of wall length to covering perimeter shall be separately calculated for each square or rectangular area, excluding common sides.

(b) "Wall" means a vertical expanse in which more than 50 percent of the opening from eave to floor or ground is composed of a solid building material. The building material need not be rigid.

(2) COST-SHARE ELIGIBILITY. A cost-share grant under s. ATCP 50.40 may reimburse the cost of constructing a roof if the department or the county land conservation committee finds that the roof construction is the most practical and cost-effective way to achieve compliance with state or local regulations.

(3) ELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may reimburse the cost of designing and constructing a roof that is necessary to prevent barnyard runoff or discharges from a manure storage structure.

(4) INELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may not reimburse any of the following:

(a) Costs to install walls or to enclose a roofed area.

(b) Costs to design or construct a building or structure other than a roof.

(5) DESIGN, CONSTRUCTION AND MAINTENANCE. A cost-share grant under s. ATCP 50.40 may not reimburse the cost of installing a roof unless all the following conditions are met:

(a) The roof complies with the american society of agricultural engineers engineering practice number 288.5, December 1992 edition.

NOTE: Copies of ASAE EP 288.5 are on file with the department, the secretary of state and the revisor of statutes. Copies may be obtained from the department.

(b) The roof structure has sufficient ventilation to protect farm operators, livestock and the roof.

(c) The roof and supporting structure are constructed of materials with a life expectancy of 10 years or more.

(d) The farmer agrees not to establish additional outdoor animal lots on the site, except with adequate runoff control practices approved by the department.

(e) The farmer agrees not to convert a roofed animal lot structure, cost-shared under this chapter, for use other than as an animal lot.

(f) The farmer agrees to maintain the roof for 10 years unless farming operations on the affected land are discontinued.

ATCP 50.85 Roof runoff systems. (1) DEFINITION. In this section, "roof runoff system" means facilities for collecting, controlling, diverting, and disposing of precipitation from roofs. A "roof runoff system" may include gutters, downspouts, erosion-resistant channels, subsurface drains and trenches.

(2) ELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may reimburse the cost of designing and constructing a roof runoff system as part of a barnyard runoff control system or manure storage system if the roof runoff system is necessary to prevent roof runoff from flowing across areas of concentrated manure.

(3) INELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may not reimburse costs for structures that divert water to areas not adequately protected from erosion.

(4) DESIGN, CONSTRUCTION AND MAINTENANCE. A cost-share grant under s. ATCP 50.40 may not reimburse the cost of installing a roof runoff system unless all the following conditions are met:

(a) The roof runoff system complies with all the following that apply:

1. NRCS technical guide roof runoff management standard 558.

2. NRCS technical guide underground outlet standard 620.

(b) The farmer agrees to maintain the roof runoff system for 10 years unless farming operations on the affected land are discontinued.

ATCP 50.86 Sediment basins. (1) DEFINITION. In this section, "sediment basins" means permanent basins that reduce the transport of waterborne pollutants such as eroded soil sediment, debris and manure sediment. Sediment basins may include containment walls or berms, pickets or screens to filter debris, orifices or weirs to control discharge, and conduits to direct runoff to treatment or discharge areas.

(2) ELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may reimburse the cost of designing and constructing a sediment basin, including costs for heavy use area protection, livestock fencing, filter strips, waste transfer, underground outlets, and critical area plantings.

(3) INELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may not reimburse the costs for any of the following:

(a) Basins with a structural height of more than 25 feet or with a maximum storage capacity of more than 50 acre-feet.

(b) Basins whose failure may endanger human life.

(4) DESIGN, CONSTRUCTION AND MAINTENANCE. A cost-share grant under s. ATCP 50.40 may not reimburse the cost of installing a sediment basin unless all the following conditions are met:

(a) Filter strips or buffers are used to filter any discharge from the sediment basin.

(b) The sediment basin complies with all the following that apply:

1. NRCS technical guide waste management system standard 312.

2. NRCS technical guide critical area planting standard 342.

3. NRCS technical guide sediment basin standard 350.

4. NRCS technical guide manure transfer standard 634.

5. NRCS technical guide fencing standard 382.

6. NRCS technical guide filter strip standard 393.

7. NRCS technical guide heavy use area protection standard 561.

8. NRCS technical guide underground outlet standard 620.

(c) The farmer agrees to maintain the sediment basin for 10 years unless farming operations on the affected land are discontinued.

ATCP 50.87 Streambank and shoreline protection. (1) DEFINITION. In this section, "streambank and shoreline protection" means using vegetation or structures to stabilize and protect the banks of streams, lakes, estuaries or excavated channels against scour and erosion.

(2) ELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may reimburse any of the following costs related to streambank and shoreline protection:

(a) Costs for permanent fencing to protect streambanks and shorelines from damage by livestock.

(b) Costs to install rock riprap. Wood chunks, unsorted demolition material, brick, plaster, blacktop and other materials that may produce leachates may not be used as riprap. A cost-share grant may reimburse costs for rock and timber riprap used to establish fish habitat as part of a streambank and shoreline protection scheme, provided that reimbursement for fish habitat does not exceed 25% of the cost-share grant.

NOTE: Lunker structures, or rock and timber riprap, are sometimes used to create fish habitat.

(c) Costs to shape streambanks or shorelines before installing protective plantings or structures.

(d) Costs to construct or modify stream crossings.

(e) Costs to establish permanent vegetative cover, or to provide temporary cover until permanent cover is established. This may include costs for mulch, fertilizer and other necessary materials.

(f) Costs for water pumps or other facilities that deliver water to livestock so that livestock can be excluded from surface waters. Well construction costs may not be reimbursed under a cost-share grant unless well construction is the most cost-effective way to deliver water to livestock.

(3) DESIGN, CONSTRUCTION AND MAINTENANCE. A cost-share grant under s. ATCP 50.40 may not reimburse costs for streambank or shoreline protection unless all the following conditions are met:

(a) The streambank or shoreline protection complies with all the following that apply:

1. NRCS technical guide critical area planting standard 342.

2. NRCS technical guide fencing standard 382.

3. NRCS technical guide streambank and shoreline protection standard 580.

4. NRCS technical guide tree planting standard 612.

(b) DNR pre-approves the streambank or shoreline protection project in writing if the project will create banks higher than 15 feet, measured from the stream or lake bed.

(c) The farmer agrees to maintain the streambank or shoreline protection for 10 years unless farming operations on the affected land are discontinued.

ATCP 50.88 Strip-cropping. (1) DEFINITION. In this section, "strip-cropping" means growing crops in a systematic strip arrangement in which strips of grass, legumes or other close growing crops are alternated with strips of clean tilled crops or fallow, and in which all of the strips are established on the contour or across a slope to reduce water or wind erosion.

(2) ELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may reimburse the cost of establishing a strip-cropping system, including costs for the necessary removal of obstructions or for the necessary installation of subsurface drains.

(3) DESIGN, CONSTRUCTION AND MAINTENANCE. A cost-share grant under s. ATCP 50.40 may not reimburse the cost of establishing a strip-cropping system unless all the following conditions are met:

(a) The strip-cropping operations are performed, to the maximum extent feasible, on the contour.

(b) The strip-cropping system complies with all the following that apply:

1. NRCS technical guide obstruction removal standard 500.

2. NRCS technical guide contour strip-cropping standard 585.

3. NRCS technical guide field strip-cropping standard 586.

4. NRCS technical guide wind strip-cropping standard 589.

5. NRCS technical guide subsurface drain standard 606.

10 yr rule?

ATCP 50.89 Subsurface drains. (1) DEFINITION. In this section, "subsurface drain" means a conduit installed below the surface of the ground to collect drainage water and convey it to a suitable outlet.

(2) ELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may reimburse the cost of designing and constructing a subsurface drain as part of a manure storage system, barnyard runoff control system, or erosion control system.

(3) DESIGN, CONSTRUCTION AND MAINTENANCE. A cost-share grant may not reimburse the cost of establishing a subsurface drain unless all the following conditions are met:

(a) The subsurface drain is a necessary component of a manure storage system, barnyard runoff control system or erosion control system.

(b) The subsurface drain complies with all the following that apply:

1. NRCS technical guide subsurface drain standard 606.

2. NRCS technical guide underground outlet standard 620.

(c) The farmer agrees to maintain the subsurface drain for 10 years unless farming operations on the affected land are discontinued.

ATCP 50.90 Terrace systems. (1) DEFINITION. In this section, "terrace system" means a system of ridges and channels installed on the contour with a non-erosive grade and suitable spacing.

(2) ELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may reimburse any of the following costs related to a terrace system:

(a) Costs to install the system, including necessary costs for necessary leveling, filling and obstruction removal.

(b) Costs to purchase and install necessary underground pipe outlets and other necessary mechanical outlets.

(c) Costs to modify an ineffective system, unless the system has been rendered ineffective because of changes in cropping patterns or equipment usage.

(d) Costs to establish permanent vegetative cover, or to provide temporary cover until permanent cover is established. This may include costs for mulch, fertilizer and other necessary materials.

(3) DESIGN, CONSTRUCTION AND MAINTENANCE. A cost-share grant may not reimburse terrace system costs unless all the following conditions are met:

(a) The terrace system includes a stable outlet or waterway of adequate capacity.

(b) The terrace system complies with all the following that apply:

1. NRCS technical guide critical area planting standard 342.

2. NRCS technical guide grassed waterway standard 412.

3. NRCS technical guide lined waterway or outlet standard 468.

4. NRCS technical guide obstruction removal standard 500.

5. NRCS technical guide terrace standard 600.

6. NRCS technical guide subsurface drain standard 606.

7. NRCS technical guide underground outlet standard 620.

8. NRCS technical guide water and sediment control basin standard 638.

(c) The farmer agrees to maintain the terrace system for 10 years unless farming operations on the affected land are discontinued.

ATCP 50.91 Underground outlets. (1) DEFINITION. In this section, "underground outlet" means a conduit installed below the surface of the ground to collect surface water and convey it to a suitable outlet.

(2) ELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may reimburse the cost of designing and constructing an underground outlet as part of a manure storage system, barnyard runoff control system, or erosion control system.

(3) DESIGN, CONSTRUCTION AND MAINTENANCE. A cost-share grant under s. ATCP 50.40 may not reimburse the cost of establishing an underground outlet unless all the following conditions are met:

(a) The underground outlet is a necessary component of a manure storage system, barnyard runoff control system or erosion control system.

(b) The underground outlet complies with all the following that apply:

1. NRCS technical guide subsurface drain standard 606.

2. NRCS technical guide underground outlet standard 620.

(c) The farmer agrees to maintain the underground outlet for 10 years unless farming operations on the affected land are discontinued.

ATCP 50.92 Waste transfer systems. (1) DEFINITION. In this section, "waste transfer system" means components such as pumps, pipes, conduits, valves, and other structures installed

to convey manure and milking center wastes from buildings and animal feeding operations to a storage structure, loading area or treatment area.

(2) ELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may reimburse the cost of designing and constructing a waste transfer system which is a necessary component of a manure storage system, barnyard runoff control system or milking center waste system funded under this chapter, provided that the waste transfer system is designed and used for that sole purpose.

(3) INELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may not reimburse the costs for any of the following:

(a) Portable equipment for spreading wastes on land or for incorporating wastes into land.

(b) Buildings or modifications to buildings. This paragraph does not apply to building modifications that are essential for the installation of a milking center waste control system.

(4) DESIGN, CONSTRUCTION AND MAINTENANCE. A cost-share grant under s. ATCP 50.40 may not reimburse the cost of installing a waste transfer system unless all the following conditions are met:

(a) The waste transfer system complies with all of the following that apply:

1. NRCS technical guide manure transfer standard 634.

2. NRCS technical guide underground outlet standard 620.

(b) The farmer agrees to maintain the waste transfer system for 10 years unless farming operations on the affected land are discontinued.

ATCP 50.93 Water and sediment control basins. (1) DEFINITIONS. In this section:

(a) "Manure storage facility" has the meaning given in s. ATCP 50.62(1)(c).

(b) "Water and sediment control basin" means an earthen embankment or a ridge and channel combination which is installed across a slope or minor watercourse to trap or detain runoff and sediment. "Water and sediment control basin" does not include a manure storage facility or a structure designed to collect runoff and sediment from concentrated animal feedlots.

(2) ELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may reimburse the cost of designing and constructing a water and sediment control basin, including practices necessary to protect the basin from livestock.

(3) DESIGN, CONSTRUCTION AND MAINTENANCE. A cost-share grant may not reimburse the cost of installing a water and sediment control basin unless all the following conditions are met:

(a) The water and sediment control basin complies with all the following that apply:

1. NRCS technical guide critical area planting standard 342.

2. NRCS technical guide fencing standard 382.

3. NRCS technical guide water and sediment control basin standard 638.

(b) The farmer agrees to maintain the water and sediment control basin for 10 years unless farming operations on the affected land are discontinued.

ATCP 50.94 Waterway systems. (1) DEFINITION. In this section, "waterway" means a natural or constructed watercourse or outlet that is shaped, graded and covered with a vegetation or another suitable surface material to prevent erosion by runoff waters.

(2) ELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may reimburse any of the following costs related to a waterway system:

(a) Costs for site preparation, grading, shaping and filling.

(b) Costs to establish permanent vegetative cover, or to provide temporary cover until permanent cover is established. This may include costs for mulch, fertilizer and other necessary materials.

(c) Costs for the necessary removal of obstructions, the necessary installation of subsurface drains, and the necessary installation of machinery crossings.

(3) DESIGN, CONSTRUCTION AND MAINTENANCE. A cost-share grant under s. ATCP 50.40 may not reimburse costs for a waterway system unless all the following conditions are met:

(a) Waterways are permanently covered by vegetation or other suitable surface materials to prevent erosion. Close-sown small grains, annual grasses or mulches may be used for temporary protection if followed by an appropriate permanent vegetative cover.

(b) The system complies with all the following that apply:

1. NRCS technical guide critical area planting standard 342.

2. NRCS technical guide fencing standard 382.

3. NRCS technical guide grassed waterway standard 412.

4. NRCS technical guide mulching standard 484.

5. NRCS technical guide subsurface drain standard 606.

(c) The farmer agrees to maintain the waterway system for 10 years unless farming operations on the affected land are discontinued.

ATCP 50.95 Well decommissioning. (1) DEFINITION. In this section, "well decommissioning" means permanently disabling and sealing a well to prevent contaminants from reaching groundwater.

(2) ELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may reimburse costs to design and implement a well decommissioning, including costs to fill the well, seal the well, and shape the land to protect the abandoned wellhead from precipitation and runoff.

(3) DESIGN, CONSTRUCTION AND MAINTENANCE. A cost-share grant under s. ATCP 50.40 may not reimburse the cost of well decommissioning unless the well decommissioning complies with all the following that apply:

(a) NRCS technical guide well standard 642.

(b) Section NR 812.26, related to well and drillhole decommissioning.

ATCP 50.96 Wetland development or restoration. (1) DEFINITION. In this section, "wetland development or restoration" means the construction of berms, or the destruction of tile line or drainage ditch functions, to create conditions suitable for wetland vegetation.

(2) ELIGIBLE COSTS. A cost-share grant under s. ATCP 50.40 may reimburse any of the following costs related to the development or restoration of wetlands:

(a) Costs for earth moving to construct or remove berms, levees or dikes.

(b) Costs for earth moving to fill in portions of drainage ditches.

(c) Costs to destroy portions of tile lines.

(d) Costs to establish vegetative cover to develop or restore wetlands, consistent with the practice goals.

(3) DESIGN, CONSTRUCTION AND MAINTENANCE. A cost-share grant under s. ATCP 50.40 may not reimburse wetland development or restoration costs unless all the following conditions are met:

(a) The wetland development or restoration complies with NRCS technical guide wetland restoration standard 657.

(b) The farmer agrees to maintain the wetland restoration practice for at least 10 years.

EFFECTIVE DATE. The rules contained in this order shall take effect on the first day of the month following publication in the Wisconsin administrative register, as provided under s. 227.22(2)(intro.), Stats.

Dated this _____ day of _____, _____.

STATE OF WISCONSIN
DEPARTMENT OF AGRICULTURE,
TRADE AND CONSUMER PROTECTION

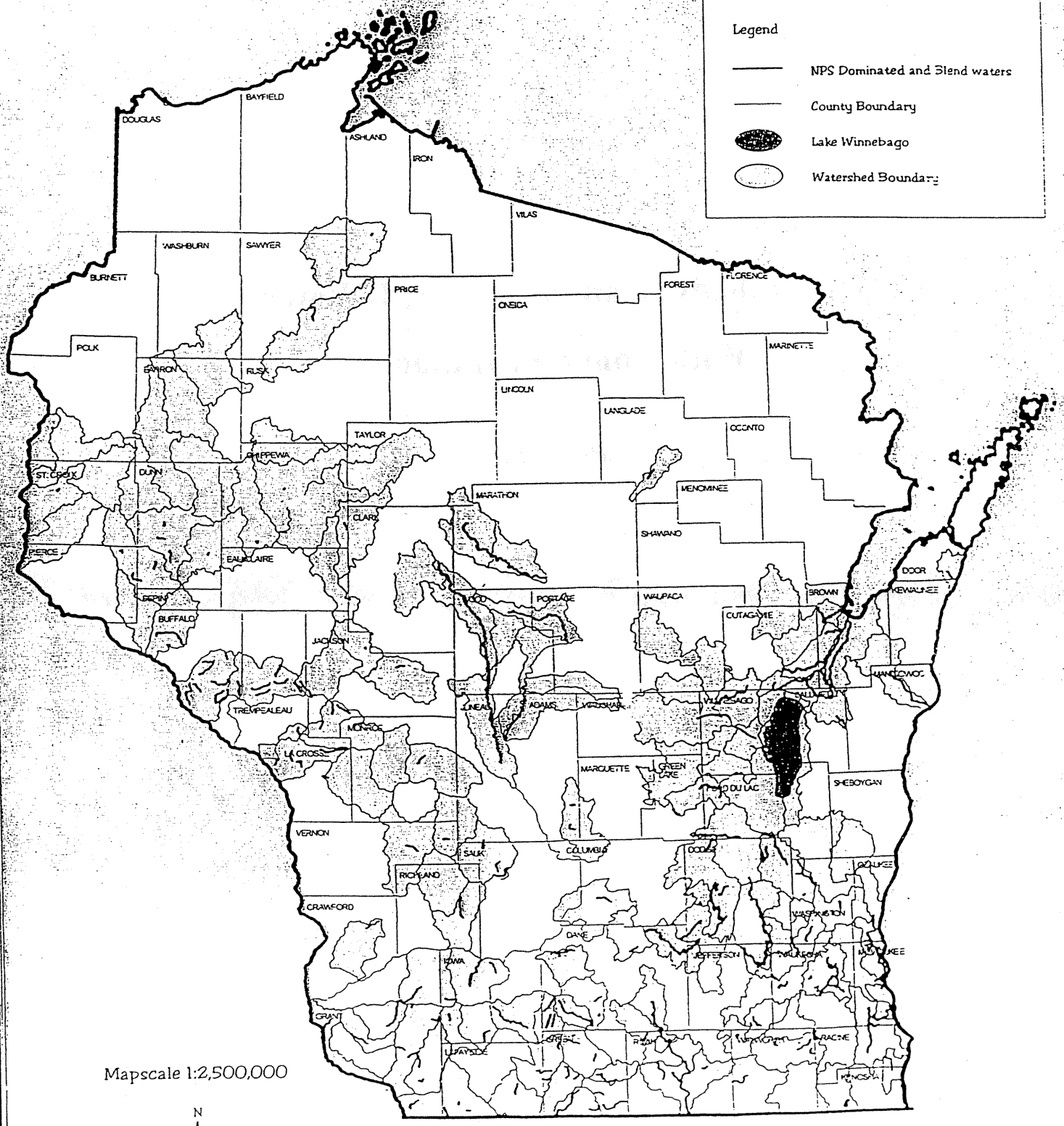
By _____
Ben Brancel, Secretary

Appendix A

Watersheds Draining to 303(d)Waters With Nonpoint Impacts

Wisconsin Department of Natural Resources

Watersheds Draining to 303(d) Waters* with Nonpoint Impacts



Mapscale 1:2,500,000

N
W E
S

0 30 60 90 Miles

* The 303(d) waters are still under review. This map is provided as DRAFT only.

Wisconsin Department of Natural Resources
Water Division
Bureau of Watershed Management
June 1999

Appendix B

Nutrient Management - *Fast Facts*

Nutrient and Pest Management Program, University of Wisconsin-Extension

Manure info.

Approx. 1st & 2nd year available nutrient content with 2nd year in brackets [ ]

	N manure not incorporated	N manure incorporated by 3rd day	P_2O_5	K_2O
Dairy manure				
Solid (lb/ton)	3 [1]	4 [1]	3 [0]	8 [1]
Liquid (lb/1000 gal)	8 [3]	10 [3]	8 [1]	21 [3]
Beef manure				
Solid (lb/ton)	4 [1]	4 [2]	5 [1]	8 [1]
Liquid (lb/1000 gal)	10 [4]	12 [4]	14 [2]	23 [3]
Swine manure				
Solid (lb/ton)	4 [1]	5 [1]	3 [1]	7 [1]
Liquid (lb/1000 gal)	22 [6]	28 [5]	15 [3]	26 [3]
Poultry manure				
Solid (lb/ton)	13 [2]	15 [3]	14 [2]	9 [1]
Liquid (lb/1000 gal)	35 [7]	41 [7]	38 [7]	25 [3]

Manure output

Animal and size	lb/day	tons/year
Dairy (1400 lb)	120	21.9
Beef (1250 lb)	75	13.7
Swine (200 lb)	13	2.4
Poultry (4 lb)	0.21	0.038

Determining manure application rate :

Step 1: Figure load size :

Weigh spreader in tons — Solid or semi-solid

90% tank capacity in gallons — Liquid

Step 2: Determine field acreage :

$$\frac{\text{field length (ft)} \times \text{field width (ft)}}{43{,}560 \text{ ft}^2/\text{a}} = \text{acres}$$

Step 3: Calculate manure application rate :

$$\frac{(\text{\# of loads}) \times (\text{load size})}{\text{field acreage}} = \text{tons or gallons / acre}$$

Guideline for unincorporated manure:

Do not apply more than 25 tons of solid dairy manure per acre or its phosphorus equivalent per year.

	Solid (tons)	Liquid (gallons)
Dairy	(25)	9000
Beef	14	5000
Swine	25	5000
Poultry	5	2000

NUTRIENT MANAGEMENT

FAST FACTS

Nutrient and Pest Management Program (NPM), University of Wisconsin-Extension. Call (608) 265-2660 for additional copies. 3/97

indicates information pertains to Wisconsin only.

Harvest info.

Nutrients removed by crop at harvest

	P_2O_5	K_2O
	approximate lb	
Alfalfa* / red clover, 1 ton/a	13	50
Barley[1], 50 bu/a	19	13
Corn		
Grain (1 bu = 56 lb @ 15.5% moisture)		
90-110 bu/a	40	25
110-130 bu/a	45	30
130 - 150 bu/a	55	35
150 -170 bu/a	60	40
Silage,1 ton/a	4	11
Oats[1]		
Grain, 100 bu/a (1 bu = 32 lb @ 13% moisture)	25	19
Straw, 1 ton/a	5	30
Potatoes[2], 100 cwt/a	13	58
Sorghum[1], 1 ton/a	15	58
Soybean*, 40 bu/a (1 bu = 60 lb @ 13% moisture)	35	40
Wheat[1]		
Grain, 50 bu/a (1 bu = 60 lb @ 13% moisture)	31	19
Straw, 1 ton/a	3	40

*Nitrogen removal by alfalfa (1ton) is 60 lb and by soybeans (40 bu) is 115 lb.

USING THIS TABLE IS NOT A SUBSTITUTE FOR SOIL TESTING

Source: University of Wisconsin Extension unless noted
1 From Modern Corn Production, S.R. Aldrich, et al., 1986
2 From Minnesota Extension Bulletin 262

Converting pounds harvested to bushels with % moisture content corrections:

Shelled Corn

[lbs harvested x (1 - % moisture in corn)] + 47.32 = bu @ 15.5% moisture

Ear corn

lbs harvested ÷ number from chart below = bu @ 15.5% moisture

moisture %	15	15.5	16	17	18	19	20	21	22	23	24	25	26	27
equation #	68.1	68.6	69.2	70.4	71.6	72.8	74.1	75.4	76.6	78.0	79.4	80.7	82	83.4

Soybeans or wheat

lbs harvested x (1 - % foreign matter) = adjusted lbs harvested

[adjusted lbs x (1 - % moisture)] ÷ 52.2 = bu soybeans @ 13% moisture
bu wheat @ 0% moisture

Calculating acres harvested:

acres harvested =
[row length(ft.) x row width(ft) x # of rows harvested] ÷ 43,560 ft²/acre

Example with corn harvested by combine :

Step 1: 12,580 lbs corn harvested @ 21.35% moisture
12,580 lbs x (1 - .2135) ÷ 47.32 = 209 bu of corn @ 15.5 % moisture

Step 2: Four-row harvester: 16 rows , each 30 inch row is 1210 feet long
30 inches = 2.5 feet
(1210 ft x 2.5 ft x 16 rows) ÷ 43,560 ft²/acre = 1.10 acres

Step 3: 209 bu of corn ÷ 1.10 acres = 190 bu/acre

Fertilizer analysis

	N-P-K
Nitrogen	
Anhydrous ammonia	82-0-0
Ammonium nitrate	34-0-0
Urea	46-0-0
UAN solution - 28 and 32%	28-0-0
(Urea ammonium nitrate)	32-0-0
Aqueous ammonia	20-0-0
Ammonium sulfate (AMS)	21-0-0-24(S)
Phosphorus	
Triple superphosphate (TSP)	0-46-0
Diammonium phosphate(DAP)	18-46-0
Monoammonium phosphate (MAP)	11-52-0
Ammonium polyphosphate liquid	10-34-0
Ammonium polyphosphate	15-62-0
Potassium	
Potassium chloride (muriate of potash)	0-0-60 to 62
Potassium sulfate	0-0-50-18(S)
Potassium-magnesium sulfate	0-0-22-22(S)-11(Mg)
Potassium nitrate	13-0-44

1 gallon water weighs 8.3 lbs
1 gallon UAN (28%N) weighs 10.6 lbs

Conversions

Take column 1	multiply by column 2	to get column 3
acre (a)	43,560	square feet (ft²)
acre (a)	0.405	hectare (ha)
square mile (mi²)	640	acres (a)
cubic yard (yd³)	27	cubic feet (ft³)
cubic feet (ft³)	7.48	gallons (gal)
bushel (bu)	1.244	cubic feet (ft³)
bushel (bu)	8	gallons - dry
bushel (bu)	9.31	gallons - liquid
ounces (oz)	29.6	milliliters (ml)
gallon (gal)	3.78	liters (l)
gallon (gal)	128	fluid ounces (fl oz)
gallon (gal)	4	quart (qt)
acre-foot	43,560	cubic feet (ft³)
acre-foot	325,851	gallons (gal)
chain (ch)	66	feet (ft)
chain (ch)	4	rods (r)
rods (r)	16.5	feet (ft)
mile (mi)	5280	feet (ft)
ton (short)	2,000	pounds (lb)
ton (long)	2,230	pounds (lb)
gallons/acre (gal/a)	9.354	liters/hectare (l/ha)
miles/hour (mph)	88	feet/minute (ft/min)
pounds/acre (lb/a)	1.12	kilograms/hectare (kg/ha)
P_2O_5 (lb)	0.44	P (lb)
K_2O (lb)	0.83	K (lb)
ppm-plow layer (6 in)	2	lb/acre (lb/a)
ppm-top soil (12 in)	4	lb/acre (lb/a)

To get column 1, divide column 3 by column 2

Appendix B

Soybean nutrient recommendations

	Yield goal (bu/a)	Soil test level of the field: Very Low	Low	Optimum	High	Very High	Ex. High
		lbs/acre of P_2O_5 to apply					
Phosphate	15-25	30	30	20	10	--	0
	26-35	35	35	25	15	--	0
	36-45	45	45	35	20	--	0
	46-55	55	55	45	20	--	0
	56-65	60	60	50	25	--	0
	66-75	70	70	60	30	--	0
	76-85	80	80	70	35	--	0
		lbs/acre of K_2O to apply					
Potash	15-25	60-75**	35-50**	20	10	0	0
	26-35	70-85**	45-60**	30	15	0	0
	36-45	80-95**	55-70**	40	20	10	0
	46-55	90-105**	65-80**	50	25	10	0
	56-65	100-115**	75-90**	60	30	15	0
	66-75	110-125**	85-100**	70	35	20	0
	76-85	120-135**	95-110**	80	40	20	0

-- Very high category does not exist for soil test phosphorus
** Use lower values on sandy or organic soils

Alfalfa nutrient recommendations

	Yield goal (tons/a)	Soil test level of the field: Very Low	Low	Optimum	High	Very High	Ex. High
		lbs/acre of P_2O_5 to apply					
Phosphate	1.5-2.5	55-75*	45-65*	25	10	--	0
	2.6-3.5	65-85*	55-75*	35	15	--	0
	3.6-4.5	80-100*	70-90*	50	25	--	0
	4.6-5.5	95-115*	85-105*	65	30	--	0
	5.6-6.5	105-125*	95-115*	75	35	--	0
	6.6-7.5	120-140*	110-130*	90	45	--	0
		lbs/acre of K_2O to apply					
Potash	1.5-2.5	135-150**	125-135**	100	50	25	0
	2.6-3.5	185-200**	175-185**	150	75	40	0
	3.6-4.5	235-250**	225-235**	200	100	50	0
	4.6-5.5	285-300**	225-285**	250	125	60	0
	5.6-6.5	335-350**	325-335**	300	150	75	0
	6.6-7.5	385-400**	325-385**	350	175	90	0

-- Very high category does not exist for soil test phosphorus
* Use lower values on sandy soils
** Use lower values on sandy or organic soils

Special Situations

Legume Forage
Where an alfalfa stand is to be maintained for more than three years increase the annual top-dressed K_2O by 20%.
Apply 30 lb N/acre in the seeding year if grown on soils with less than 2% organic matter.
Apply 40 lb N/acre for legume pasture on sandy soils and 20 lb N/acre on soils with less than 2% organic matter.

Nurse Crops
Where barley or oats are seeded with legume forage, reduce N for the small grain by 50%.

Legume N credits

Legume crop	Nitrogen credit	Exceptions
Forages		
First Year Credit		
Alfalfa	190 lb N/acre for good stand (more than 70% alfalfa or more than 4 plants/ft²)	Reduce credit by 50 lb N/acre on sands and loamy sands.
	160 lb N/acre for fair stand (30 - 70% alfalfa or 1.5 - 4 plants/ft²)	
	130 lb N/acre for poor stand (less than 30% alfalfa or less than 1.5 plants/ft²)	Reduce credit by 40 lb N/acre if less than 8 inches of regrowth after last harvest.
Red Clover & Birdsfoot Trefoil	80% of alfalfa credit for similar stands	
Second Year Credit	50 lb N/acre, following a good or fair stand.	No credit on sands and loamy sands.
Green manures		
Sweet clover	80-120 lb N/acre	Use 20 lb N/acre credit if field has less than 6 inches of growth before tillage.
Alfalfa	60-100 lb N/acre	
Red clover	50-80 lb N/acre	
Soybeans	40 lb N/acre	
Vegetable Crops		
Peas, snap beans & lima beans	20 lb N/acre	No credit on sands and loamy sands.

Corn nutrient recommendations

	Organic matter (%)	Soil texture: Sands or loamy sands		Other Soils: Yield potential* Low/medium†	Other Soils: Yield potential* High/very high
		Non-irrigated	Irrigated		
		lbs/acre of N to apply			
Nitrogen	< 2	120	200	150	180
	2.0 - 4.9	110	160	120	160
	5.0 - 20	100	120	90	120
	> 20	80	80	80	80

Credit starter fertilizer N >20 lb against the overall N recommendation

* To determine yield potential consult UWEX publication A2809 or contact your agronomist or county agent
† Irrigated non-sandy soils with a low/medium yield potential should use the high/very high recommendation

Grain

	Yield goal (bu/a)	Soil test level of the field: Very Low	Low	Optimum	High	Ex. High
		lbs/acre of P_2O_5 to apply				
Phosphate	71-90	60-90*	50-70*	30	15	0
	91-110	70-100*	60-80*	40	20	0
	111-130	75-105*	65-85*	45	25	0
	131-150	85-115*	75-95*	55	25	0
	151-170	90-120*	80-100*	60	30	0
	171-190	100-130*	90-110*	70	35	0
	191-210	105-135*	95-115*	75	40	0
		lbs/acre of K_2O to apply				
Potash	71-90	50-80**	40-65**	25	15	0
	91-110	55-85**	45-70**	30	15	0
	111-130	60-90**	50-75**	35	15	0
	131-150	65-95**	55-80**	40	20	0
	151-170	70-100**	60-85**	45	20	0
	171-190	75-105**	65-90**	50	20	0
	191-210	80-110**	70-95**	55	25	0

* Use higher values on sandy or organic soils
** Use lower values on sandy or organic soils

Silage

	Yield goal (tons/a)	Soil test level of the field: Very Low	Low	Optimum	High	Very High	Ex. High
		lbs/acre of P_2O_5 to apply					
Phosphate	< 16	80-110*	70-90*	50	25	--	0
	16 - 20	95-125*	85-105*	65	30	--	0
	20 - 25	115-145*	105-125*	85	40	--	0
	> 25	130-160*	120-140*	100	50	--	0
		lbs/acre of K O to apply					
Potash	< 16	125-155**	115-140**	100	50	25	0
	16 - 20	145-175**	135-160**	120	60	30	0
	20 - 25	160-190**	150-175**	135	70	35	0
	> 25	175-205**	165-190**	150	75	40	0

-- Very high category does not exist for soil test phosphorus
* Use higher values on sandy or organic soils
** Use lower values on sandy or organic soils

Special Situations

Conservation tillage
If > 50% residue cover remains on the surface, increase N requirement for corn by 30 lb N/acre for the first two years.

High P soils
If P levels exceed 150 ppm, do not apply additional P, except for a maximum of 20 lb/a of starter P_2O_5 for row crops.

Sandy soils
N should be applied as single sidedress application or as split applications.

Appendix B

Appendix C

Nutrient Management Plan Checklist Form

To Assist in Following Wisconsin's Nutrient Management Standard 590

Appendix C

NUTRIENT MANAGEMENT PLAN CHECKLIST

12/23/99

For Following Wisconsin's NRCS 590 Nutrient Management Standard

County name:_____ Date Plan Submitted:_____ Growing season year NM plan is written for _____
(from harvest to harvest)

Name of qualified nutrient management planner	Planner's business name, address, phone:
Circle the planner's qualification: *1*-NAICC; *2*-CCA; *3*-ARCPACS –Agronomist, Crop Specialist, Crop Scientist, Soil Specialist, or Soil Scientist; *4*-DATCP approved training course; *5*- Other credentials approved by DATCP	Cropland Acres: / Name of farmer receiving nutrient management plan: Circle relevant program or ordinance: County ordinance, DNR watershed, USDA, DATCP, NR 243 - NOD, NR-243 - WPDES

590 Requirement	Provided By	Location in NM plan/Comments Yes	No	
1. Farm Aerial Photographs or Maps	*Conservation staff*			
a. Photos or map indicate field boundaries and field ID numbers?		a.	a.	
b. Fields with manure spreading restrictions are identified?		b.	b.	
2. Soil Survey Maps	*Conservation staff*			
a. Are soil series and slope consistent with the plan?		a.	a.	
3. Soil Test Reports (conservation staff require hard copy with NM plan)	*Farmer and Consultant*			
a. Are all the soil test reports from an approved lab?		a.	a.	
b. Have all fields been tested within the last four years?		b.	b.	
c. Is soil sample size 5 acres or less per sample?		c.	c.	
d. Does the soil test field ID correspond with the NM plan field ID?		d.	d.	
e. Are yield goals identified (for P2O5 & K2O recommendations)?		e.	e.	
f. Have the predominant soil series for each field been identified?		f.	f.	
4. Written Plan Components for individual field nutrient recommendations	*Farmer and Consultant*			
a. Crop to be grown and previous crop grown are indicated?		a.	a.	
b. Fertilizer recommendations are indicated?		b.	b.	
c. Legume and manure credits are indicated?		c.	c.	
d. Manure application rates and spreading sites are indicated?		d.	d.	
e. Additional fertilizer needs are indicated?		e.	e.	
5. Are fields receiving manure or organic byproducts less than or equal to "T"?	*Conservation staff will determine based on conservation plan on file. Farmer & the consultant may require a new assessment if rotations and tillage have changed.*	a.	a.	
6. Farm Information Sheet items for manure quantity and spreader capacity:	*Farmer and Consultant*			
a. Animal numbers, average weight, confinement, consistency		a.	a.	
b. Estimated annual manure production and amount collected		b.	b.	
c. Does the manure available correspond to the manure used?		c.	c.	

I certify that the nutrient management plan represented by this checklist complies with Wisconsin's NRCS 590 nutrient management standard.

Signature of qualified nutrient management planner _____

Appendix D

Wisconsin's Nutrient Management Standard 590

With The 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 <u>not</u> 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.

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 budges 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 P_2O_5/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. 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 Content	X	Manure Nutrient Availability	=	Available Nutrient 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

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/ton)(20 ton/acre) = 60 lb N/acre, 60 lb P205/acre, 160 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 gal.	X	(0.45-0.65-0.85)	=	14.4 lb N/1,000 gal., 9.8 lb P205/1,000 gal. 30.6 lb K20/1,000 gal.

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

(14.4	lb N/1,000 gal.)	X	8,000 gal/acre	=	115 lb N/acre
(9.8	lb P205/1,000 gal.)	X	8,000 gal/acre	=	78 lb P205/acre
(30.6	lb K20/1,1000 gal.)	X	8,000 gal/acre	=	245 lb K20/acre

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.

(160 - 115) lb N/acre	=	45 lb N/acre or 50 lb N/acre
(60 - 78 - 23) lb P205/acre	=	-41 lb P205/acre (excess P)
(120 - 245 - 30) lb K20/acre	=	-155 lb K20/acre (excess K)

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, incorporate ' d	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, sur. 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

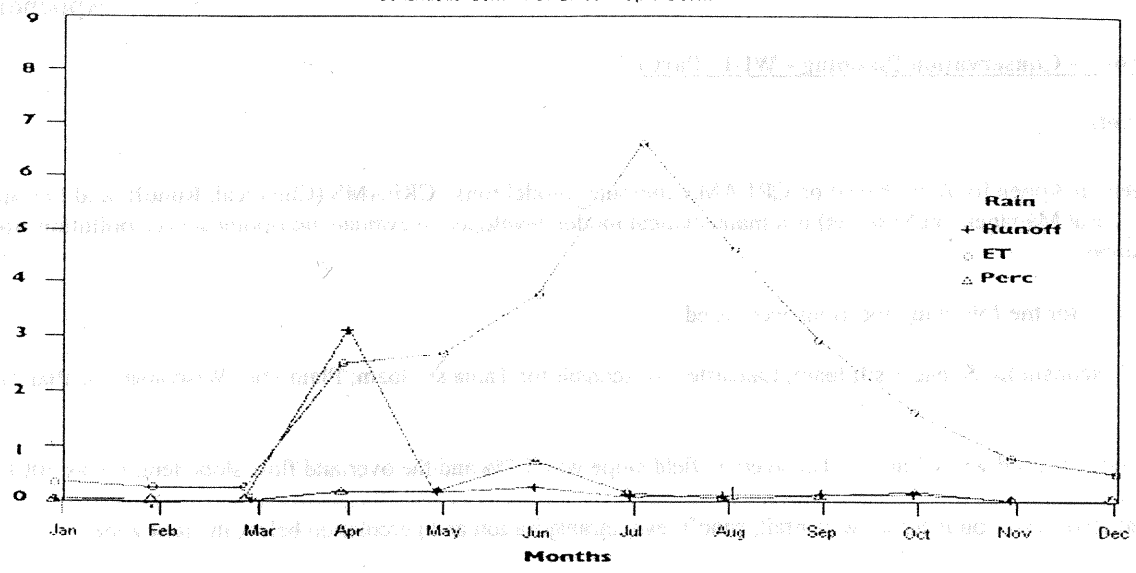
	Flow Type and Surface Condition	A	B	C	D	E
High Hazard Areas	Overland Flow*: - Perm. long grasses - Woodland with heavy cover	200	200	200		
I. Distance (ft.) from Water Bodies and Discharge Points	Overland Flow: - Contour Strip - Contoured, with Rotations >50% OH* (all tillage) - Contoured with OH <50%, >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		
	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.

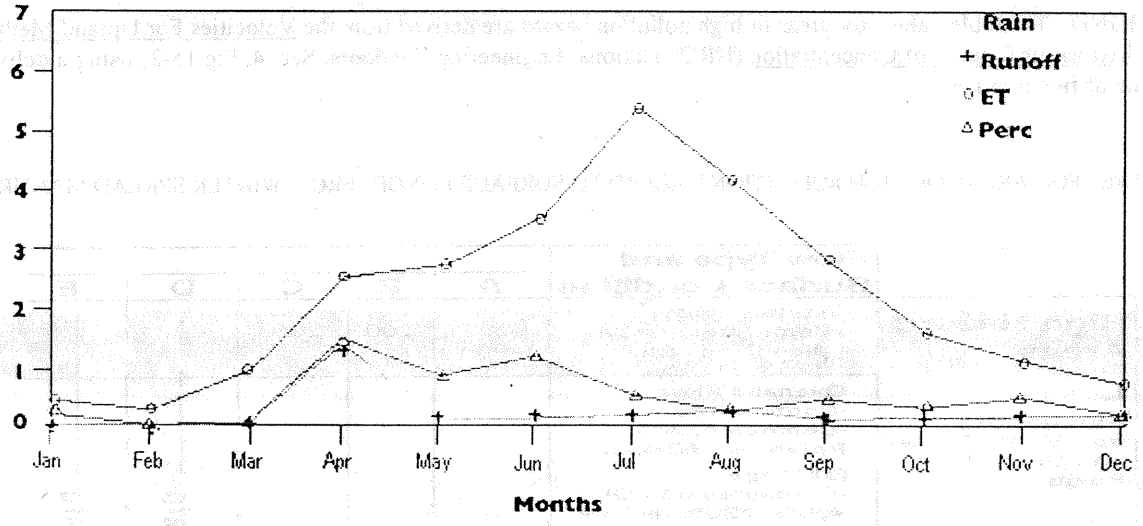
Spencer silt loam - Wisconsin

Continuous Corn - Fall Chisel - Up & Down



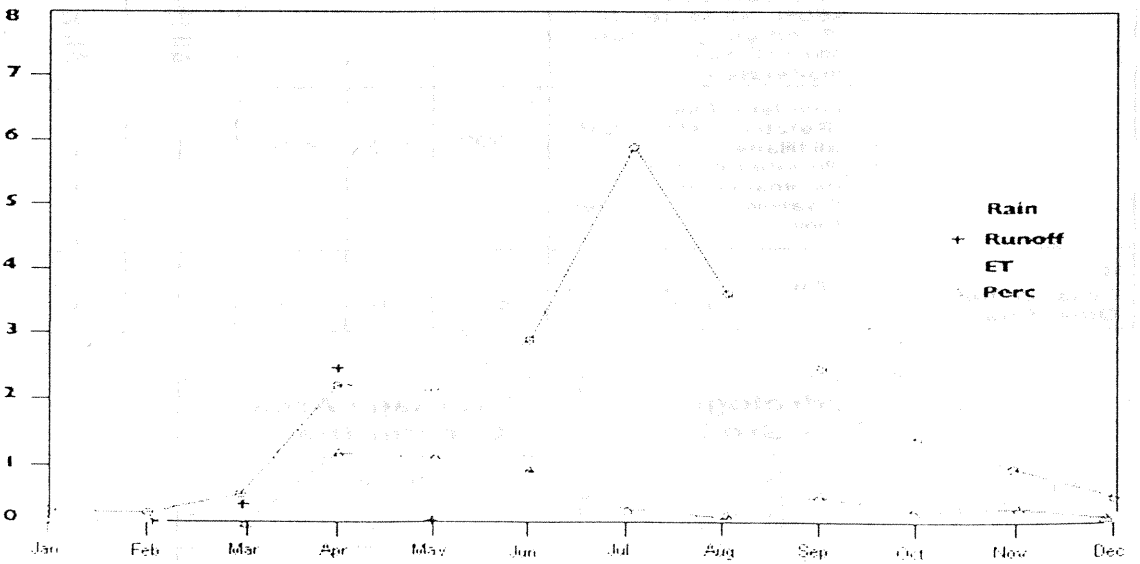
Tama Silt Loam - Wisconsin

Cont. Corn - Fall CP - Up and Downhill



Plainfield loamy sand - Wisconsin

Continuous Corn - Fall Chisel-Up and Down



Appendix E

Agricultural Engineering Practitioner Certification Form

Wisconsin Department of Agriculture, Trade, and Consumer Protection

Appendix E

1/99

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

PRACTITIONER _____ OFFICE _____ Original Revised 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 STRUCTURE	EARTHEN EMBANKMENTS	HAZARD	CLASS	a	a	a	a	a		
350	SEDIMENT BASIN (EXCEPT FOR ANIMAL WASTE)		DRAINAGE AREA	ACRES	20	40	160	320	640		
			EFFECTIVE HEIGHT (a)	FEET	10	15	20	25	35		
378	POND (EMBANKMENT)		STORAGE (b)	AC.FT.	5	15	30	50	85		
587	STRUCTURE FOR WATER CONTROL		CONDUIT (SINGLE)	INCH	12	18	24	36	48		
402	DAM, FLOODWATER RETARDING	BOX DROP TO CULVERT	NET DROP	FEET	2*	3*	4*	4	6		
			WEIR CAPACITY	C.F.S.	100*	200*	300*	400	500		
		TOEWALLS	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		
362	DIVERSION		DRAINAGE AREA	ACRES	10	20	40	160	ALL		

FISCAL ESTIMATE WORKSHEET

1999 SESSION

Detailed Estimate of Annual Fiscal Effect
DOA-2047 (R10/94)

☒ ORIGINAL ☐ UPDATED
☐ CORRECTED ☐ SUPPLEMENTAL

List both LRB No. and Bill/Adm.Rule No.	Amendment No.
ATCP 3.11, 40.11, and 50	

Subject
Soil and Water Resource Management Program

I. One-time Cost or Revenue Impacts for State and/or Local Goverment (do not include in annualized fiscal effect):
None

II. Annualized Cost:	**Annualized Fiscal Impact on State funds from:**	
A. State Costs by Category	**Increased Costs**	**Decreased Costs**
State Operations - Salaries and Fringes	$ 0	$ - 0
(FTE Position Changes)	(0 FTE)	(- 0 FTE)
State Operations - Other Costs	0	- 0
Local Assistance	$ 2,000,000	- 0
Aids to Individuals or Organizations	0	- 0
TOTAL State Costs by Category	$ $2,000,000	$ - 0
B. State Costs by Source of Funds	**Increased Costs**	**Decreased Costs**
GPR	$ $ 2,000,000	$ - 0
FED		-
PRO/PRS		-
SEG/SEG-S	0	- 0
III. State Revenues - Complete this only when proposal will increase or decrease state revenues (e.g., tax increase, decrease in license fee, etc.)	**Increased Rev.**	**Decreased Rev.**
GPR Taxes	$	$ -
GPR Earned		-
FED		-
PRO/PRS		-
SEG/SEG-S		-
TOTAL State Revenues	$	$ -

NET ANNUALIZED FISCAL IMPACT

	STATE	LOCAL
NET CHANGE IN COSTS	$ 2,000,000	$ 2,000,000
NET CHANGE IN REVENUES	$ 0	$ 2,000,000

Agency Prepared by: (Name & Phone No.)	Authorized Signature/Telephone No.	Date
DATCP Keith Foye (608) 224-4603	Barbara Knapp Barbara Knapp (608) 224-4746	January 14, 2000

Assumptions Used in Arriving at Fiscal Estimate (continued from page 2)

Impact of the Rule Revision to State Government

1999 Wisconsin Act 9, the biennial budget bill, transfers $170,000 in fiscal year 1999-2000 and $190,000 in 2000-2001 from the Department of Natural Resources (DNR) to the department for three staff positions. These staff will work on the new responsibilities resulting from the budget and the redesign of the state's nonpoint source programs. The department is assuming responsibilities to implement the agricultural component of DNR's nonpoint source program.

The department will have increased work associated with implementing a statewide nutrient management program. The proposed rule includes a process to certify soil-testing laboratories. The increased cost and work to administer the statewide nutrient management program and certify soil test laboratories will be done as a result of the new staff mentioned above and otherwise absorbed by the department.

The department will have increased work associated with reviewing ordinances proposed by local governments. Again, this activity will be included with the responsibilities of the new staff or otherwise absorbed by the department.

The department will have increased work associated with reviewing and approving county land and water resource management plans. The department previously had staff that assisted the Department of Natural Resources by developing portions of the priority watershed plans under DNR's nonpoint source pollution abatement program. The priority watershed program is being phased out and the department's staff that worked on the watershed plans will now be assigned to review and work with counties on land and water resource management plans.

The department also has new responsibility, under s. 281.16, Stats., to develop conservation practices and develop and disseminate technical standards to implement agricultural performance standards and prohibitions. The proposed rule establishes the procedures the department will use to accomplish this task. The department will utilize the new staff, or otherwise absorb this work activity.

Finally, the department will have increased work related to the grants issued to counties to implement land and water resource management plans and the agricultural performance standards and prohibitions in Department of Natural Resources NR 151 and ATCP 50. The department will utilize the new staff, or otherwise absorb this work activity into the current operating budget.

Assumptions Used in Arriving at Fiscal Estimate (continued from page 1)

s. 92.17, Stats.), and for local regulation of livestock operations (s. 92.15, Stats.). The authority to adopt local regulations on livestock operations were established in 1997 Wisconsin Act 27. Local governments may adopt local ordinances, at their discretion. The department is required, under s. 92.05(3)(L), Stats., to review and comment on these ordinances and other ordinances adopted by local governments that regulate implementation of conservation practices.

As a result of the proposed rule, the department may be asked to increase the allocation of state funds to some county land conservation committees and some farmers. 1999 Wisconsin Act 9, the budget bill, included $3.575 million in new bond revenue, funding for cost-share grants; and transferred about $6.2 million from the Wisconsin DNR priority watershed program to the department in the second year of the biennium, fiscal year 2000-2001. The budget also directed the department to establish a goal of providing an average of three staff funded 100% for the first, 70% for the second, and 50% for the third staff person. The department is also directed to provide an average of $100,000 grant per year per county for cost-share assistance to implement county land and water resource management plans. The department is revising its allocation process to begin to phase in the new funding strategy for 2001. The proposed rule does not otherwise increase funding for the program; therefore any increases in grants to some counties must result in decreases in grants to other counties.

The department has estimated the cost to counties as a result of implementing the proposed performance standards and prohibitions included in the Department of Natural Resources' NR 151, and ATCP 50. The total staff costs to implement the agricultural performance standards and prohibitions are based on assumptions from the attached fiscal estimate worksheet. The total cost for staff to implement the performance standards and prohibitions are estimated at between about $80 million and $190 million over a ten year implementation period for low cost and high cost alternatives, respectively. Currently, there are about 400 county land conservation department staff, statewide. The department estimates that the average salary and fringe benefit for county staff is about $45,000 per year. For this fiscal estimate, the department assumes that about 75% of the needed staff resources to complete the technical and administrative work related to implementing the performance standards and prohibitions could come from redirecting current staff. Counties currently implement a number of local, state and federal programs that support implementation of the performance standards and prohibitions. Using the 75% assumption, implementing the rule over an assumed ten-year implementation period would result in an unmet need of about 450 staff (45 staff per year), or about $2 million per year for the low cost alternative. Assuming the high cost alternative, the department estimates that about 1,050 staff years would be needed over ten years, or about 105 staff per year, or about $4.7 million per year. The table below illustrates the assumptions used for the fiscal estimate. Please refer to the totals at the bottom of Appendix B for the total staff needs over ten years to implement the agricultural performance standards and prohibitions.

	Low Cost	High Cost
Total Staff Needed Over Ten-year Implementation	1,786	4,218
Annual Staff Needs For Implemenation	179	422
75% of Need From Redirecting Current Staff	134	317
Difference Which Estimates Annual Additional Staff Needs	45	105
Estimated Annual Cost (Assuming $45,000 per staff per year)	$ 2.0 million	$ 4.7 million

The department recognizes that current workload analysis shows that from the estimates made by the USDA Natural Resources Conservation Service, with assistance from counties, that there is already an unmet staff need to implement current programs.

If less than 75% of the needed staff to implement the performance standards and prohibitions were from redirecting current staff, the staff costs would increase proportionately. The result of redirecting these current staff would result in fewer staff available to implement current programs. Especially, those programs that do not directly or indirectly implement the agricultural performance standards and prohibitions. The department believes the low cost estimate for this fiscal estimate is more accurate. The department believes the low cost is more accurate, because these estimates do not include the staffing contributions made by the federal government.

1999 Session

FISCAL ESTIMATE

DOA-2048 N(R 10/98) ☒ ORIGINAL ☐ UPDATED ☐ CORRECTED ☐ SUPPLEMENTAL

List both LRB No. and Bill/Adm. Rule No.: ATCP 3.11, 40.11, and 50

Amendment No. (If Applicable):

Subject **Soil and Water Resource Management Program**

Fiscal Effect

State: ☐ No State Fiscal Effect

Check columns below only if bill makes a direct appropriation or affects a sum sufficient appropriation

☐ Increase Existing Appropriation ☐ Increase Existing Revenues

☐ Decrease Existing Appropriation ☐ Decrease Existing Revenues

☐ Create New Appropriation

☒ Increase Costs – May be possible to Absorb Within Agency's Budget ☐ Yes ☒ No

☐ Decrease Costs

Local: ☐ No local government costs

1. ☒ Increase Costs ☐ Permissive ☐ Mandatory
2. ☐ Decrease Costs ☐ Permissive ☐ Mandatory
3. ☐ Increase Revenues ☐ Permissive ☐ Mandatory
4. ☐ Decrease Revenues ☐ Permissive ☐ Mandatory

5. Types of Local Governmental Unit Affected:

☐ Towns ☐ Villages ☐ Cities ☒ Counties ☐ Others _____ ☐ School Districts ☐ WTCS Districts

Fund Source Affected: ☒ GPR ☐ FED ☐ PRO ☐ PRS ☒ SEG ☐ SEG-S

Affected Ch. 20 Appropriations: 20.115(7) (c) and (qd)

Assumptions Used in Arriving at Fiscal Estimate

The proposed rule amends ATCP 3.02(1)(h), revising an administrative code reference; creates ATCP 40.11, related to nutrient management plan requirements for agricultural fertilizer sales; and repeals and recreates ch. ATCP 50, Wis. Adm. Code, interpreting Ch. 92, Stats., regarding the state's soil and water resource management program and the department's role in s. 281.16, Stats., related to water quality protection from nonpoint sources. The proposed rule incorporates changes to Ch. 92, and s. 281.16, Stats., made by 1997 Wisconsin Act 27 and 1999 Wisconsin Act 9, the past two biennial budget bills.

Impact of the Rule Revision on County Governments

The proposed rule establishes procedures and requirements for counties that prepare land and water resource management plans under s. 92.10, Stats. The initial plans were approved for two to three year periods. The next round of plans is expected primarily in 2001 and 2002. The department allocated an average of $2 million per year in 1999 and 2000 to counties to implement their land and water resource management plans. The department also allocates about $3.7 million annually (final allocation plan for 2000) to counties for basic annual staffing grants. The county's staff costs for preparing the county plans are eligible activities under these basic annual staffing grants.

The proposed rule establishes the procedures and standards that counties and other local governments must use to adopt local ordinances for manure storage systems (under s. 92.16, Stats.), shoreland management (under

(Continued on Page 2)

Long - Range Fiscal Implications

The proposed rule implements the state's agricultural performance standards and prohibitions. To meet the objectives of the rule, the state may need to increase funding in the future for cost-share assistance to farmers by up to $650 million over ten years and for county staff to allow agricultural producers to comply with the performance standards and prohibitions in a timely manner. Please also refer to the fiscal estimate worksheet for these estimates.

Agency/prepared by: (Name & Phone No.)	Authorized Signature/Telephone No.	Date
DATCP Keith Foye 224-4603	Barbara Knapp Barbara Knapp (608) 224-4746	January 14, 2000

Appendix E

1/99

STD. CODE	PRACTICE	SUB-PRACTICE	CONTROLLING FACTORS	UNITS	JOB CLASS					CERTIFICATION RATING	
					I	II	III	IV	V	DESIGN	CONST
393	FILTER STRIP	SEDIMENT RELATED	WIDTH	FEET	ALL						
		BARNYARD	CONTRIBUTING AREA	SQ. FT.	15000	40000	ALL				
		MILKING CENTER	VOLUME	G.P.D.	300	600	ALL				
		OTHER WASTES	FILTER AREA	SQ.FT.	1000	2500	5000	10000	ALL		
412	GRASSED WATERWAY		DRAINAGE AREA	ACRES	50	200	600	1300	ALL		
561	HEAVY USE AREA PROTECTION		AREA	SQ. FT.	15000	40000	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)		VOLUME OF EXCAVATION	CU. YD.	20000	ALL					
521	POND SEALING OR LINING, WATER PONDS		AREA TREATED	ACRES	1/4	1/2	1	2	ALL		
558	ROOF RUNOFF MANAGEMENT		ROOF SIZE	SQ. FT.	1500	3000	4500	7000	ALL		
350	SEDIMENT BASIN, LIVESTOCK		WALL HEIGHT	FEET	2*	4*	5*	6*	8*		
			CONTRIBUTING AREA	SQ. FT.	15000	40000	ALL				
574	SPRING DEVELOPMENT		ESTIMATED FLOW	G.P.M.	ALL						
580	STREAMBANK AND SHORELINE PROTECTION	LAKESHORES	WAVE HEIGHT	FEET	-	3	ALL				
		STREAMBANKS	CAPACITY	C.F.S.	100	300	1000	2000	4000		
			VELOCITY (d)	F.P.S.	2	4	6	8	10		
606	SUBSURFACE DRAIN		PIPE SIZE	INCH	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	EMBANKMENT HEIGHT	FEET	2	3	ALL				
		UNDERGROUND OUTLET	EMBANKMENT HEIGHT	FEET	3	4	6	8	ALL		
614	TROUGH OR TANK		NUMBER	EACH	ALL						
620	UNDERGROUND OUTLET		PIPE SIZE	INCH	4	6	8	12	ALL		
638	WATER AND SEDIMENT CONTROL BASIN		EMBANKMENT HEIGHT	FEET	5	10	15				
725	CREVICE AND SINKHOLE TREATMENT		NUMBER	EACH	ALL						

1/99

STD. CODE	PRACTICE	SUB-PRACTICE	CONTROLLING FACTORS	UNITS	JOB CLASS					CERTIFICATION RATING	
					I	II	III	IV	V	DESIGN	CONST
312	WASTE MANAGEMENT SYSTEM		ANIMAL UNITS	EACH	75	150	300	600	1000		
313	WASTE STORAGE FACILITY (INCLUDES CLOSURE)	STRUCTURAL FACILITIES	DESIGN CAPACITY	CU. FT.	5000	25000	75000	150000	300000		
			PREQUALIFIED (e)	EACH	ALL, subject to design capacity						
			WALL HT.(STANDARD)	FEET			4*	6*	8*		
			WALL HT. (f) (NON-STANDARD)	FEET			4	6	8		
		EARTHEN FACILITIES	EFFECTIVE HEIGHT (a)	FEET	10	15	20	25	ALL		
		UNLINED POND	DESIGN CAPACITY	CU.FT.			100000	500000	1.5M		
		CONCRETE LINER	DESIGN CAPACITY	CU.FT.			100000	500000	1.5M		
		CLAY LINER	DESIGN CAPACITY	CU.FT.			100000	500000	1.5M		
		MEMBRANE AND GEO-SYNTHETIC CLAY LINER	DESIGN CAPACITY	CU.FT.			100000	500000	1.5M		
634	MANURE TRANSFER		TYPE	EACH	PUMP	RAVITY	ALL				
			RECEPTION TANK (g) (subject to wall height class under 313)	EACH	STAND. DRAW-ING	NON-STAN-DARD	ALL				
351	WELL DECOMMISSIONING		ESTIMATED DEPTH	FEET	100	200	300	500	ALL		
657	WETLAND RESTORATION	SCRAPE	SURFACE AREA	ACRE	1/2	1	ALL				
		TILE BREAK	DRAIN DIAMETER	INCH	6	8	12	ALL			
		DITCH PLUG	DEPTH	FEET	4	6	8	ALL			
			DRAINAGE AREA	ACRES	80	160	320	640	ALL		
		EMBANKMENT	EFFECTIVE HEIGHT	FEET	4	6	8	10	ALL		
			DRAINAGE AREA	ACRES	20	40	80	120	160		
			STORAGE (b)	AC.FT.	5	15	30	50	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 ARE CLASSIFIED UNDER WALL HEIGHT (NON-STANDARD).

g. THE MNTC DRAWING Nos. 5.E-33,001 AND 5.E-33,002 ARE CLASSIFIED AS NON-STANDARD DRAWINGS.