers' Ground

## Study of Nutrient Management on 54 Wisconsin Dairy Farms

**Within each region**

- **18 farms selected at random from high, medium and low animal density categories**

**To provide a "snap-shot" of the Wisconsin dairy industry**



# Study Methods

- Research team made 4-5 visits/farm over a 3 year period

Detailed records were kept on the types and amounts of agricultural nutrients used during the period March 2003 to September 2004.

…..this provided a “snap-shot” of diet, manure, fertilizer, legume-N management on typical Wisconsin dairy farms

When,

where and

how much

manure

do farmers

land-apply?

**Total Cropland:**

**274 acres**

**Total Manured Land:**

**240 acres (88%)**

# Manure P applications

## Oct. ’03 – Sept. ’04

**P (lb/acre)**

- 0
- 1-15
- 16-30
- 31-60
- > 60
- Barn

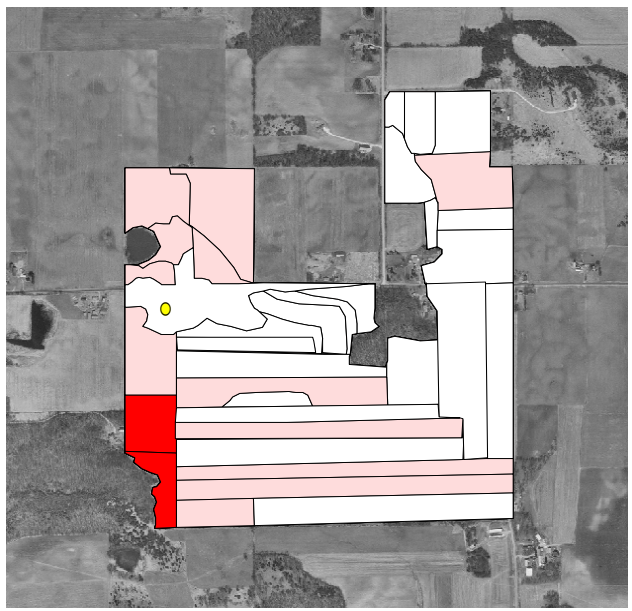
# Seasonal Manure P Applications

**Sept ’03 – Aug ’04**

**Fall (Sept. ‘03 – Nov. ‘03)**

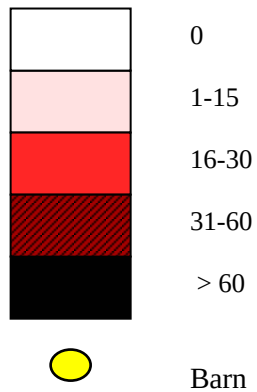
**Winter (Dec. ‘03 – Feb. ‘04)**

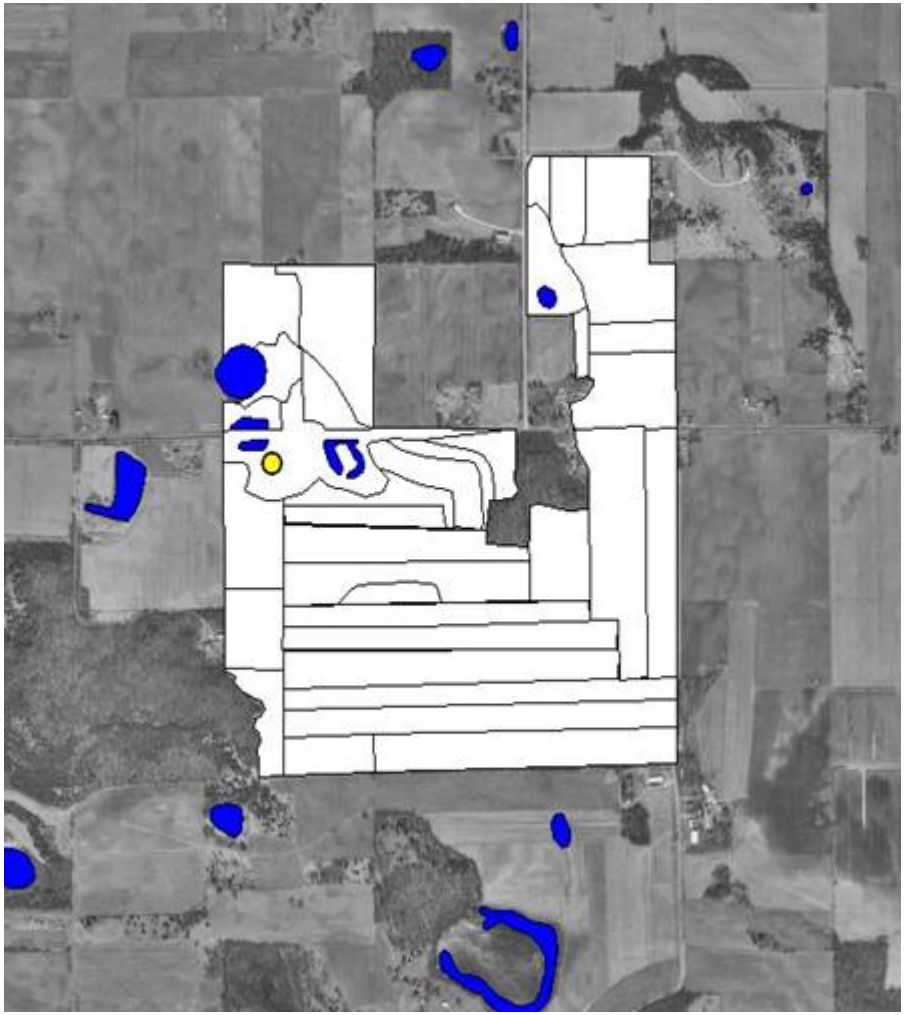
**Spring (March ‘04 – May ‘04)**



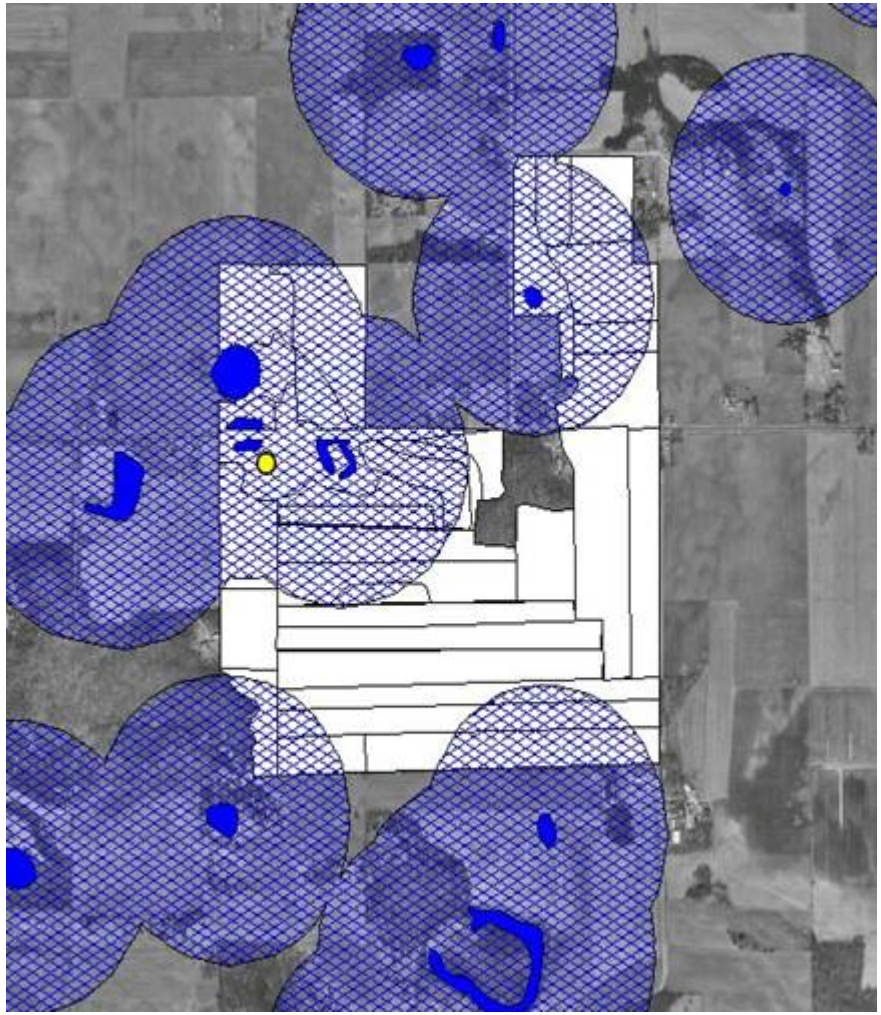
**Summer (June ‘04 –Aug. ‘04)**

**P (lb/acre)**



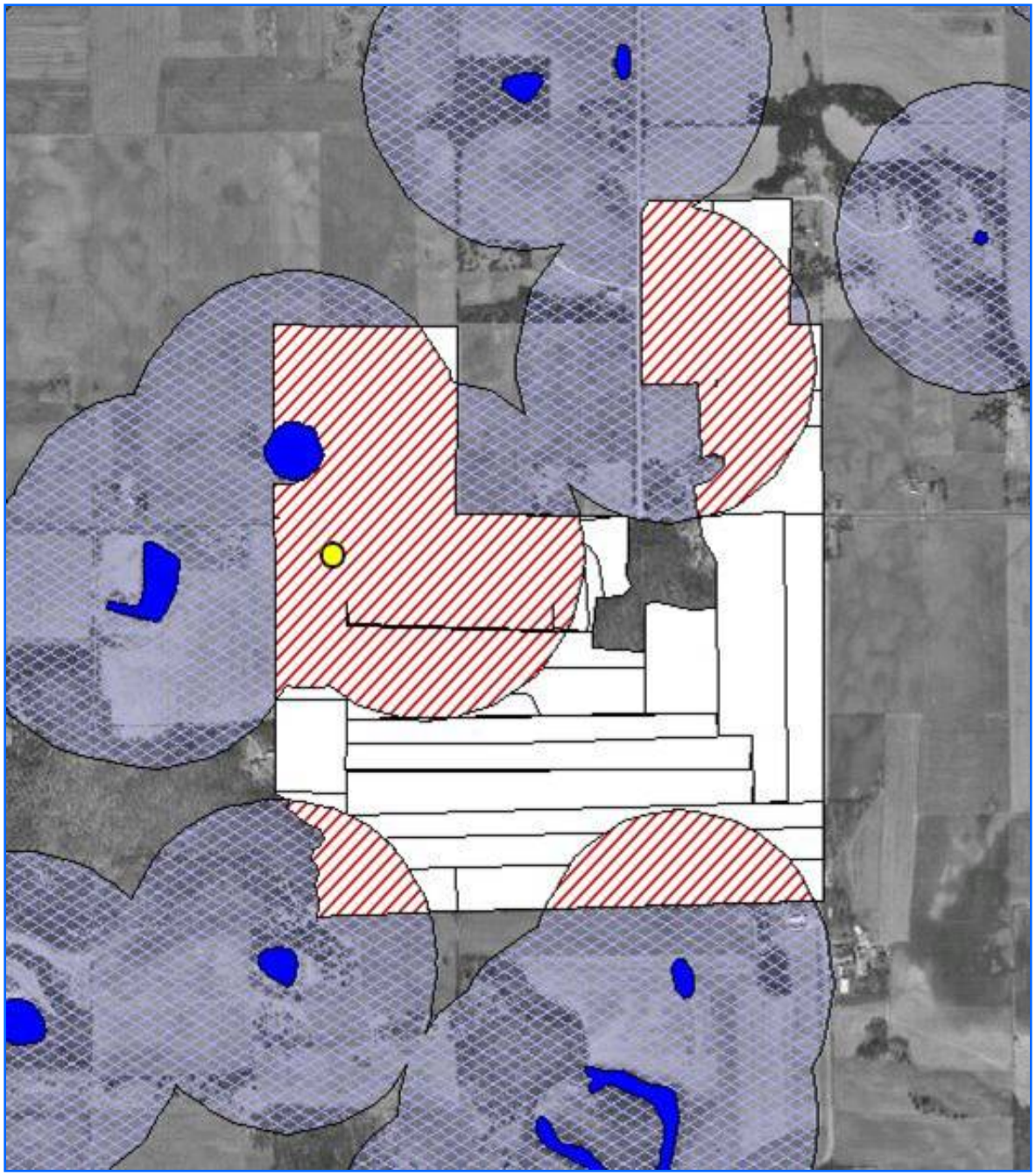


**Bodies of Water Close to Farm**



**<u>590 Standard</u>**

**1000-foot Winter “No-Spreading” Buffer**

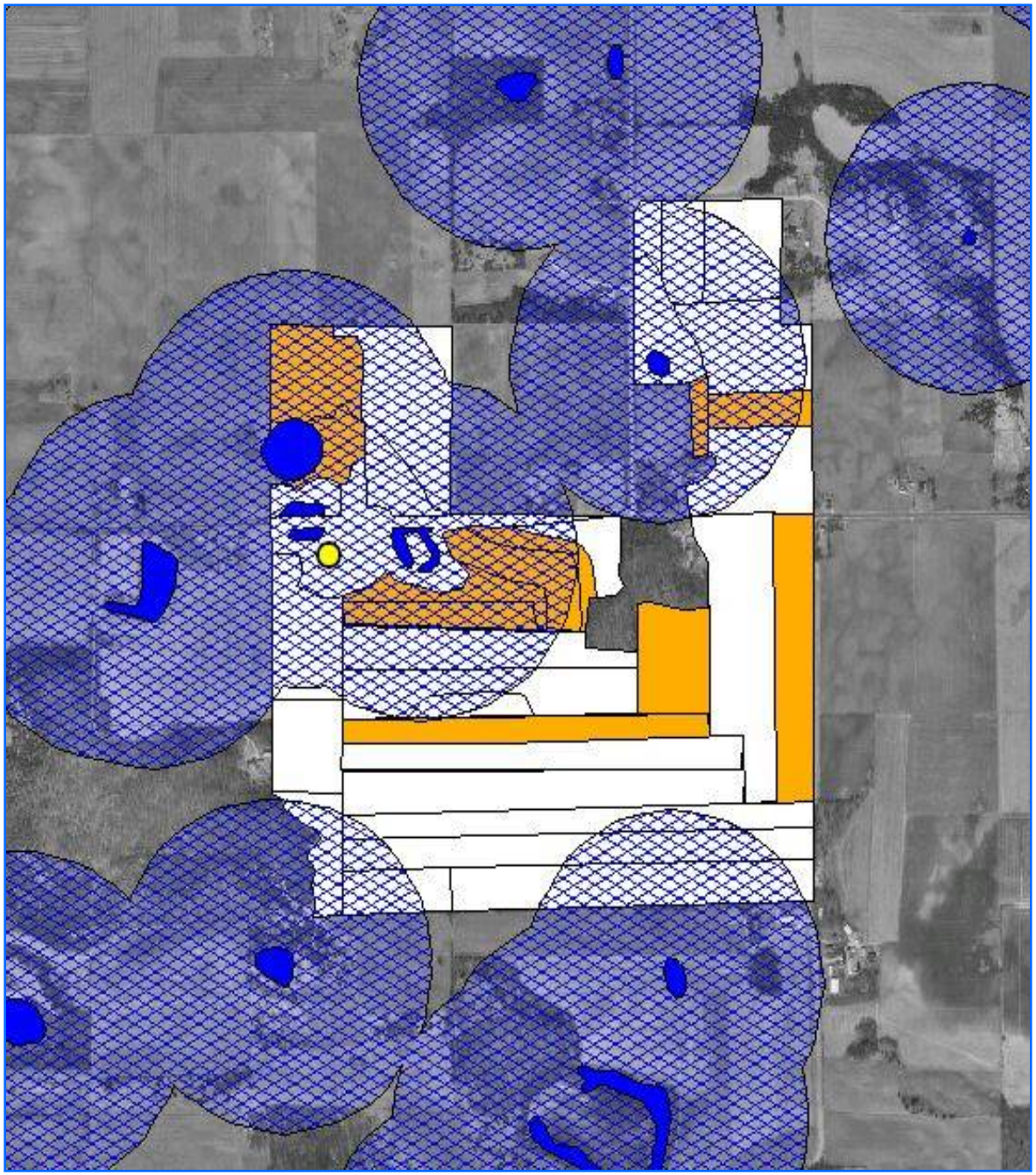


**Total Land Affected by Buffer:**

**165 acres (60.5%)**

**Land manured during Winter:**

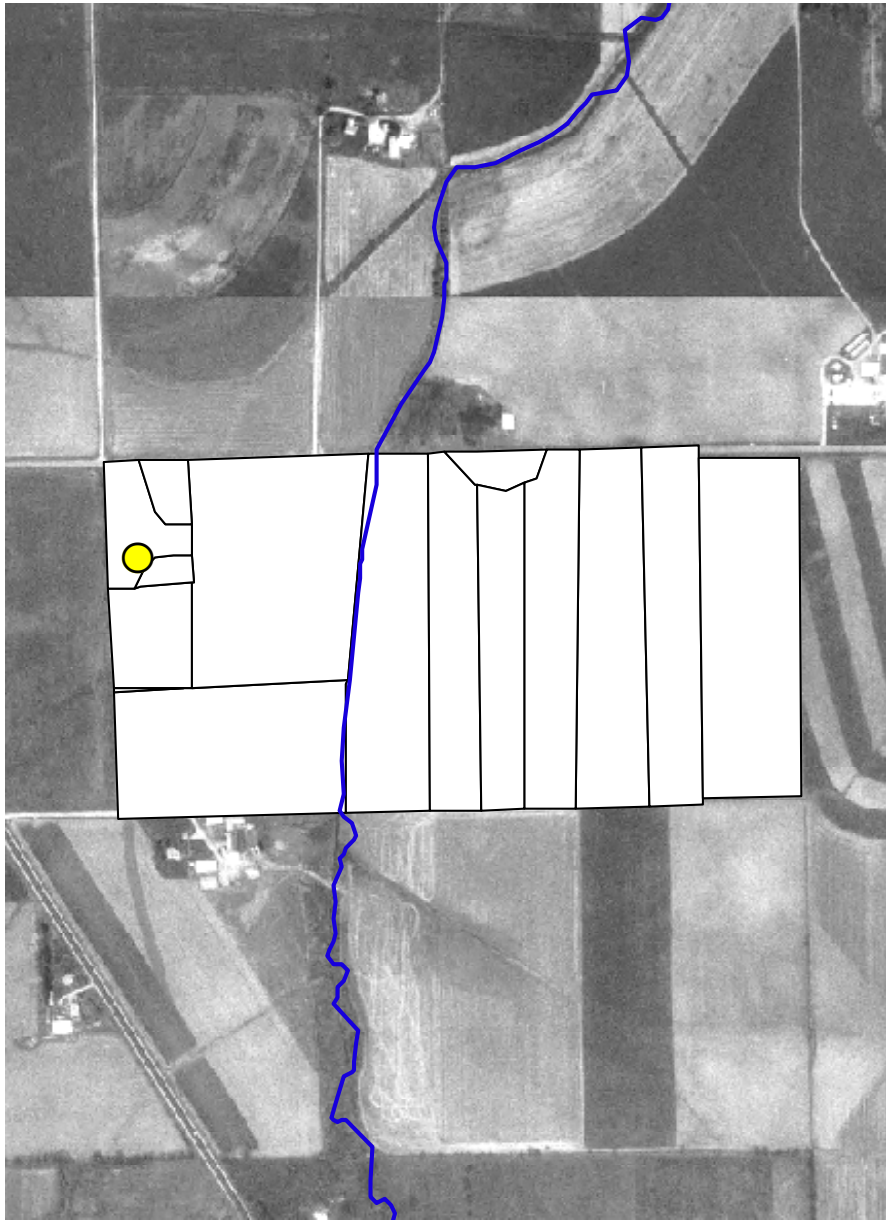
**59 acres**



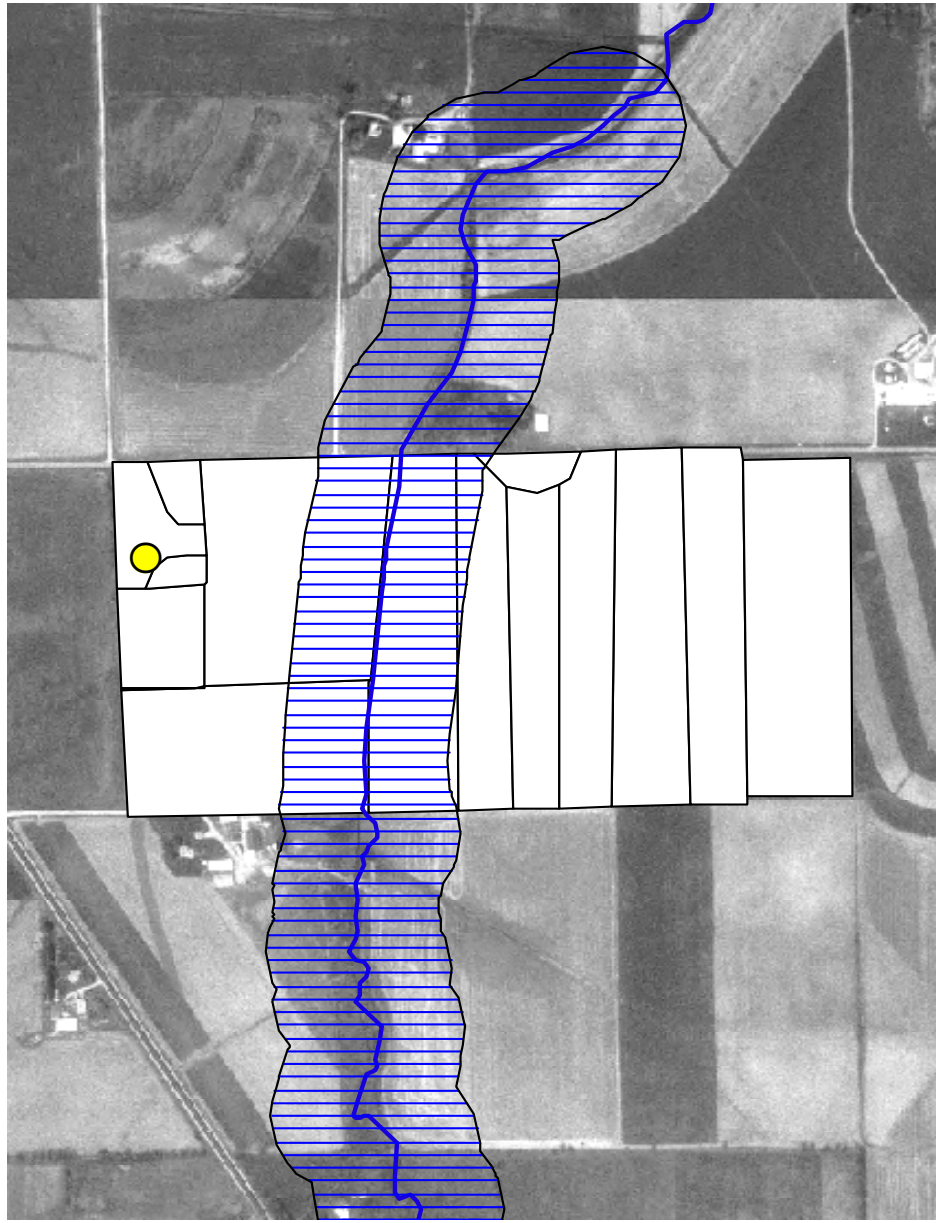
**590 Standard**

**590 Standard**

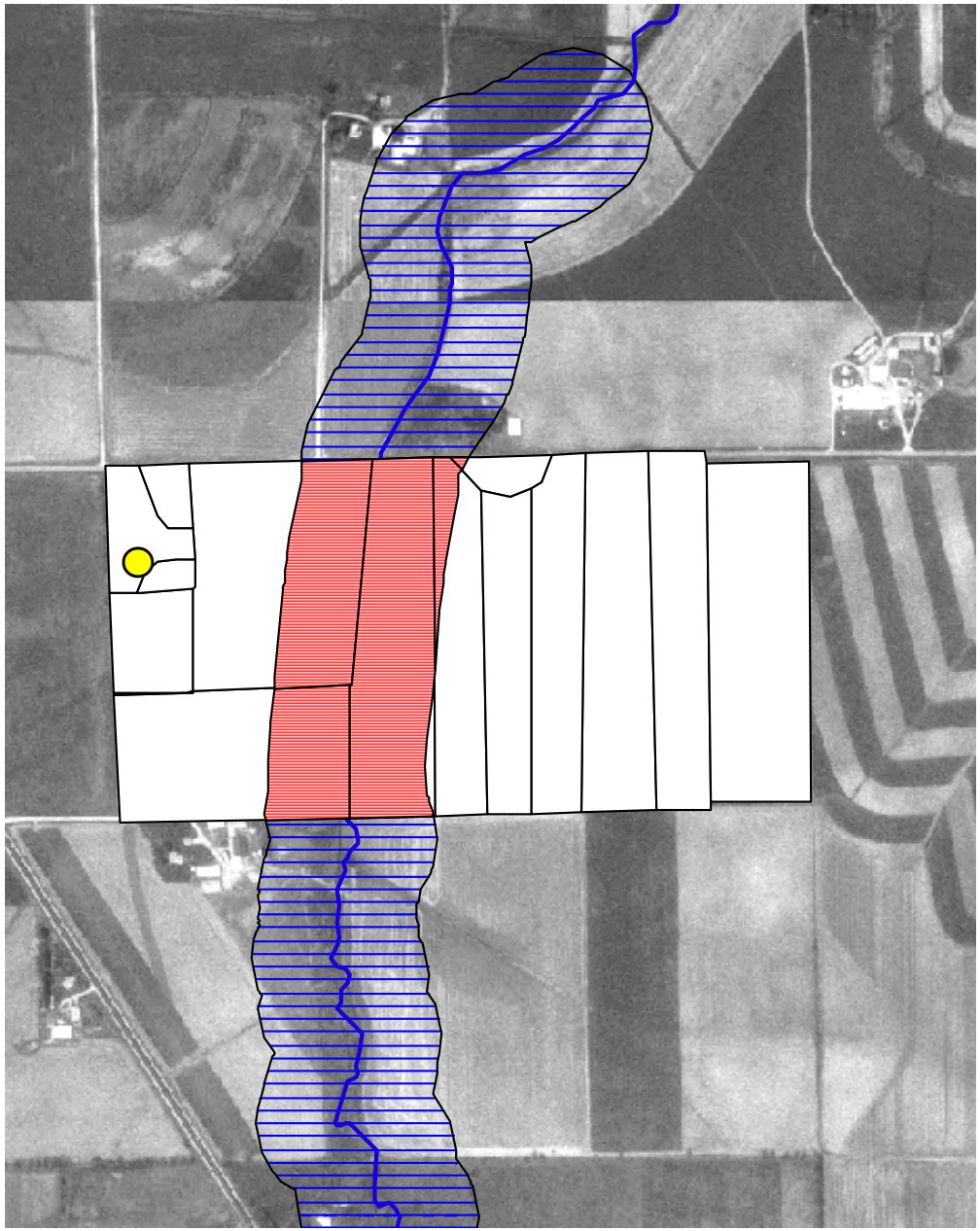
**Winter manured land affected by buffer: 37 acres (61%)**



Stream Running Through Property



300’ Buffer



**Total Land Affected by Buffer: 24%**

**Land Manured During WINTER: 20 acres**

**Within Buffer Zone: 14 acres (54%)**

# Summary of Results

33 farms,1070 fields, 8880 cropland acres

Corn (3345 acres)
Established alfalfa/hay (3130 acres)
Newly established alfalfa/hay (810 acres)
Soybeans (705 acres)
Small grains (435 acres)
Miscellaneous crops

# Manure P applications

- Average annual available $P_2O_5$ applications

## 32 to 37 lbs/acre

- 70% from manure and 30% from fertilizer
(manure availability=60% and fertilizer availability= 100%)

- 80 to 90% of acres below annual crop $P_2O_5$ removal of 50 lbs/acre

- 95 to 98% of the acres below the two-year replacement level of 100 lbs/acre

# Manure N applications

- Potential N available to corn

  28-36% from previous legumes

  26-33% from manure

  40% from fertilizer

**Assumed (1) 1st year alfalfa N credits of 120 and 70 lbs/acre for medium/fine and sandy textured soils, respectively and 40 lbs N/acre for soybeans except no credit on sandy soils ; (2) 1st year manure N availability of 60%; (3) fertilizer N availability of 100%**

**Most farmers appear to credit legume and manure N**

## Average available N applications to corn

105 lbs/acre in the SC region
165 lbs/acre in the NE
180 lbs/acre in the SW

Range of 75-225 lbs available N /acre:
55 to 60% of corn acreage

## Available N over 225 lbs available N /acre:

- 6 of 12 farms comprising 19% of the total corn acreage in the NE
- 3 of 12 farms comprising 5% of the corn acreage in the SC
- 6 of 9 farms comprising 10% of the total corn acreage in the SW region

# Summary of Results

- *80-90% of cropland area on Wisconsin dairy farms is not situated in Water Quality Management Area*

- *Farms in each zone, however, have one-third to two-thirds of their total operated cropland areas within Water Quality Management Areas*

- *Of total annual manure applications:*

  *…….8 to 22% occurred during winter*

  *…….5 to 25% of winter applications were within Water Quality Management Areas*

# Summary of Results

- In SW Wisconsin, only 8% of total manured area received manure during winter months, followed by the NE 12%, and the SC 22% regions

- Of the 8800 acres surveyed, approximately 2.5% (156 acres in the SC region, and 69 acres in the SW) received manure during winter that would have been in excess of annual crop P removal.

# Conclusions

- Few farms would have to change current cropping and nutrient management practices to adhere to proposed 590 Standards

- Some farms would require assistance in managing manure runoff from:

  Feedlots barnyards and denuded pasture areas

  Areas of unrestricted livestock access in Water Quality Management Areas

  Relatively small, targeted cropland areas


Questions?