

Appendix D

NRCS technical guide nutrient
management standard 590 (March, 1999)
with Wisconsin technical note

For nutrient management planning guidance

NUTRIENT MANAGEMENT

(Acre)

Code 590

Natural Resources Conservation Service

Conservation Practice Standard

Definition

Managing the amount, form, placement, and timing of applications of plant nutrients.

Scope

This standard establishes the minimum acceptable requirements for a plan that addresses the application of plant nutrients associated with organic wastes (manure and organic byproducts), commercial fertilizer, legume crops, and crop residues.

Purposes

This practice may be applied as part of a conservation management system to support one or more of the following purposes:

- Supply plant nutrients for crop production.
- Minimize entry of nutrients to surface water.
- Minimize entry of nutrients to groundwater.

Conditions Where Practice Applies

On lands where plant nutrients are applied.

Criteria

Because this is the first conservation practice standard designed to use the new NRCS planning procedure, a short explanation of the application of criteria based on identified purpose is provided.

In order to address the purpose of supplying nutrients for crop production, Criteria I must be applied.

It would be extremely rare in Wisconsin to find a field with an identified concern of nutrients applied for production where there would not also be a concern for the entry of nutrients to either surface or

groundwater. Criteria I would only be used alone where Total Resource Planning did not identify a surface or groundwater concern. Food Security Act and Farmland Preservation Plans are not Total Resource Plans.

In order to address the purpose of minimizing the entry of nutrients to surface water, Criteria I and III must be applied.

The criteria for minimizing the entry of nutrients to surface water will be applied to the majority of the fields in Wisconsin.

In order to address the purpose of minimizing entry of nutrients into groundwater, Criteria I and II must be applied.

The criteria for minimizing the entry of nutrients to groundwater will be applied in areas with groundwater concerns, ie, Lower Wisconsin River Valley, Central Sands, Atrazine Prohibition Areas, etc.

This practice would be used to treat these identified resource concerns:

Soil Resource

Soil Contaminants:

Excess Animal Wastes and Other Organics

Excess Fertilizer

Water Resource

Quality:

Nutrients and Organics in Groundwater

Nutrients and Organics in Surface Water

Plant Resource

Management:

Nutrient Management

I. Minimum Criteria to Provide Nutrients for Crop Production and to Minimize Entry of Nutrients to Surface Water and Groundwater

A. General Cases:

1. Soils shall be tested a minimum of once every four years.
2. Develop field by field nutrient budget for all major nutrients consistent with UWEX Publication "A-2809". Conservation Planning Tech Note WI-1 spells out the minimum requirements for a Nutrient Management Plan.
3. Available nitrogen, including nitrogen from legumes, manure, sludge, organic byproducts, and commercial sources, shall not exceed nonlegume crop needs, except that, available nitrogen may exceed crop needs by up to 20% if legumes, manures and organic byproducts are the only sources of nitrogen.
4. Commercial fertilizer shall not be applied to frozen or snow covered ground except for grass pastures on slopes of six percent or less north of Wisconsin Highway 29 and on winter grains throughout the state.

B. Manure and organic byproducts applied to crops for harvest.

1. Organic byproducts other than manure or septage shall be analyzed for nutrients. Other analyses may be required as prescribed by state, federal, or local regulations. These materials shall be spread as prescribed by federal, state, or local regulations (see Wis. Department of Natural Resources Code, NR214 (industrial wastes), NR204 (municipal sludges), NR113 (septage)). Required documentation shall be maintained by the applicator. These materials may require injection or incorporation within specified time periods.

2. Surface spread liquid manures and organic byproducts shall not run off the intended site during application. Application must be stopped if ponding or runoff begins.

C. Manure and organic byproducts applied on land where vegetation is not harvested. This does not include non-farmed wetlands.

1. Liquid materials shall be injected across slopes that are 3% or greater or be surface spread.
2. Application rates shall not exceed 75 lb available P₂O₅/acre (32.8 lb P/acre) total for a 5-year period unless incorporated.
3. Application of manure shall occur between July 15 and freeze-up to minimize damage to wildlife habitat.

II. Additional Criteria to Minimize Entry of Nutrients to Groundwater

- A. Manure shall contain a nitrification inhibitor if it is injected in the fall on sands, and loamy sands when the soil temperature is above 50 degrees F.
- B. Commercial nitrogen fertilizer for spring seeded crops shall not be fall applied on sands and loamy sands.
- C. Manure and organic byproducts shall not be applied to the following areas unless injected or incorporated within 72 hours:

1. within 200 feet upgradient of sinkholes, creviced bedrock at the surface, or other direct conduits to the groundwater, such as gravel pits and wells.
2. In other locally identified areas documented as having a high potential to pollute groundwater resources.

- D. Commercial Nitrogen application rates shall not exceed recommendations based on crop need.

III. Additional Criteria to Minimize Entry of Nutrients to Surface Water

- A. Manure shall not be applied at rates exceeding 75 lb available P₂O₅/acre/ year (32 lb P/acre) unless these materials are incorporated within 72 hours after application, in which case, the nitrogen content of the manure becomes the restricting nutrient. Applications of manure cannot be at a level which delivers more nitrogen than the crop needs. The nutrient content of manure shall be determined through a laboratory analysis or from SCS Conservation Planning Technical Note 1.
- B. The soil loss tolerance will not be exceeded on soils receiving manure and organic byproducts.
- C. Manure and organic byproducts shall not be spread in established waterways, non-farmed wetlands, terrace channels or other areas where runoff concentration occurs.
- D. Manure and organic byproducts shall not be applied to the following areas unless injected or incorporated within 72 hours:
1. within the 10-year floodplain or within 200 feet of streams, rivers, or lakes, whichever is greater,
 2. within 200 feet upgradient of sinkholes, creviced bedrock at the surface, or other direct conduits to the groundwater, such as gravel pits and wells.
- E. Manure and organic byproducts shall not be applied on frozen or snow covered ground in the following areas:
1. areas identified in III(D) (above),
 2. slopes of greater than 9%, except for manure on slopes up to 12% with well grassed waterways, that are either contour stripcropped with alternate strips in sod, or contour farmed with all the residue from a corn crop taken for grain remaining on the surface.
 3. other locally identified areas documented as having a high potential to pollute surface water resources.
- F. Manure and organic byproducts may be applied on frozen or snow covered ground on locally identified areas documented as having a low potential to pollute surface water.
- G. Commercial phosphorus application rates shall not exceed recommendations based on crop need.
- H. Additional guidance for reducing entry of nutrients into surface water may be found in Conservation Planning Technical Note 1.

PLANNING CONSIDERATIONS

1. Manure should not be winter spread on sites that are likely to deliver nutrient runoff to surface waters and/or groundwater. See Conservation Planning Technical Note 1 for guidelines concerning areas with high pollution hazard for surface runoff.
2. Manure should be stored in properly located and constructed facilities during periods when land application is not suitable. (See UWEX Publication A-3466 for more information.)
3. Manure applications to no-till cropping systems should be injected to avoid nutrient runoff and maximize nutrient availability. Surface applications should be avoided.
4. Vegetative filter strips, along with other erosion control practices, should be maintained adjacent to surface water, wetlands, sinkholes, and rock outcrops in order to reduce the amount of sediment and nutrients which actually reach surface water and/or groundwater.
5. Evaluate federal, state, and local water quality standards and designated use limitations, such as city, county, and township zoning ordinances.

PLANS AND SPECIFICATIONS

Plans and specifications will be prepared for a specific site based on this standard, and planning instructions provided in Conservation Planning Technical Note 1.

1. Nutrients shall be applied consistent with federal, state, and local regulations.

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2. Industrial wastes and byproducts are regulated under NR214, Wisconsin Administrative Code. They must be spread in accordance with a Wisconsin Pollution Discharge Elimination System (WPDES) Permit as obtained from the Wisconsin Department of Natural Resources (WDNR).

OPERATION, SAFETY AND MAINTENANCE

1. Minimize operator exposure to potentially toxic gases associated with manure, organic wastes and chemical fertilizers, particularly in enclosed areas. Wear protective clothing appropriate to the material being handled.
2. Protect commercial fertilizer from the weather, and agricultural waste storage facilities from accidental leakage or spillage. See Chapter Ag 162 of Wisconsin Administrative rules and County Waste Storage Facilities Ordinances concerning regulations on siting, design, operation and maintenance of these facilities.
3. When cleaning equipment after nutrient application, remove and save fertilizers or wastes in an appropriate manner. If system is flushed, use rinse water in the following batch of nutrient mixture, where possible, or dispose of according to state and local regulations. Always avoid cleaning equipment near high runoff areas, ponds, lakes, streams, and other water bodies. Extreme care must be exercised to avoid contaminating wells.
4. Application equipment must be calibrated to achieve the desired application rate.

Working Tools -

1. SCS Conservation Planning Technical Note 1
2. University of Wisconsin-Extension (UWEX) Publication "A-2809, Soil Test Recommendations for Field, Vegetable, and Fruit Crops", Rev. 1991.
3. University of Wisconsin-Extension (UWEX) Publication "A-3512, Wisconsin's Preplant Soil Profile Nitrate Test"
4. University of Wisconsin-Extension (UWEX) - Wisconsin Department of Agriculture, Trade, and Consumer Protection (UWEX-DATCP)

Publication "A-3466, Nutrient and Pesticide Best Management Practices for Wisconsin Farms", June 1989.

5. University of Wisconsin-Extension (UWEX) Publication "A-2100, Sampling Soils for Testing".
6. University of Wisconsin-Extension (UWEX) Publication "A-3517, Using Legumes as a Nitrogen Source", May 1991, with revised 1992 Forage Legume Nitrogen Credit Table.
7. University of Wisconsin-Extension (UWEX) Publication "A-3537, Nitrogen Credits for Manure Applications", May 1991.
8. University of Wisconsin-Extension (UWEX) Publication "A-3557, Nutrient Management: Practices for Wisconsin Corn Production", May 1992.
9. University of Wisconsin-Extension (UWEX) Publication "A-3568, A Step-by-Step Guide to Nutrient Management", May 1992.
10. University of Wisconsin-Extension (UWEX) Publication "Wisconsin Irrigation Scheduling Program".
11. University of Wisconsin-Extension (UWEX) Publication "WISP: Managing Irrigation for Corn Production", March 1991.
12. Wisconsin Department of Natural Resources Codes NR214, (Land Treatment of Industrial Liquid Wastes, By-product Solids and Sludges); NR204 (Municipal Sludge Management) and NR113 (Septage).
13. WISPer Model, The Wisconsin Integrative Soil Program Ver. 2.0 for Economic Recommendations, University of Wisconsin-Extension.

Wisconsin Technical Note - Conservation Planning WI-1

October 21, 1993

Subject: Nutrient Management

Nutrient management planning is an important yet oftentimes cumbersome process. This Technical Note has been developed in order to provide guidance for nutrient management planning, specifically:

Conservation Planning Technical Note 1.

Part 1.1 Minimum requirements for a nutrient management plan

Part 1.2 Items to consider in nutrient management planning that may provide additional benefit over and above the criteria in the nutrient management standard

Part 1.3 A procedure for estimating nutrient credits available from manure

Part 1.4 A sample procedure for identifying areas that pose a pollution hazard to water quality from winter spread manure.

Part 1.5 Example water budgets

Technical Note- Conservation Planning - WI-1, Part 1.1***Minimum requirements for a nutrient management plan***

A nutrient management plan shall be developed according to the following criteria and steps.

A. Assemble the following background information for the plan:**1. Aerial photographs of the farm containing**

- a. Boundaries and identification numbers for all crops fields, pastures, and waste spreading sites.
- b. Identification of fields or portions of fields with waste spreading restrictions.

2. A soil survey map and other appropriate maps will be used to identify:

- a. Soils for sampling and making nutrient recommendations.
- b. Drainage features and other environmentally sensitive areas including waterways, springs, creviced bedrock, streams, lakes, sinkholes, quarries, tile outlets and wells.
- c. Percent land slope.
- d. The map may also be used to identify environmentally vulnerable soils including those less than 20 inches to bedrock, having permeabilities greater than 6.0 inches/hour or having water tables shallower than 1.0 foot (unless drained) as given in Section II-G of the Field Office Technical Guide (FOTG).

3. As a minimum, the amount of nutrients from all sources shall be identified including (legumes), manure, other organic byproducts, and commercial fertilizers.**4. A crop history identifying the previous season's crops and future cropping plans, including crop type and rotation shall be recorded. UWEX Soil Analysis Laboratory has developed a "Soil Information Sheet" to record and utilize this information as part of a soil test program.****B. The producer or land manager is responsible for developing and maintaining a current nutrient budget on a field by field basis. Soil test reports from UWEX soil analysis laboratories (including ASCS approved labs) provides an existing method of developing a budget.****Technical Note - Conservation Planning - WI-1, Part 1.2*****Items of benefit for nutrient management planning***

The items listed in Part 1.2 of the technical note should be considered in nutrient management planning. These items may provide additional water quality benefit over and above the criteria in the Nutrient Management Standard.

The rate, timing and placement of nutrients are important considerations that may affect water quality.

I. The following considerations look at timing of nutrient applications in order to reduce the impacts on water quality.

- A. Nutrients should be applied as near to the time of crop use as possible.
- B. Minimize nutrient applications on frozen or snow-covered ground.
- C. Seasonal water budgets can be used to identify potential leaching and runoff events and to select management options to control these losses. Example water budgets are in Part 1.5 of this Technical Note.
- D. Manure and other organic byproducts should not be applied on sandy or loamy sand soil in the fall when soil temperatures are greater than 50 degrees F unless a cover crop is present to use the nitrogen.

II. The following considerations look at managing the rate of nutrients applied and the placement of nutrients in order to reduce the impact on water quality.

A. Use soil test levels to prioritize manure application sites. Apply manure to the least environmentally sensitive areas first. Criteria to consider include: soil permeability, infiltration capacity, slope, erodibility, accessibility, present crop, potential fate of runoff and presence of conservation practices.

B. Manure injection or incorporation within 72 hours minimizes nitrogen volatilization losses.

C. When concerned with the rate and placement of nitrogen, consider these things.

1. Risk of nitrogen movement to ground water is greatest for highly permeable soils, shallow soils over permeable bedrock, and soils with a high water table. A map of groundwater contamination susceptibility in Wisconsin is found in UWEX-DATCP publication "A-3466" between p. 66 and 67.

2. Nitrogen losses to the atmosphere from denitrification are greatest on poorly drained soils.

3. Unused or residual nitrate may be leached from the soil and pollute groundwater. In years of normal fertilizer application and unexpected low yields, excess nutrients, including nitrate, may accumulate in the soil. Soil profile nitrate tests can be used to measure carryover nitrogen and adjust nitrogen applications (see UWEX publication "A-3512"). Additional options for reducing the amount of nitrogen subject to leaching include:

a. Growing a winter cover crop to use carryover nitrogen.

b. Growing legume crops (when managed without supplemental N inputs) to "scavenge" N remaining in the profile.

c. Growing high N demanding crops such as corn and forage grasses.

4. Nitrification inhibitors used with ammonium or ammonium-forming N fertilizers can improve N efficiency and limit loss of fertilizer N on soils where the potential for nitrate loss through leaching or denitrification is high (see page 29 of the UWEX publication "A3466" for more information).

D. When concerned with the rate and place of phosphorus, consider these things.

1. Appropriate management practices for phosphorus on individual farms will vary with specific cropping, topographical, environmental and economic conditions. See UWEX publication A-3466 and A-3557 for more information.

2. Soil test values are primarily interpreted for crop response and economic return.

3. Consider reducing or eliminating applications of P sources, including manure and other organic byproducts, if soil test levels exceed 75 ppm P (150 lbs P/acre).

4. Where soil test P levels are 75 to 150 ppm (very high to excessively high) the following practices are recommended:

a. Use runoff and erosion control practices such as residue management, conservation tillage, and contour farming.

b. Rotate to P-demanding crops such as alfalfa.

c. Limit starter P applications on row crops to 20 lbs P₂O₅/acre.

d. Where possible, apply manure on fields with lower P tests.

5. Where soil test levels exceed 150 ppm P, these additional practices are recommended:

a. To the extent possible, eliminate all non-starter P applications.

b. Consider using additional runoff and erosion control practices such as buffer (filter) strips.

6. Where soil test P exceeds 150 ppm on all land available for manure or other waste material applications, apply to the least environmentally sensitive areas first at rates needed to supply the crop N requirements or the anticipated crop removal of P and/or K. Criteria to prioritize application sites may include soil permeability and infiltration capacity, slope, erodibility, soil test P level, potential fate of runoff, presence of conservation practices, and field accessibility.

III. Other Considerations

A. Phosphorus losses are greatest on eroding sites with high runoff.

B. Use appropriate pH management to keep soil pH in the proper range for optimum crop production. Soil pH affects the availability of almost all of the essential elements (see UWEX Publication "A-2809").

C. Barnyards, feedlots, and manure storage facilities should be thoroughly cleaned prior to abandonment. High N demanding crops such as alfalfa or corn should be planted at the site to use soil nitrate.

D. Good soil tilth should be maintained. good soil tilth encourages infiltration and reduces runoff. this is especially important when the objective is to protect surface water but may not be desirable if the objective is protection of groundwater.

1. Organic matter additions promote good soil tilth.

2. Equipment travel on saturated soils should be avoided to reduce soil compaction and rutting.

E. Practices such as crop rotation promote efficient nutrient use.

Technical Note – Conservation Planning – WI-1, Part 1.3

Determining manure nutrient credits

Proper crediting of manure nutrients can lower commercial fertilizer needs and reduce the potential for surface and ground water pollution. Manures contain the major plant nutrients (N, P and K) and other essential nutrients. Only a portion of the nutrients from a field spread manure are available in the first year. The rest become available over time as the nutrients are released from the organic fraction. Calculating the fertilizer value of manure involves three steps:

STEP 1: Determine Available-Nutrient Content

STEP 2: Determine Manure Application Rates.

STEP 3: Calculate the Manure Nutrient Credit

STEP 1: Determine Available-Nutrient Content

Because the nutrient content of manure varies so much, it is recommended that a representative (well-agitated) sample be sent to a laboratory to determine its fertilizer value.

Where manure is tested:

Multiply the total nutrient content by the appropriate percent available nutrients from Table 2. See Equation 1.

Equation 1. Calculating Available Nutrient Content

Total Nutrient X Manure Nutrient = Available Nutrient
Content Availability Content

Express Total Nutrient Content as pounds per ton if working with solid manure or pounds per 1,000 gallons if working with liquid manure.

Express Table 2 percentage as a decimal and use that as the Manure Nutrient Availability term in Equation 1.

Where manure is not tested:

Use Tables 3 and/or 4 to estimate the available nutrient content of various solid and liquid manures after one application or consecutive annual applications.

STEP 2: Determine Available-Nutrient Content

Identify the fields that have received or will receive manure.

Then, determine how much manure per acre has been applied or will be applied to each field. UWEX Publication A3381, "Determining Manure Application Rates", contains more information.

STEP 3: Calculate the Manure Nutrient Credit

After you know the manure's available nutrient content and the application rate to a particular field, you can calculate the manure nutrient credit from Equation 2.

Multiply the Manure Application Rate from STEP 2 by the Available Nutrient Content from STEP 1.

Maintain proper units for this calculation by using the appropriate conversion terms in Table 5.

Equation 2. Manure Nutrient Credit Calculation

Available Nutrient Content	x	Manure Application= Rate	=	Manure Nutrient Credit
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MANURE CREDITING EXAMPLES

Example 1: Producer Smith surface applied 20 ton/acre of fresh solid dairy manure to corn ground last fall without testing the manure. Estimate the amount of N, P205, and K20 available to the next corn crop from manure.

Step 1: Use Table 3 to estimate available nutrients from surface spread solid dairy manure as 3-3-8/ton.

Step 2: Use Equation 2 to calculate the manure nutrient credit from a 20 ton/acre application rate.

$$(3-3-8/\text{ton})(20 \text{ ton/acre}) = 60 \text{ lb N/acre, } 60 \text{ lb P205/acre, } 160 \text{ lb K20/acre}$$

Table 1. Rule of Thumb Average Nutrient and Dry Matter Content from Various Solid and Liquid Manures +

Species/mgt	%Dry Matter	N	P205	K20
			lb/ton	
Dairy, solid, fresh*	12.7	10	5	10
Beef, solid, fresh*	11.6	14	9	11
Swine, solid, fresh*	9.2	10	6	9
Poultry, solid, fresh*	25.2	25	25	12
			--- lb/1,000 gal---	
Dairy, liquid*	8.5	28	14	28
Veal calf, liquid**	1.5	12	12	25
Beef, liquid*	7.7	39	25	31
Swine, liquid, finishing unit***	7.6	55	27	34
Swine, liquid farrow-nursery***	3.8	30	10	10
Poultry, liquid*	16.8	69	69	33

- * Adapted from Table 1, UWEX Publication A3411, "Manure Nutrient Credit Worksheet", 1987.
 ** Adapted from Table 10-7, Midwest Plan Service Publication 18, "Livestock Waste Facilities Handbook", Rev. 1985, with 50% dilution water added. NOTE: Rainfall and flush water, may contribute significantly more water than 50%.
 *** Adapted from Table 3, Iowa State University Extension Service Publication Pm-1164, Animal Manure: A Source of Crop Nutrients", 1984.
 + Sample analysis will give a better estimate for subject farm.

Table 2. Estimated First-Year Nutrient Availability (%)* from Various Manures

Species	N	P205	K20
Dairy, surface applied**	30%	55%	75%
Dairy, incorporated**	35%	55%	75%
Veal calf, surface applied***	40%	55%	75%
Veal calf, incorporated***	50%	55%	75%
Beef, surface applied**	25%	55%	75%
Beef, incorporated**	30%	55%	75%
Swine, surface applied**	40%	55%	75%
Swine, incorporated**	50%	55%	75%
Poultry, surface applied**	50%	55%	75%
Poultry, incorporated**	60%	55%	75%

- * If manure has been applied to the same field at similar rates for 2 consecutive years, increase the nutrient values in the table an additional 10 percentage points. If manure has been applied to the same field at similar rates for three or more consecutive years, increase the nutrient values in the table an additional 15 percentage points. (See example 2, step 1)
 ** Modified from Table 3, UWEX Publication A3411, "Manure Nutrient Credit Worksheet", 1987.
 *** Modified from Table 10-7, Midwest Plan Service Publication 18, Livestock Waste Facilities Handbook", Rev. 1985.

Example 2: Producer Jones surface spread and incorporated 8,000 gal/acre of fall-applied stored liquid dairy manure on a 20 acre corn field for two consecutive years. A manure analysis from a private lab showed a total nutrient value of 32-15-36/1,000 gal. Next spring he will plant corn and apply 100 lb/acre of 9-23-30 starter fertilizer. A UWEX Soil test recommended 160 lb N/acre, 60 lb P205/acre, and 120 lb K20/acre. Calculate the amount of nutrients in the manure and starter fertilizer, and how much additional nutrients must be supplied from other sources.

Step 1: Table 2 shows the percent available nutrients in dairy manure as 35% N, 55% P205, and 75% K20 for first year nutrient availability. However, since similar manure rates have been applied for two consecutive years, increase these values an additional ten percentage points for each nutrient to 45% for N, 65% for P205, and 85% for K20. See the first footnote in Table 2.

Step 2: Use Equation 1 to calculate the available nutrient content.

$$(32-15-36)/1,000 \text{ gal.} \times (0.45-0.65-0.85) = \begin{matrix} 14.4 \text{ lb N/1,000 gal.} \\ 9.8 \text{ lb P205/1,000 gal.} \\ 30.6 \text{ lb K20/1,000 gal.} \end{matrix}$$

Step 3: Use Equation 2 to calculate the manure nutrient credit from an 8,000 gallon rate.

$$\begin{matrix} (14.4 \text{ lb N/1,000 gal.}) \times 8,000 \text{ gal/acre} = 115 \text{ lb N/acre} \\ (9.8 \text{ lb P205/1,000 gal.}) \times 8,000 \text{ gal/acre} = 78 \text{ lb P205/acre} \\ (30.6 \text{ lb K20/1,000 gal.}) \times 8,000 \text{ gal/acre} = 245 \text{ lb K20/acre} \end{matrix}$$

Now, subtract the manure and starter P205 and K20 credits from the soil test recommendations to determine if additional nutrients are required. Round the resulting positive numbers to the nearest 10 lb/acre.

$$\begin{matrix} (160 - 115) \text{ lb N/acre} & = & 45 \text{ lb N/acre or } 50 \text{ lb N/acre} \\ (60 - 78 - 23) \text{ lb P205/acre} & = & -41 \text{ lb P205/acre (excess P)} \\ (120 - 245 - 30) \text{ lb K20/acre} & = & -155 \text{ lb K20/acre (excess K)} \end{matrix}$$

The total amount of additional N needed is: 50 lb N/acre X 20 acres = 1000 lb N

If Phosphorus or Potassium are a water quality concern, this producer may want to reduce the amount of manure being applied to these acres.

Table 3. Rule-of-thumb Estimates of Available Nutrients from Solid Manure by Species and Management Systems for up to Three or More Consecutive Years of Application*

Species/mgt. System	Dry Matter %	Total Available Nutrients		
		N	P205	K20
----- lb./ton -----				
One Year of Application				
Dairy, surface applied	12.7	3	3	8
Dairy, incorporated	12.7	4	3	8
Beef, surface applied	11.6	4	5	8
Beef, incorporated	11.6	4	5	8
Swine, surface applied	9.2	4	3	7
Swine, incorporated	9.2	5	3	7
Poultry, surface applied	25.2	13	14	9
Poultry, incorporated	25.2	15	14	9
Two Consecutive Years of Application				
Dairy, surface applied	12.7	4	3	9
Dairy, incorporated	12.7	5	3	9
Beef, surface applied	11.6	5	6	9
Beef, incorporated	11.6	6	6	9
Swine, surface applied	9.2	5	4	8
Swine, incorporated	9.2	6	4	8
Poultry, surface applied	25.2	15	16	10
Poultry, incorporated	25.2	18	16	10
Three or More Consecutive Years of Application				
Dairy, surface applied	12.7	5	4	9
Dairy, incorporated	12.7	5	4	9
Beef, surface applied	11.6	6	6	10
Beef, incorporated	11.6	6	6	10
Swine, surface applied	9.2	6	4	8
Swine, incorporated	9.2	7	4	8
Poultry, surface applied	25.2	16	18	11
Poultry, incorporated	25.2	19	18	11

* Based on values given in Tables 1 and 2, calculated using Equation 1. Figures are rounded to the nearest whole pound.

Table 4. Rule-of-thumb Estimates of Available Nutrients from Liquid Manure by Species and Management Systems for up to Three or More Consecutive Years of Application*

Species/mgt. System	Dry Matter %	Total Available Nutrients		
		N	P205	K20
----- lb./1000 gal. -----				
One Year of Application				
Dairy, surface applied	8.5	8	8	21
Dairy, incorporated	8.5	10	8	21
Veal calf, surf. appl.	3.0	12	14	38
Veal calf, incorp.	3.0	14	14	38
Beef, surface applied	7.7	10	14	23
Beef, incorporated	7.7	12	14	23
Swine, f.u.** , surf. appl.	7.6	22	15	26
Swine, f.u.** , incorp.	7.6	28	15	26
Swine, f.n.*** , surf. appl.	3.8	12	6	8
Swine, f.n.*** , incorp.	3.8	15	6	8
Poultry, surface applied	16.8	35	38	25
Poultry, incorporated	16.8	41	38	25
Two Consecutive Years of Application				
Dairy, surface applied	8.5	11	9	24
Dairy, incorporated	8.5	13	9	24
Veal calf, surf. appl.	3.0	14	16	43
Veal calf, incorp.	3.0	17	16	43
Beef, surface applied	7.7	14	16	26
Beef, incorporated	7.7	16	16	26
Swine, f.u.** , surf. appl.	7.6	28	15	29
Swine, f.u.** , incorp.	7.6	33	15	29
Swine, f.n.*** , surf. appl.	3.8	15	7	9
Swine, f.n.*** , incorp.	3.8	15	7	9
Poultry, surface applied	16.8	42	45	28
Poultry, incorporated	16.8	48	45	28
Three or More Consecutive Years of Application				
Dairy, surface applied	8.5	13	10	25
Dairy, incorporated	8.5	14	10	25
Veal calf, surf. appl.	3.0	16	17	46
Veal calf, incorp.	3.0	18	17	46
Beef, surface applied	7.7	16	17	28
Beef, incorporated	7.7	18	17	28
Swine, f.u.** , surf. appl.	7.6	30	19	31
Swine, f.u.** , incorp.	7.6	36	19	31
Swine, f.n.*** , surf. appl.	3.8	17	8	9
Swine, f.n.*** , incorp.	3.8	20	8	9
Poultry, surface applied	16.8	45	48	30
Poultry, incorporated	16.8	52	48	30

* Based on values given in Tables 1 and 2, calculated using Equation 1. Figures are rounded to the nearest whole pound.

** finishing unit

*** farrow-nursery

Technical Note - Conservation Planning - WI-1, Part 1.4**Guidelines for identifying areas that represent a surface water pollution hazard from winter spread manure and other organic by products.****DIRECTIONS:**

- A. On a copy of the aerial photo, identify:
-perennial streams, lakes, and natural wetlands -"Discharge Points" -"Other channels -Cropland field boundaries
- B. For fields not within 900 ft. of waterbodies or discharge points identify distances (either 50, 100, or 150 ft.) from identified channels by using section II. of the table.
- C. For fields within 900 ft. of waterbodies or discharge points:
1. Determine the cropping system (crops, rotation, tillage, contouring, etc.) for each field.
 2. Based on slope, flow type and surface conditions, determine the area of high hazard by selecting a distance from section I. of the table.

Note: If the minimum distance cannot be achieved within the boundaries of the selected slope, flow type and surface condition, prorate the distance by estimating a representative slope, flow type and surface condition.

DEFINITIONS:

- A. **Discharge Point** = In addition to mapped waterbodies, discharge points include: impoundments, natural wetlands, intermittent streams, drainage ditches, grassed waterways or other channels having a drainage area as indicated in the following table. For the purposes of establishing hazard areas this definition expands the standard definition of waterbodies to include a broader drainage network active during peak runoff events.
- B. **OH** = Means that part of a crop rotation in which small grains as a companion crop or hay is grown.
- C. **Other Channels** = Channels that can be identified on aerial photos, soil maps or field observation (eg. waterways, gullies, etc.) that have drainage areas less than those specified for Discharge Points.
- D. **Overland Flow** = The assumed mode of runoff flow in the absence of well established rills and channels.
- E. **Shallow Concentrated Flow** = The assumed mode of runoff flow commonly occurring with long slopes, characterized by well established rills but devoid of open channels.

1 gallon = 8.3 pounds

1 ton = 2,000 pounds

1,000 gal. = 4.17 tons

1 bushel = 77.5 Pounds (liquid)

1 bushel = 1.25 cubic feet (liquid)

1 cu.ft. = 62 pounds (liquid dairy)

1 cu.ft. = 60 pounds (liquid beef & swine)

1 cu.ft. = 60 pounds (fresh, solid poultry)

1 cu.ft. = 62 pounds (semi-solid dairy)

1 cu.ft. = 55 pounds (semi-solid beef & swine)**

1 cu.ft. = 45 pounds (solid dairy)

1 cu.ft. = 7.5 gallons

1 acre-inch = 27,225 gallons

* When sizing manure spreaders, use manure unit conversions based on cubic feet, rather than bushel, measurements.

** UWEX estimates

Technical Note - Conservation Planning - WI-1. Part 1.5

Water Budgets

Water budgets in Appendix A are based on CREAMS computer model runs. CREAMS (Chemical, Runoff, and Erosion from Agricultural Management Systems) is a mathematical model developed to evaluate non-point source pollution from field-sized areas.

Rainfall records for the following locations were used:

Rice Lake, Wisconsin for Spencer silt loam; Lancaster, Wisconsin for Tama silt loam; Plainfield, Wisconsin for Plainfield loamy sand.

The watershed size used was 12 acres. The average field slope was 5.5% and the overland flow slope length was 2001.

The representative water budgets show rainfall, runoff, evapotranspiration and percolation below the root zone.

F. Winter Spread Manure = The practice of spreading manure during that time of the year (winter and portions of fall and spring) when incorporation' is not practical and the potential for runoff is greatest.

BACKGROUND: The table values for areas of high pollution hazard are derived from the Velocities For Upland Method of Estimating Time = of Concentration (NRCS National Engineering Handbook Sec. 4, Fig 15-2) using a delivery time of five minutes.

GUIDELINES FOR AREAS OF HIGH POLLUTION HAZARD TO SURFACE RUNOFF FROM WINTER SPREAD MANURE

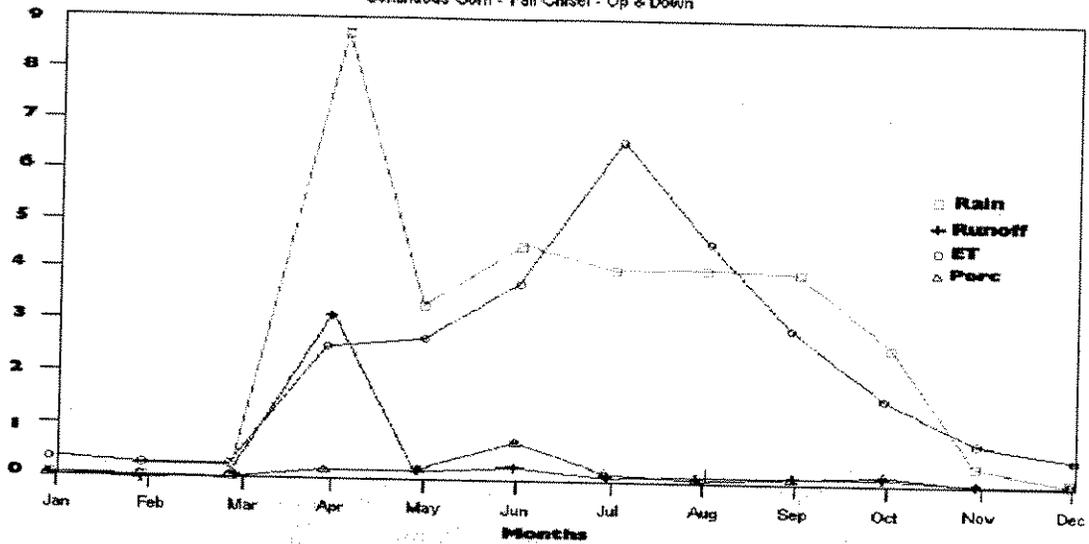
		Flow Type and Surface Condition					
		A	B	C	D	E	
High Hazard Areas	I. Distance (ft.) from Water Bodies and Discharge Points	Overland Flow* -Perm. long grasses -Woodland with heavy cover	200	200	200		
		Overland Flow: -Contour Strip -Contoured, with Rotations >50% OH* (all tillage) -Contoured with OH <50%, >30% residue -Perm. Hayland				All High Hazard	All High Hazard
		Overland Flow: -Rotations >50% OH -Contoured with OH <50%, <30% residue -Short grass pasture -Woodland with moderate cover	250	450	650	All High Hazard	All High Hazard
		Overland Flow: -Rotations <50% OH, all tillage -Woodland with minimal cover -Shallow concentrated Flow*	300	600	900		
II. Distance from Other Channels	All flow types and surface conditions	50	100	150			

* See Definitions

Hydrologic Soil Group	Drainage Area Greater than:
A	100 ac.
B	40 ac.
C, D (or use drained condition)	20 ac.

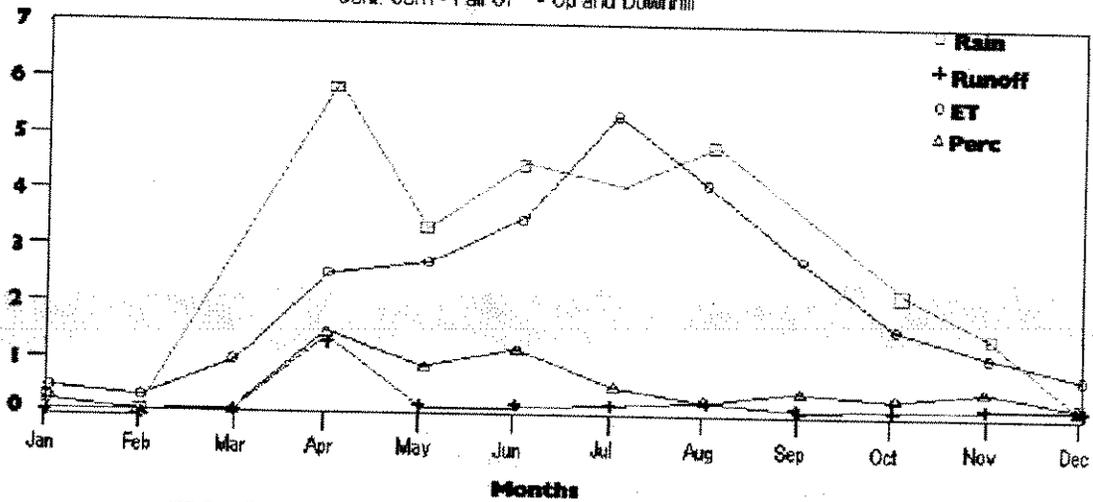
Spencer silt loam - Wisconsin

Continuous Corn - Fall Chisel - Up & Down



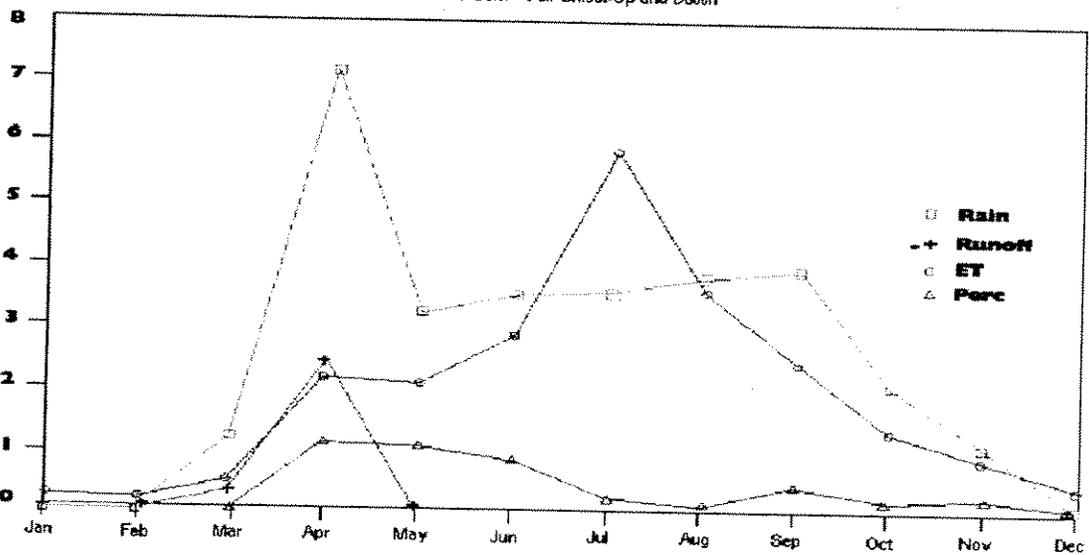
Tama Silt Loam - Wisconsin

Cont. Corn - Fall GP - Up and Downhill



Plainfield loamy sand - Wisconsin

Continuous Corn - Fall Chisel - Up and Down



Appendix E

Agricultural engineering practitioners certification form

Department of Agriculture, Trade and Consumer Protection

**WISCONSIN DEPARTMENT OF AGRICULTURE, TRADE AND CONSUMER PROTECTION
AGRICULTURAL ENGINEERING PRACTITIONER; CERTIFICATION**

PRACTITIONER _____ OFFICE _____ Original Revised _____
 (SIGNATURE) _____ TITLE _____ DATE _____
 CONCURRED BY _____ TITLE Supervisor _____ DATE _____
 CERTIFIED BY _____ TITLE DATCP Agricultural Engineer _____ DATE _____
 CONCURRED BY _____ TITLE _____ DATE _____

STD. CODE	PRACTICE	SUB-PRACTICE	CONTROLLING FACTORS	UNITS	JOB CLASS					CERTIFICATION RATING		
					I	II	III	IV	V	DESIGN	CONST	
560	ACCESS ROAD		GRADE	%	10	ALL						
		CULVERT	DRAINAGE AREA	ACRES	10	20	40	160	ALL			
		LIVESTOCK AND EQUIPMENT STREAM CROSSING	VELOCITY	F.P.S.	4	6	8	10	ALL			
575	ANIMAL TRAILS AND WALKWAYS		GRADE	%	ALL							
410	GRADE STABILIZATION	EARTHEN	DRAINAGE AREA	ACRES	20	80	320	640	2000(g)			
	STRUCTURE	EMBANKMENTS (HAZARD CLASS "a" ONLY)	EFFECTIVE HEIGHT (e)	FEET	10	15	20	25	35			
350	SEDIMENT BASIN (EXCEPT FOR ANIMAL WASTE)		STORAGE (b)	AC. FT.	5	15	30	50	85			
378	POND (EMBANKMENT)		CONDUIT (SINGLE)	INCHES	12	18	24	36	48			
587	STRUCTURE FOR WATER CONTROL	BOX DROP TO CULVERT TOEWALLS	(STOR. VOL.)x(EFF. HT.)	--	500	1000	1500	2000	3000			
			NET DROP	FEET	2*	3*	4*	4	6			
			WEIR CAPACITY	C.F.S.	100*	200*	300*	400	500			
			NET DROP	FEET	2*	3*	4*	3	4			
			WEIR CAPACITY	C.F.S.	100*	200*	300*	300	300			
		CHUTES	NET DROP	FEET	4	6	8	10	12			
			CAPACITY	C.F.S.	50	100	200	250	300			
1001	WET DETENTION BASIN (HAZARD CLASS "a" ONLY)	EMBANKMENT AND EXCAVATION	DRAINAGE AREA	ACRES	5	15	40	100	ALL			
			EFFECTIVE HEIGHT (e)	FEET	4	6	10	ALL				
			STORAGE (b)	AC. FT.	2	7	15	30	50			
362	DIVERSION		DRAINAGE AREA	ACRES	10	20	40	160	ALL			

STD. CODE	PRACTICE	SUB-PRACTICE	CONTROLLING FACTORS	UNITS	JOB CLASS					CERTIFICATION RATING		
					I	II	III	IV	V	DESIGN	CONST	
635	WASTEWATER TREATMENT STRIP	INFILTRATION OVERLAND BUFFERS MILKING CENTER	CONTRIBUTING AREA	SQ. FT.	5000	10000						
			CONTRIBUTING AREA	SQ. FT.	5000	10000						
			CONTRIBUTING AREA	SQ. FT.	5000	10000	30000	ALL				
			VOLUME	G.P.D.	200	300						
412	GRASSED WATERWAY		DRAINAGE AREA	ACRES	50	200	600	1300	ALL			
561	HEAVY USE AREA PROTECTION		AREA	SQ. FT.	10000	30000	ALL					
468	LINED WATERWAY OR OUTLET		DESIGN CAPACITY (c)	C.F.S.	10	30	100	150	ALL			
582	OPEN CHANNEL		DESIGN VELOCITY	F.P.S.	2	4	6	8	10			
584	STREAM CHANNEL STABILIZATION		DESIGN CAPACITY	C.F.S.	100	200	300	400	500			
516	PIPELINE, LIVESTOCK WATER		LENGTH	MILES	1/4	1	3	30	ALL			
378	POND (EXCAVATED)		SURFACE AREA	ACRES	1/2	1	ALL					
521	POND SEALING OR LINING, WATER PONDS		AREA TREATED	ACRES	1/4	1/2	1	2	ALL			
558	ROOF RUNOFF MANAGEMENT		ROOF SIZE (EACH)	SQ. FT.	1500	3000	ALL					
350	SEDIMENT BASIN, LIVESTOCK		WALL HT. (STANDARD)	FEET	2*	4*	5*	6*	8*			
			WALL HT. (NON-STD.)	FEET	2	4	5	6	8			
			CONTRIBUTING AREA	SQ. FT.	10000	30000	ALL					
			ESTIMATED FLOW	G.P.M.	ALL							
574	SPRING DEVELOPMENT		WAVE HEIGHT	FEET	3	ALL						
580	STREAMBANK AND SHORELINE PROTECTION	LAKESHORES STREAMBANKS	CAPACITY	C.F.S.	100	300	1000	2000	5000			
			VELOCITY (d)	F.P.S.	2	4	6	8	10			
606	SUBSURFACE DRAIN		PIPE SIZE	INCHES	4	6	8	12	ALL			
607	SURFACE DRAIN FIELD DITCH		DRAINAGE AREA	ACRES	10	20	50	100	ALL			
608	SURFACE DRAINAGE, MAIN OR LATERAL		DRAINAGE AREA	ACRES	100	320	640	2000	ALL			
600	TERRACE	GRADIENT UNDERGROUND OUTLET	EMBANKMENT HEIGHT	FEET	2	3	ALL					
			EMBANKMENT HEIGHT	FEET	3	4	6	8	ALL			
614	WATERING FACILITY		NUMBER	EACH	ALL							
620	UNDERGROUND OUTLET		PIPE SIZE	INCHES	4	6	8	12	ALL			
638	WATER AND SEDIMENT CONTROL BASIN		EMBANKMENT HEIGHT	FEET	5	10	15					
			STORAGE (b)	AC. FT.	5	10	15					
725	CREVICE AND SINKHOLE TREATMENT		NUMBER	EACH	ALL							

STD. CODE	PRACTICE	SUB-PRACTICE	CONTROLLING FACTORS	UNITS	JOB CLASS					CERTIFICATION RATING		
					I	II	III	IV	V	DESIGN	CONST	
313	WASTE STORAGE FACILITY (Multiple impoundments are considered one facility if interconnected)	STRUCTURAL FACILITIES	DESIGN CAPACITY	CU. FT.	5000	25000	75000	150000	300000			
			PREQUALIFIED (e)	EACH	ALL, subject to design capacity							
			WALL HT.(STANDARD)	FEET	2*	4*	5*	6*	8*			
			WALL HT.(NON-STD.) (f)	FEET	2	4	5	6	8			
			EFFECTIVE HEIGHT (a)	FEET	10	15	20	25	ALL			
360	CLOSURE OF WASTE IMPOUNDMENTS	EARTHEN FACILITIES	DESIGN CAPACITY	CU.FT.	60000	200000	500000	1M	2M			
			DESIGN CAPACITY	CU.FT.	60000	200000	500000	1M	2M			
			DESIGN CAPACITY	CU.FT.	60000	200000	500000	1M	2M			
			DESIGN CAPACITY	CU.FT.	60000	200000	500000	1M	2M			
634	MANURE TRANSFER		NUMBER	EACH	ALL							
			PUMPED	A.U.	100	300	ALL					
351	WELL DECOMMISSIONING		GRAVITY	A.U.	100	300	ALL					
			RECEPTION TANK (f)	FEET	150	250	400					
657	WETLAND RESTORATION	SCRAPE TILE BREAK DITCH PLUG EMBANKMENT	ESTIMATED DEPTH	FEET	100	300	ALL					
			SURFACE AREA	ACRE	1/2	1	ALL					
			DRAIN DIAMETER	INCHES	6	12	ALL					
			DEPTH	FEET	4	6	ALL					
			DRAINAGE AREA	ACRES	80	160	320	640	ALL			
			EFFECTIVE HEIGHT (a)	FEET	4	6	10	ALL				
			DRAINAGE AREA	ACRES	20	40	80	160				
STORAGE (b)	AC. FT.	5	15	30	50							

* STANDARD DETAIL DRAWINGS

NOTES:

1. CERTIFICATION IS NOT GRANTED FOR PRACTICES NOT SHOWN.
2. OTHER RESTRICTIONS MAY APPLY AS NOTED.

FOOTNOTES:

- a. DIFFERENCE IN ELEVATION IN FEET BETWEEN THE EMERGENCY SPILLWAY CREST (TOP OF EMBANKMENT IF NO EMERGENCY SPILLWAY) AND THE LOWEST POINT IN THE CROSS SECTION TAKEN ALONG THE CENTERLINE OF THE EMBANKMENT.
- b. STORAGE - TOTAL STORAGE CAPACITY AT THE TOP OF THE DAM IN ACRE-FEET.
- c. LINED WATERWAY OR OUTLET (468) - THE JOB CLASS WILL BE BASED ON THE 10 YEAR 24 HOUR DURATION PEAK DISCHARGE.
- d. MAXIMUM DESIGN VELOCITY.
- e. PREQUALIFIED STRUCTURES CAN BE FOUND IN CHAPTER 17 OF THE ENGINEERING FIELD HANDBOOK.
- f. THE MNTC DRAWING Nos. 5.E-33,001 AND 5.E-33,002 AND WISCONSIN STANDARD DRAWINGS IN THE 740 SERIES ARE CLASSIFIED AS NON-STANDARD DRAWINGS.
- g. EFFECTIVE HEIGHT MUST BE LESS THAN 6 FEET.

Appendix F

Scheduled completion dates for priority watershed projects

Department of Agriculture, Trade and Consumer Protection

COMPLETION DATES FOR PRIORITY WATERSHED PROJECTS, 2001 – 2009*

County	Project Codes	Project End Dates**	County	Project Codes	Project End Dates**
Adams	NEE	2002	Monroe	LTM	2002
Barron	YEL	2004		MKR	2003
Bayfield	WTC	2006	Oconto	PEN	2008
Brown	DAA***	2008	Outagamie	ARD	2003
	EAS	2002		DAA***	2009
	BRB	2006	Ozaukee	CCK	2003
	RLS	2007		MNB	2001
Buffalo	MTR	2004		MRS	2003
	WMD	2001	Pierce	KNC	2009
Burnett	BIG	2009	Polk	BAL	2006
Calumet	WNE	2003		HSC	2009
Chippewa	DUN	2005		OSC	2007
Clark	UYL	2004	Portage	WPC	2007
Columbia	BDR	2005	Racine	SHC	2006
	NEE	2005	Richland	MKR	2004
	YME	2008	Rock	SPC	2004
Dane	DLP	2004	Rusk	SMH	2007
	YME	2008	Saint Croix	SCL	2008
Dodge	BDR	2005		SFH****	2005
Door	RLS	2007		KNC	2009
Douglas	USC	2008	Sauk	DEL	2009
Dunn	SFH****	2005		NBR	2004
			Shawano	PEN	2007
Fond du Lac	EWB	2001	Sheboygan	MNB	2001
	FDL	2009		PIG	2009
	SHB	2002		SHB	2003
	WNE	2004	Trempealeau	MTR	2004
Grant	LGR	2002		UTR	2005
Green	LEP	2002	Vernon	HIL	2005
Jackson	UTR	2006		MKR	2004
Jefferson	ROC	2004	Walworth	SHC	2008
Kewaunee	RLS	2007	Washington	CCK	2004
Lafayette	LEP	2003		EWB	2001
Lanlade	SPR	2008		MNB	2001
Manitowoc	BRB	2007	Waukesha	MWL	2005
	PIG	2009		UFR	2005
	SHB	2002	Waupaca	LLW	2008
Marathon	LBE	2002		WPC	2006
	LRR	2009	Waushara	PWR	2009
	UYL	2004	Winnebago	ARD	2004
Marinette	MIN	2006		FDL	2009
	MPT	2009		PWR	2009
Marquette	NEE	2005	Wood	UYL	2002

* Table reflects end dates in effect on October 6, 1998, the date set by sec. 92.14(5g)(b), Stats., for determining the requirement for matching funds. Table does not include subsequent extensions or changes in end dates for Wood and other counties.

** All projects end December 31st of the listed year, unless DNR has subsequently extended or changed the end dates. DNR may authorize funding for landowners for up to one year after the end date of a project.

*** Combines AAC and DUK watersheds.

**** By sec. 281.65(11), Stats., watershed end date treated as if in effect on October 6, 1998.

Attachment 1

HEARING SUMMARY

**Hearings Held
March and April, 2000**

**ATCP 50 Hearing Summary
March and April, 2000**

Public hearings on the proposed order to amend ATCP 50, relating to the soil and water resource management program, were held in Fitchburg, East Troy, Richland Center, Whitehall, Chilton, Hancock, Medford, Antigo, and Barron. In addition, a video-conference hearing was conducted in Madison with video hook-ups in Superior and Rhinelander. The hearings were conducted from March 14 through April 5, 2000. The hearing record remained open for additional written comments until April 19, 2000.

March 14, 2000. Fitchburg, Wisconsin. Approximately 80 people attended the hearing and 14 gave oral testimony. Speaking were:

- 1) D. Cole, crop consultant: opposes the nutrient management portion of the rule. He said that by practicing nutrient management, we would be lowering soil fertility.
- 2) Tom Hall, farmer: opposes the nutrient management part of the rule. He said farmers must be allowed to write their own nutrient management plans.
- 3) John Judd, farmer: supports parts of the rule and opposes parts of it. Cost share funds must be made available to farmers.
- 4) Robert Krueger, farmer: supports parts of the rule and opposes parts of it. More conservation staff are needed to work with farmers.
- 5) Brett Larson, WLWCA: supports parts of the rule and opposes parts of it. DATCP needs to work with county LCCs to develop the rule.
- 6) Robert Uphoff, farmer: opposes the rule. This version of the rule is too restrictive on farmers.
- 7) Roy Schroedl, interested citizen: supports parts of the rule and opposes parts of the rule. He feels generally it is cost prohibitive and the state is exerting too much control over counties.
- 8) Arnold Gudex, farmer: opposes the rule. We need to support small family farms and keep DNR off farms.
- 9) Perry Lindquist, Waukesha County LCD: supports parts of the rule and opposes parts of it. There is too much state control of county activities.
- 10) William Gudex, farmer: opposes the rule. We must preserve small family farms and keep DNR off farms.
- 11) Robert Wiesenber, farmer: opposes the rule. The rule will put small farmers out of business. It is too costly.
- 12) Thomas Strutt, farmer: opposes the rule. He doesn't like the nutrient management requirements of the rule. Keep DNR off farms.
- 13) Dennis Zeloski, farmer: opposes the rule. The state does not have the funding to implement this rule.
- 14) Bruce Borganz, farm cooperative representative: opposes the nutrient management part of the rule. There are many problems with the nutrient management program need to be fixed.

March 15, 2000. East Troy, Wisconsin. Approximately 60 people attended the hearing and 12 gave oral testimony. Speaking were:

- 1) Kerry Schumann, WISPIRG: supports the intent of the rule but opposes parts of it. The state needs strong nonpoint rules but this version of the rules needs more work to make them better.

- 2) Gerald Hebard, NRCS: generally supports the rule. He gave specific comments to improve technical aspects of the rule.
- 3) Patrick Buckley, Lake Association: supports the intent of the rule but opposes parts of it. The rule needs to do more to protect lakes.
- 4) John Hall, Michael Fields Institute: supports the intent of the rules. There isn't enough funding to implement them.
- 5) Troy Kuphal, WALCE: supports parts of the rule and oppose parts of the rule. The rule needs to recognize the lead role of counties in implementing the program.
- 6) Rura Clark, farmer: opposes the rule. The proposal is too regulatory for farmers and too costly.
- 7) Robert Bartholemew, farmer: opposes the rule. This proposed rule is too regulatory on farmers.
- 8) Lisa Conley, Lakes Association: supports part of the rule and opposes parts of the rule. She supports the intent of the rule but feels more needs to be done to protect lakes.
- 9) Roland Tischendorf, interested citizen: supports the rule.
- 10) Don Henningfeld, interested citizen: opposes part of the rule. This rule should not include sludge application in its nutrient management program.
- 11) Dennis Bries, interested citizen: generally opposes the rule. He supports the intent of the rules but more common sense must be shown in setting standards and practices.
- 12) Randy Craig, farmer: generally opposes the rule. Dairy farmers need help in meeting requirements. Don't try to implement too fast.

March 16, 2000. Richland Center, Wisconsin. Approximately 175 people attended the hearing and 21 presented oral testimony. Speaking were:

- 1) Bert Tuckey, farmer: opposes the rule. A lot of the standards and practices cannot be met or implemented by farmers.
- 2) Duane Brown, farmer: opposes the nutrient management part of the rule. Nutrient management requirements on farmers are too restrictive.
- 3) Gerald Biba, farmer: opposes the rule. The rule is too costly for farmers. Have funding available before requiring farmers to implement practices.
- 4) Linda Wilborn, interested citizen: supports parts of the rule and opposes parts of it. DATCP and DNR must cooperate better. Keep nutrient management requirements out of the rules. Make the program educational.
- 5) George Ramsden, farmer: opposes the rule. Urban sites cause as much nonpoint pollution as rural sites.
- 6) James Milsna, farmer: opposes this rule. Farmers need funding to implement rules. Urban areas should be required to do more.
- 7) John Mitchell, farmer: this is too regulatory on farmers and will put many out of business.
- 8) Charles Stuedel, Trout Unlimited: support the need for strong rules but opposes most of this rule. We must all work together to set sound rules that we all can implement.
- 9) Stacy Haffner, WISPIRG: support the need strong rules to control nonpoint pollution but opposes most of this rule. These rules need more work to be effective.
- 10) Dan Patenaude, farmer: supports parts of the rule and opposes parts of the rule. Farmers need to take the lead in implementing conservation. Rules are needed for the occasional bad actor.
- 11) Ann Greenheck, farmer: generally opposes the rule. Funding is needed to implement these

rules.

- 12) Keith Radke, farmer: generally opposes the rule. We need to work together to improve water quality. Farmers need financial help to put in practices.
- 13) Richard Gorder, farmer: supports parts and opposes parts of the rule. The nutrient management portion of the rule needs to be changed to give farmers flexibility.
- 14) Ed Liegel, crop consultant: generally supports intent of the rule but opposes parts of it. Need to make changes in the nutrient management portion of rule, giving farmers more flexibility.
- 15) Cathy Cooper, Richland County LCD: supports some of the rule but opposes many parts of it. Not enough county staff and cost share funds to implement.
- 16) Kurt Radke, farmer: opposes the rule. The proposed standards and practices are too restrictive for farmers.
- 17) Phillip Swaube, farmer: opposes parts of the rule. Farmers must be allowed to write their own nutrient management plans.
- 18) Carl Pulvermacher, farmer: opposes parts of the rule. He is opposed to required buffers, all of farm is within buffer area.
- 19) John Turgansen, farmer: generally opposes the rule. This rule must allow farmers to spread manure all times of the year.
- 20) Georgina Willamark, farmer: opposes the rule. This is too regulatory on farmers. Urban areas cause more problems than rural areas.
- 21) Donald Stevens, farmer: opposes the rule. This rule will put their farm out of business if implemented.

March 21, 2000. Whitehall, Wisconsin. Approximately 75 people attended the hearing and 10 presented oral testimony. Speaking were:

- 1) Lynn Harrison, farmer: opposes the rule. This rule is too costly for farmers. The rule is very poorly written.
- 2) Darrell Lorch, farmer: opposes the rule. DATCP and DNR need to work together on these rules. These proposed rules will not work in Trempealeau County.
- 3) Ronald Tuschner, farmer: opposes the rules. DATCP and DNR need to work together on these rules. These proposed rules will not work in Trempealeau County. Need uniform, common-sense rules.
- 4) Jean Schomisch, Eau Claire County LCD: generally supports the intent of the rules and the state standards but opposes this version of the rule. Several provisions need to be changed in this version of the rule.
- 5) Eugene Halama, farmer: opposes the rule. Need consistent rules for all. These are too regulatory on farmers.
- 6) Douglas Knoepke, farmer: generally opposes the rule. The nutrient management program won't work. Mandated stuff should be 100% funded.
- 7) Dan Masterpole, Chippewa County LCD: supports the intent of the rule but opposes this version of it. DATCP must be consistent with DNR rules. Many of the standards and practices are unworkable. ATCP 50 needs clearer implementation program.
- 8) Joe Bragger, farmer: generally opposes the rule. This rule and DNR's rules need to be consistent and both need corrections. Some standards and practices will put farmers in the driftless area out of business.
- 9) John Pronschinske, farmer: opposes the nutrient management part of the rule. The nutrient management program needs to be revised.

10) Richard Bauer, farmer: opposes the rule. These rules are too regulatory for farmers. Need more education.

March 22, 2000. Chilton, Wisconsin. Approximately 150 people attended the hearing and 17 presented oral testimony. Speaking were:

- 1) Tom Davies, Winnebago County LWCD: generally opposes the rule. DATCP and DNR need consistency in their rules, standards and practices. The rules should set obtainable goals and the practices to reach those goals should be set locally.
- 2) Tom Milheiser, Oconto County LCD: supports some of the rule but opposes most parts of it. DATCP is overstepping its bounds with the rule.
- 3) Pete Van Airdale, Winnebago County LCD: opposes the rule. Supports the intent of redesigning the programs, but this version of the rule does not meet the intent.
- 4) Bill Schuster, Door County LCD: opposes the rule. Supports the intent of redesigning the programs, but this version of the rule does not meet the intent. The rule must have a clear implementation program.
- 5) Terry Abraham, farmer: opposes the rule. These rules will put many farmers out of business, they are too regulatory for farmers.
- 6) Bill Hafs, Brown County LCD: generally opposes the rule. Supports the intent of redesigning the programs, but this version of the rule does not meet the intent. DATCP and DNR need consistency.
- 7) Vince Michalski, farm cooperative representative: opposes the nutrient management part of the rule. The nutrient management program needs significant changes. Farmers should not be allowed to write their own nutrient management plans.
- 8) Brad Holtz, Brown County LCD: generally opposes the rule. DATCP and DNR must have consistent rules. The rules need adequate funding to implement them.
- 9) Shawn Eckstein, farm cooperative representative: generally opposes the rule. He supports the intent of the rules, but they need to be more farmer-friendly. Many standards and practices are unrealistic.
- 10) Steve Hoffman, Crop consultant: generally opposes the rule. DATCP and DNR rules need to be consistent. DNR should not tell farmers how to farm.
- 11) Wilmer Geiser, farmer: opposes the rule. Keep DNR off farms. Rules are too regulatory for farmers. Cost sharing should be at a higher rate.
- 12) Don Langkamp, farmer/crop consultant: opposes changes in ATCP 40.11.
- 13) John Pagel, farmer: generally opposes the rule. He supports efforts to improve water quality. Need consistency between DATCP and DNR. Need funding to implement the rule.
- 14) Louis Zink, farmer: opposes the rule. The rule is too regulatory against farmers. Need fairness in the rules.
- 15) Tom Ward, Manitowoc County LCD: support the need for the rule but oppose this version of the rule. The state needs standards and enough funding to meet the standards. To make the rules flexible at the county level means the rules will be complex.
- 16) Larry Dufeck, farmer: oppose the rule. Farms are not the main contributors to nonpoint pollution, roads and urban sites are. Need more cost share funds to implement.
- 17) Lee Konop, farmer: generally opposes the rule. Need money to implement before requiring farmers to install practices.

March 23, 2000. Hancock, Wisconsin. Approximately 40 people attended the hearing and 9 presented oral testimony. Speaking were:

- 1) Betsy Ahner, farm business representative: opposes the nutrient management portion of the rule. The entire nutrient management program needs changing. The cost to implement nutrient management are enormous, do not require until the state has the money.
- 2) Leonard Buss, crop consultant: opposes the nutrient management portion of the rule. The state needs more research before we adopt a phosphorus standard for the nutrient management program.
- 3) Tom Lochner, Cranberry Growers Association: opposes this version of the rule. DATCP needs to be consistent with DNR. The state must have funds available before requiring farmers to install practices.
- 4) Donnie Mengel, custom manure hauler: opposes the rule. This rule will put custom manure haulers out of business.
- 5) Allan Brooks, farmer: generally opposes the rule. The rules need more work and more input from the agriculture community. Work through the LCD to develop the rules. The nutrient management requirements need changing.
- 6) Eric Lynch, WISPIRG: support the intent of the rules to improve water quality, but oppose this version of the rule. The rules need adequate funding. DATCP must be consistent with DNR rules.
- 7) Jessica Tritsch, WISPIRG: support the intent of the rule but oppose this version of it. Agricultural and environmental groups need to work together to improve water quality. AWAC prohibitions need to be implemented statewide. Ban manure storage in floodplains.
- 8) Garth Towne, farmer: generally opposed to the rule. Do we know what the water quality of the state is? Have the waters been tested? It seems like we're trying to fix something that isn't broken.
- 9) Darrell Reigel, farmer and LCC member: generally opposed to the rule. The rules are too narrow and complicated. Need a stronger education program. Provide cost sharing for management practices, not just structures.

March 28, 2000. Medford, Wisconsin. Approximately 90 people attended the hearing and 3 presented oral testimony. Speaking were:

- 1) Richard Scheuer, Marathon County LCC: generally opposes the rule. The state must have the funds available before requiring farmers to install practices. Keep the program out of EPA's hands.
- 2) Tom Peissig, farmer: generally opposes the rule. Make sure the state has funding for the program before requiring farmers to install practices. DATCP must be consistent with DNR's rules. The definition of WQMAs is too confusing and hard to understand.
- 3) Ken Hein, farmer: neither supports nor opposes the rule. The state must keep the local delivery mechanism for the program. The county LCDs know farming and the programs.

March 29, 2000. Antigo, Wisconsin. Approximately 65 people attended the hearing and 12 presented oral testimony. Speaking were:

- 1) R. J. O'Harrow, retired farmer: supports the intent of the rule. In dealing with environmental issues, Wisconsin should follow the approach taken by the Dutch. Work with the university

- and its specialists to study and test practices and approaches.
- 2) Harold Sargent, farmer: generally opposes the rule. DATCP must be consistent with DNR's rules. The rules must make clear how the program will be implemented.
 - 3) Dennis Muck, farmer: generally opposes the rule. The nutrient management program needs to be changed. Farmers need flexibility. Cooperatives are overcharging farmers for their services.
 - 4) Dean Kaatz, Marathon County LCD: generally opposes the rule. He agrees with the intent of the legislation, but the rules do not meet that intent. The rules must make clear a statewide implementation program.
 - 5) John Walter, farmer: generally opposes the rule. The nutrient management program needs changes to it. The state must have funding available before requiring farmers to install practices.
 - 6) Mike Carter, Wis. Potato and Vegetable Growers Association: generally opposes the rule. The rules need more work. As presented now, the rules add another layer of regulations on farmers. The costs are too high.
 - 7) Gary Tauchen, farmer: generally opposes the rule. DATCP must coordinate its work with DNR and LCCs. Farmers must be allowed to write their own nutrient management plans.
 - 8) Tiffany Lyden, Vilas County LCD: neither opposes nor supports the rule. The rule should focus on implementing county LWRM plans. Sufficient funds should be given to northern counties to implement their LWRM plans to protect resources.
 - 9) Joe Wisniewski, Vilas County LCC: neither opposes nor supports the rule. He supports state funding to help build northern county LCDs.
 - 10) Vernon Ainsworth, Shawano County LCC: generally opposes the rule. DATCP must coordinate its rule with DNR's rule. The cost is too prohibitive for farmers.
 - 11) Eric Anderson, agronomist: generally opposes the rule. DATCP must be consistent with DNR's rules. These rules are too expensive for farmers.
 - 12) John Matteck, farmer: opposes the rule. Farmers must be allowed to write their own nutrient management plans. The state will cut funding for the program once it is started.

March 30, 2000. Barron Wisconsin. Approximately 95 people attended the hearing and 11 presented oral testimony. Speaking were:

- 1) Jeff Timmons, Polk Co. LCD: generally opposes the rule. The state is making it difficult for counties to get involved.
- 2) Rudy Erickson, Northern Beef and Sheep Producers representative: opposes the rule. The rule places too many restrictions on farmers and will put many producers out of business.
- 3) George Raab, The Turkey Store representative: opposes the rule. Does not like inconsistent regulations from county to county. Need level playing field statewide.
- 4) Richard Marquardt, farmer: opposes the rule, it will put farmers out of business.
- 5) Mike Robers, farmer: opposes the rule. Homes on waterfronts pollute more than farms do.
- 6) Dan Burgess, farmer: opposes the rule. Scientific data does not support having 300 foot buffers.
- 7) Al Riphenburg, farmer: supports parts of the rule and opposes parts of it. We have to focus limited funds on priority problems.
- 8) Walter Lundeen, farmer: opposes the rule. The state should stay off his land.
- 9) Randy Bina, crop consultant: supports parts of the rule and opposes parts of it. Changes need to be made to the nutrient management program.

- 10) Duron Bergeson, farmer: opposes the rule. This rule is too restrictive on farmers, it will put them out of business.
- 11) Bob Fetzer, farmer; generally opposes the rule. Common sense must be used when developing this rule

April 5, 2000. Madison, Superior and Rhinelander, Wisconsin. Sixteen people attended the hearing and 7 presented oral testimony. Speaking were:

- 1) Susan Halverson, WISPIRG: supports parts of the rule and opposes parts of it. The state needs strong rules to improve water quality, but these are not strong enough.
- 2) Caryl Terrell, Sierra Club: supports parts of the rule and opposes parts of it. Rules need to be made stronger.
- 3) Ivan Wielander, WISPIRG: supports parts of the rule and opposes parts of it. The state needs stronger rules that farmers can live with.
- 4) Analisa Raggert, WISPIRG: supports parts of the rule and opposes parts of it. Ban manure storage in floodplains.
- 5) Susan Nieftris, WISPRIG: supports parts of the rule and opposes parts of it. The program needs adequate funding.
- 6) Antonio Fuller, Sierra Club: supports parts of the rule and opposes parts of it. The nutrient management program needs a phosphorus standard.
- 7) Jack Hafner, interested citizen: supports parts of the rule and opposes parts of it. Cost-share funds should go to small family farms.

Summary of all comments

A. Comments from those who feel the proposed rule is too stringent and will be detrimental to family farms.

Comments from individuals who felt that the proposed rule was too strict and would be detrimental to family farms were quite divergent and covered many aspects of farming that would be impacted by the proposed rule. Farmers or those connected to the farming industry provided most of these comments.

The comments fell into five major areas.

1. Nutrient management. Farmers were very concerned about the nutrient management requirements of the proposed rule. Major written and oral comments were:
 - Farmers are doing a good job of managing nutrients. They do not want to pollute the environment.
 - Lawn fertilizers are significant sources of pollution. If farmers must follow nutrient management plans, so must those applying lawn fertilizers.
 - The state should develop a common-sense approach to nutrient management. Nutrient management plans are too complex and complicated.

- Farmers must be allowed and assisted to write their own nutrient management plans.
- There is no need for a phosphorus limit if manure is applied on flat land.
- The U. W. recommendations are recommendations for economic sustainability and not for water quality. They are recommendations only and should not be made part of a rule.
- Farmers cannot both incorporate manure and maintain soil erosion requirements on fields where manure is applied and no-till farming is used.
- Keep the nutrient management program a voluntary, educational program.
- In some areas of the state, farmers have to be allowed to spread manure on steeper slopes and in the winter time.
- The nutrient management program must have flexibility and allow farmers to incorporate manure after 72 hours, etc., if conditions demand it.

2. Consistency with DNR's performance standards. Many farmers and those in the farming community commented on the confusion caused by the apparent discrepancies between ATCP 50 and DNR's NR 151. Major written and oral comments were:

- DATCP and DNR have to work together to develop agreed upon performance standards and methods to reach those standards. Many farmers are confused as to what the requirements are that they must meet.
- Would rather have to meet the 1/2T performance standard rather than a 1/3T performance standard.
- Both 1/2T and 1/3T are unrealistic.
- Too much land would be taken out of production if farms were required to meet either 1/2T or 1/3T. Many farms in the driftless area would be put out of business.
- Need agreement between DATCP and DNR on what constitutes new and expanding operations.
- We need a consistent set of rules for everyone to follow.
- Would support a 10 foot buffer, but cannot maintain 1/2T or 1/3T on fields within 300 feet of streams. Too much land would be taken out of production.
- If farmers are required to meet performance standards, municipalities must also be required to meet standards.

3. Clarity and cost of the rule. Many farmers had comments on the lack of clarity of the rules and

what the cost would be to them depending on what practices they would be required to install and when they would be required to reach performance standards. Major written and oral comments were:

- Proposed rule is unclear as to when farmers are required to install practices or meet performance standards. The implementation and compliance components of the rule are unclear. Farmers need to know what is expected of them.
- Costs are too high and will drive family farms out of business.
- The state is mandating requirements but does not have the money to pay for them.
- If buffers are required, the state should pay a farmer for the land taken out of production.
- Cost-share funds should be made available to all farmers and should be more than 70% of the cost of the project.
- Large livestock operations should be eligible for cost-share funds.
- The requirements of the rule should be guidelines, not mandates.
- Phase in requirements of the rule so that costs can be phased in also.
- Establish consistent rules and quit changing them so often.

4. Definition of Water Quality Management Areas. In addition to the comments mentioned above regarding the requirement of 1/2T or 1/3T on cropland in water quality management areas, there was one additional comment frequently heard on the definition of water quality management areas. That comment was: water quality management areas with less than three feet to bedrock would be too difficult to delineate in order to prohibit the stacking of manure.

5. Program implementation. The department received many comments from farmers complaining about the lack of clarity in the rule on how the program will be implemented and enforced. The rule gives the impression to farmers that they will be required to install many practices, that funding may or may not be available, and that farmers are being singled out as the only cause of problems. Major written and oral comments were:

- One size does not fit all, the program needs local implementation. Implementation must be done locally with common sense.
- Consistency is needed between counties. Standards and ordinances must be the same across county lines.
- Farmers can work with LCD and other local staff easier than they can work with state agency staff. Local staff have a better sense of what is needed on the landscape and of what will work and what will not work. Get local farm input when designing the

implementation program.

B. Comments from the crop consultants or crop consultant companies.

Individuals who identified themselves as crop consultants submitted comments raising issues similar to those raised by many of the farmers. The one area where they differed was regarding the preparation of nutrient management plans. Many farmers felt that farmers should not only be allowed to prepare their own nutrient management plans but should be encouraged and helped to do so. Many crop consultants, however, felt that shortened training sessions could not replace the more intensive education that they went through to be able to prepare nutrient management plans.

C. Comments from government agencies and other organizations in the public sector.

Most of the comments from those in the public sector came from county land conservation committee members and department staff. The department also received comments from cooperating agencies, university staff, Municipal Environmental Group representatives and so forth. Generally, these comments indicated support for the effort to redesign the program, but indicated that more work needs to be done. The comments fell into the following categories

1. Nutrient management. Only a few comments were received from people in this group regarding nutrient management. Significant comments were:
 - Phosphorus is a major source of pollution in lakes. Nutrient management plans should have phosphorus standards.
 - Farmers should be allowed to prepare their own nutrient management plans.
 - Need to maintain flexibility in nutrient management plans.
 - Make the nutrient-management certification similar to the pesticide-application certification process.
 - Have a phased-in approach to implementing nutrient management plans, otherwise everyone will wait until the last minute before preparing and following a plan.
2. Consistency with DNR's performance standards. People in this group had several comments regarding consistency between agencies for developing and implementing these programs. Major comments were:
 - DATCP must reach agreement with DNR on what the performance standards are. DATCP's conservation practices must be consistent with DNR's performance standards (1/3T and 1/2T).
 - DATCP and DNR must agree on the definition of new and expanding operations.

- The process of developing the rule must be restarted followed through to completion. All affected parties must sit down at the table and reach agreement on what will be in the rules.
 - ATCP 50 depends on what is in NR 151 and NR 243. Wait until these rules are completed before trying to write ATCP 50. ATCP 50 must cross-reference these rules and be designed to achieve the performance standards.
 - We support the AWAC prohibitions.
 - We support having minimum state standards or goals that counties and farmers can work toward achieving.
 - DATCP does not have the authority to set dates for the achieving of DNR's performance standards.
 - The dates for achieving the performance standards are too far off in the future. Have a phased-in approach for meeting the standards so that everybody does not put off achieving them until the last minute and so that money will be available to help farmers.
 - Make sure cost-share rates are consistent with DNR's cost-share rates.
3. Program costs. Most of the comments from this group were regarding the amount and the management of funds the state provides to counties to do the required work. Major comments were:
- There are not enough LCD staff to work with farmers to meet these goals. The state must provide more funds for LCD staff. If more state funds are not provided, these would be more unfunded mandates from the state. Counties do not have the funds to enforce these rules.
 - Support the idea of DATCP giving high priority to maintaining county staff and project continuity.
 - The rule needs better incentives for both counties and farmers to participate in the program.
 - Do not require the landowner's signature on contracts for conservation tillage and other management practices. These are management practices for the land user only.
 - Allow cost-share funds to be made available for farms located within cities and villages.
 - Do not require DATCP to be a third-party signatory to contracts over \$25,000. That is too much micro-management. Raise that amount to \$100,000.
 - Make sure cost-share rates are consistent with DNR's cost-share rates.

- People in the FPP should be eligible for cost-share funds.
- DATCP should provide funds to LCCs to fund county priorities in land and water resource management plans. State priorities favor agricultural activities and discriminate against northern counties just building their programs. More state funds should be devoted to helping counties build their programs.
- Provide adequate funds to counties and let them implement the program.

4. Technical standards. This group had the following comments on technical standards:

- Support the work of the Standards Oversight Council. Continue to work through this group to develop and accept technical standards.
- Support science-based technical standards. Keep politics out of the process for developing and accepting technical standards.
- Conservation practices should have maintenance periods associated with them which last as long as necessary to ensure compliance with performance standards. The state should not pay more than once for practices to meet standards for lack of maintenance of the practices. If maintenance periods are not provided, insert the words "and maintain" in the technical standards for each practice.
- The term "waterway" in the rule needs a clear definition.
- Conservation practices should be tied directly with water quality and only practices that improve water quality should be required.
- In the streambank and shoreline protection practice, insert the phrase "...or other activities such as bio-engineering practices."
- For streambank and shoreline protection, riparian buffer, and critical area stabilization practices, include the costs of appraisals and the purchasing of easements as eligible costs.

5. Program implementation. This group had the following comments on program implementation:

- County government is responsible for program implementation and must have a larger say in the development of these rules.
- Support the concept of using county land and water resource management plans to implement this program and achieve the state's performance standards.
- Do not allow the state agencies to micromanage county land and water resource management plans.

- Counties must retain the authority to determine how they will reach the state's goals in their counties.
- DATCP does not have the authority to require that county ordinances be consistent with this rule.
- Local regulation should be required if voluntary measures fail to reach goals.
- Counties should not be required to adopt ordinances, but should be allowed to if they so choose.
- Counties should be allowed to adopt alternative standards to meet state-established goals.
- The rule should only set goals and general guidelines. Specifics on how to reach those goals should be left up to counties by means of their land and water resource management plans.
- Implementation of this program should focus on prevention as well as restoration of polluted waters.
- The LCC should have final approval of land and water resource management plans rather than DATCP.
- There is no incentive for counties to participate in this program.

D. Comments from those generally supporting the redesign of the program but who felt the proposed changes did not go far enough to protect the state's water resources.

The comments from these individuals were relatively consistent. The common comments were:

1. The four AWAC prohibitions must apply statewide:
 - Limit livestock access to streams only to managed access points.
 - No unconfined manure piles.
 - No overflow of manure storage facilities.
 - No direct runoff from a feedlot or from stored manure into the waters of the state.
2. Ban manure storage in floodplains.
3. Provide adequate funds to ensure that all feedlots are able to develop and implement nutrient management plans.
4. Adequate funding must also be provided to target best management practices identified in county land and water resource management plans.
5. The state must adopt a phosphorus standard for nutrient management plans.

6. The state must maintain buffers along streambanks and require 1/3 T soil loss in water quality management areas.
7. DATCP has no authority to adopt different performance standards than DNR, the lead water quality agency of the state.
8. The state must coordinate this effort with the goals of the federal Clean Water Act.

**ATCP 50 Hearings March and April, 2000
Written Comments and Registrations**

<u>Individual</u>	<u>Representing</u>	<u>Support the rule</u>	<u>Oppose the rule</u>	<u>Support parts/ Oppose parts</u>	<u>Location</u>
Arndt, Allan			x		Fitchburg
Arnold, Gregory			x		Fitchburg
Auby, Roger		x			Fitchburg
Austin, Richard			x		Fitchburg
Bulin, richard			x		Fitchburg
Clemmens, Dean	ABS Global		x		Fitchburg
Cole, A. D.				x	Fitchburg
Connors, Kevin				x	Fitchburg
Davis, Robert				x	Fitchburg
Diehl, John		x			Fitchburg
Diestelmann, Eva				x	Fitchburg
Espenscheid, Marvin			x		Fitchburg
Fedkenheuer, Jerome			x		Fitchburg
Gibson, James			x		Fitchburg
Herfel, Curtis				x	Fitchburg
Holland, Dan			x		Fitchburg
Jenson, Todd				x	Fitchburg
Judd, John				x	Fitchburg
Leonard, Alexander				x	Fitchburg
Loff, Roger			x		Fitchburg
Marx, Sue				x	Fitchburg
Meier, Tom				x	Fitchburg
Nelson, Stanley			x		Fitchburg
Norton, Robert			x		Fitchburg
Peterson, Philip				x	Fitchburg
Silver, Art			x		Fitchburg
Simmons, William		x			Fitchburg
Ula, Nolan			x		Fitchburg
Uphoff, Robert			x		Fitchburg
Wagner, Tom	Wagner Dairy		x		Fitchburg
Wesenberg, Robert			x		Fitchburg
Weum, Joseph		x			Fitchburg
Zeloski, Dennis				x	Fitchburg
Total		4	17	12	33

These are in addition to those giving oral testimony

**ATCP 50 Hearings March and April, 2000
Written Comments and Registrations**

<u>Individual</u>	<u>Representing</u>	<u>Support the rule</u>	<u>Oppose the rule</u>	<u>Support parts/ Oppose parts</u>	<u>Location</u>
Boone, Vera		x			East Troy
Bries, Dennis				x	East Troy
Colburn, LeAnn	Kenosha Co. Plan & Dev. Dept.			x	East Troy
Featherstone, Marshall			x		East Troy
Griel, Tom			x		East Troy
Henningfeld, Don			x		East Troy
Jooss, Judy				x	East Troy
Masters, Frank				x	East Troy
Novak, Thomas				x	East Troy
Olson, Louise	Walworth Co. LCD			x	East Troy
Porter, Howard				x	East Troy
Stowell, Ross				x	East Troy
Taylor, Mary Elsa	Wis. Assn of Lakes		x		East Troy
Tischendorf, Roland		x			East Troy
Weis, Clayton				x	East Troy
Welsh, Dave				x	East Troy
Wilson, Connie	City of Burlington			x	East Troy
Wilson, Scott			x		East Troy
Wissner, Gregg			x		East Troy
Total		2	6	11	19

These are in addition to those giving oral testimony

**ATCP 50 Hearings March and April, 2000
Written Comments and Registrations**

<u>Individual</u>	<u>Representing</u>	<u>Support the rule</u>	<u>Oppose the rule</u>	<u>Support parts/ Oppose parts</u>	<u>Location</u>
Backes, Jim			x		Richld Ctr
Berrey, Al				x	Richld Ctr
Brown, Calvin			x		Richld Ctr
Brownlee, Jeff			x		Richld Ctr
Bundy, Jonathon				x	Richld Ctr
Clary, Dwayne				x	Richld Ctr
Clary, Fred			x		Richld Ctr
Collins, Jim			x		Richld Ctr
Crubel, Donna				x	Richld Ctr
Daily, Judy			x		Richld Ctr
Featherberry, Gary			x		Richld Ctr
Ghastin, Kirk				x	Richld Ctr
Gilbertson, Arnold				x	Richld Ctr
Haffner, LeRoy			x		Richld Ctr
Heims, Randy				x	Richld Ctr
Hillberry, Daniel				x	Richld Ctr
Hoff, Patricia				x	Richld Ctr
Hoffman, J. Scott			x		Richld Ctr
Huffman, Harold				x	Richld Ctr
Hurst, Jerome			x		Richld Ctr
Jelinek, Dave				x	Richld Ctr
Johnsrud, Ron & Janice			x		Richld Ctr
Jones, Jerry			x		Richld Ctr
Karl, Herman				x	Richld Ctr
Kinney, Gregg			x		Richld Ctr
Klekamp, Joe			x		Richld Ctr
Kohlstedt, Steve	Richland Co. UWEX		x		Richld Ctr
Lathrop, LaVon			x		Richld Ctr
Leatherberry, Steve			x		Richld Ctr
Lingel, James				x	Richld Ctr
Magley, Bob				x	Richld Ctr
Manning, David		x			Richld Ctr
McCaulley, Jim	Iowa Co. LCD			x	Richld Ctr
McIntosh, thomas				x	Richld Ctr
Morse, Wayne				x	Richld Ctr
O'Leary, Michael				x	Richld Ctr
Olson, James			x		Richld Ctr
Paasch, Paul			x		Richld Ctr
Patenaude, Dan		x			Richld Ctr
Peterson, Paul			x		Richld Ctr
Price, William			x		Richld Ctr
Raisbeck, Kevin			x		Richld Ctr
Rasmussen, Richard			x		Richld Ctr
Rule, Joyce			x		Richld Ctr
Rule, Paula			x		Richld Ctr

**ATCP 50 Hearings March and April, 2000
Written Comments and Registrations**

<u>Individual</u>	<u>Representing</u>	<u>Support the rule</u>	<u>Oppose the rule</u>	<u>Support parts/ Oppose parts</u>	<u>Location</u>
Schroeder, Roy	Town of Westfield			x	Richld Ctr
Schwert, Mary			x		Richld Ctr
Servais, Dale				x	Richld Ctr
Sill, John			x		Richld Ctr
Stafford, Donald				x	Richld Ctr
Stuedel, Charles	Trout Unlimited - Noal Chptr	x			Richld Ctr
Stevens, Donald			x		Richld Ctr
Stuelnicka, Robert				x	Richld Ctr
Tiller, Fred			x		Richld Ctr
Turgasen, John		x			Richld Ctr
Udelhofen, Angela			x		Richld Ctr
Unbehaun, David				x	Richld Ctr
Walz, Tim				x	Richld Ctr
Wiedenfeld, Vince				x	Richld Ctr
Willemarck, Georgine			x		Richld Ctr
Wilmes, Judith			x		Richld Ctr
Wolff, Chris			x		Richld Ctr
Wright, David			x		Richld Ctr
Young, Harry			x		Richld Ctr
Total		4	36	24	64

These are in addition to those giving oral testimony

ATCP 50 Hearings March and April, 2000

Written Comments and Registrations

<u>Individual</u>	<u>Representing</u>	<u>Support the rule</u>	<u>Oppose the rule</u>	<u>Support parts/ Oppose parts</u>	<u>Location</u>
Anderson, Byron				x	Whitehall
Anderson, Mary			x		Whitehall
Bauer, Richard			x		Whitehall
Bragger, Daniel			x		Whitehall
Bragger, Joe			x		Whitehall
Burky, Tim			x		Whitehall
Byon, Tim			x		Whitehall
Chust, Rudy		x			Whitehall
Ellis, Jim				x	Whitehall
Emerson, Jim			x		Whitehall
Everson, David		x			Whitehall
Fernholz, LeRoy			x		Whitehall
Mannel, Diane			x		Whitehall
McRae, David		x			Whitehall
Mueller, Douglas				x	Whitehall
Semke, Kevin				x	Whitehall
Tomter, Howard		x			Whitehall
Total		4	9	4	17

These are in addition to those giving oral testimony

**ATCP 50 Hearings March and April, 2000
Written Comments and Registrations**

<u>Individual</u>	<u>Representing</u>	<u>Support the rule</u>	<u>Oppose the rule</u>	<u>Support parts/ Oppose parts</u>	<u>Location</u>
Abraham, Terry			x		Chilton
Anderson, Jon	Coop Serv. Oil Co.			x	Chilton
Brandt, Paul			x		Chilton
Braun, Dick			x		Chilton
Davies, Tom	Winnebago Co. LCD			x	Chilton
Depies, Dale			x		Chilton
Depies, Richard			x		Chilton
Dorn, Peter		x			Chilton
Ecker, Marvin Jr.			x		Chilton
Feidler, Charles			x		Chilton
Gebhart, Charles			x		Chilton
Gilson, Michael	Cooperative Services - Denmark			x	Chilton
Glaeser, Don	Bullhead Lake Assn.	x			Chilton
Gries, Greg				x	Chilton
Hafemann, Sheila			x		Chilton
Hafs, Bill	Brown Co. LCC & LCD			x	Chilton
Hasse, Mike			x		Chilton
Holtz, Brad	Brown Co. LCD			x	Chilton
Kohnle, Jeffery				x	Chilton
Kolbe, Joe				x	Chilton
Lutze, Richard	Adell Coop Union			x	Chilton
Maile, Wayne			x		Chilton
Milheiser, Tom	Oconto Co. LCC & LCD			x	Chilton
Nadler, John			x		Chilton
Nigh, Duane				x	Chilton
Ortlieb, Dave				x	Chilton
Pagel, Eric			x		Chilton
Parma, Sal				x	Chilton
Petersen, Brent	Brown Co.			x	Chilton
Petrie, David			x		Chilton
Popp, Hebert				x	Chilton
Rasmussen, Paul				x	Chilton
Schuster, William	Door CO LCD			x	Chilton
Van Airdale, Pete	Winnebago Co. LCC & LCD			x	Chilton
Zellner, John			x		Chilton
Zink, Louis Jr.			x		Chilton
Zutz, Jeff				x	Chilton
Total		2	16	19	37

These are in addition to those giving oral testimony