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WISCONSIN STATE LEGISLATURE ... PUBLIC HEARING - COMMITTEE RECORDS

2005-06

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Assembly

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Committee on ... Agriculture (AC-Ag)

COMMITTEE NOTICES ...

- Committee Reports ... **CR**
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INFORMATION COLLECTED BY COMMITTEE FOR AND AGAINST PROPOSAL

- Appointments ... **Appt**
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- Hearing Records ... bills and resolutions
 - (**ab** = Assembly Bill) (**ar** = Assembly Resolution)
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- Miscellaneous ... **Misc**

Appendix B

NUTRIENT MANAGEMENT

(Acre)
Code 590

Natural Resources Conservation Service
Conservation Practice Standard

I. Definition

Managing the amount, source, placement, form, and timing of the application of nutrients and soil amendments.

II. Purposes

This standard establishes the acceptable criteria and documentation requirements for a plan that addresses the application and *budgeting*¹ of nutrients for plant production. All nutrient sources, including soil reserves, commercial fertilizer, manure, organic byproducts, legume crops, and crop residues shall be accounted for and properly utilized. These criteria are intended to minimize nutrient entry into surface water, groundwater, and atmospheric resources while maintaining and improving the physical, chemical, and biological condition of the soil.

III. Conditions Where Practice Applies

This standard applies to all *fields* where plant nutrient sources and soil amendments are applied during the course of a *rotation*.

IV. Federal, State, and Local Laws

Users of this standard are responsible for compliance with applicable federal, state, and local laws, rules, or regulations governing nutrient management systems. This standard does not contain the text of federal, state, or local laws. Implementation of this standard may not eliminate nutrient losses that could result in a violation of law.

V. Criteria

This section establishes requirements for planning, design parameters, acceptable management processes, and performance requirements for nutrient management plan development and implementation. Nutrient management plans shall be prepared according to all of Criteria A., B., C., D., and E.

All of the information contained in this section is required. Wisconsin Conservation Planning Technical Note WI-1 is the companion document to this standard and includes criteria that are required where referenced within this section.

A. Criteria for Surface and Groundwater Resources

1. Nutrient Criteria for All Sites

- a. Develop and implement an annual field-specific nutrient application plan. Account for the source, rate, timing, form, and method of application for all *major nutrients* consistent with this standard and soil fertility recommendations found in University of Wisconsin-Extension (UWEX) Publication A2809, "Soil Test Recommendations for Field, Vegetable and Fruit Crops," unless use of one the following options are appropriate:
 - For crops not listed in A2809, use other appropriate Land Grant University recommendations.
 - For nutrient application decisions based on plant tissue analysis, the sampling and testing of plants and the resulting nutrient recommendations shall be done in accordance with University of Wisconsin recommendations. See V.A.1.1.

Annual plan updates shall document the crops, tillage, nutrient application rates, and methods actually implemented.

- b. The plan shall be based on yield goals that are attainable under average growing conditions and established

¹ Words in the standard that are shown in italics are described in X. Definitions. The words are italicized the first time they are used in the text.

using soil productivity, local climate information, multi-year *documented yields*, and/or local research on yields for similar soils and crop management systems. Yield goals should not be higher than 15% above the previous 3-5 year average.

- c. Soils shall be tested a minimum of once every four years by a DATCP-certified laboratory for pH, phosphorus (P), potassium (K), and organic matter. A laboratory list is provided in Appendix 2 of the Wisconsin Conservation Planning Technical Note WI-1. Soil sampling shall be consistent with UWEX Publication A2100, "Sampling Soils for Testing." For perennial fruit crops, use of soil test recommendations from UWEX Publication A-2809 is only required as the basis for fertilizer applications prior to establishment of new plantings. Subsequent nutrient recommendations should be based on plant tissue analysis results. See V.A.1.1.
- d. Annual P and K nutrient recommendations may be combined into a single application that does not exceed the total nutrient recommendation for the rotation. This combined annual application is not allowed on frozen or snow covered soil. Commercial P fertilizers shall not be applied to soils with P tests in the non-responsive range for the crop being grown with the exception of not more than 20 pounds per acre P_2O_5 as starter for corn or recommended rates of starter P_2O_5 for potatoes and other vegetable crops as identified in UWEX Publication A3422, "Commercial Vegetable Production in Wisconsin." All the P and K starter fertilizer shall be credited against crop needs. When grouping fields for nutrient application purposes, N, P, and K application rates shall match individual field recommendations as closely as possible.
- e. Where practical, adjust soil pH to the specific range of the crop(s) grown to optimize nutrient utilization.
- f. Available nitrogen from all sources shall not exceed the annual N requirement of non-legume crops consistent with UWEX Publication A2809, or the annual N uptake by legume crops. Because of variability in N mineralization and manure applications, it is acceptable for available N to be up to 20% more than the recommended N rate when legumes, manures, and organic byproducts are used to meet the entire N requirement of the crop to be grown.

Starter N fertilizers are to be credited against crop needs as follows: all N beyond 20 pounds per acres for corn and 40 pounds per acre for potatoes.
- g. First year available N in manure applied to fields prior to legume crop establishment shall not exceed the first year's annual N removal by legumes and companion crop. See Wisconsin Conservation Planning Technical Note WI-1, Part II B.4.
- h. First and second-year legume credits shall be applied as identified in UWEX Publication A2809, Table 25, or through soil nitrate testing as identified in UWEX Publication A3624, "Soil Nitrate Tests for Wisconsin Cropping Systems."
- i. Estimates of first-year available nutrient credits for manure shall be established in accordance with one of the following methods:
 - (1) A manure analysis from a laboratory participating in the Manure Analysis Proficiency (MAP) testing program and interpreted according to Part III, Table 3 of the Wisconsin Conservation Planning Technical Note WI-1, or
 - (2) Estimates of first-year available nutrients from manure. See Part III, Table 4 of the Wisconsin Conservation Planning Technical Note WI-1.

Note: It is strongly recommended that second-year nutrient credits, especially for areas receiving consecutive manure applications, be

- included in the nutrient management plan using values in Part III, Table 4 of Wisconsin Conservation Planning Technical Note WI-1 or soil nitrate testing.
- j. Organic byproducts other than manure (i.e., industrial wastes, municipal sludge, and septage) applied to fields shall be analyzed for nutrient content and applied in accordance with applicable regulations including restrictions on heavy metal content and land application rates.
 - k. Manures, organic byproducts, and fertilizers shall not run off the field site during or immediately after application. If ponding, runoff, or drainage to subsurface tiles of the applied materials occurs, implement the following activities as appropriate:
 - (1) Stop application.
 - (2) Take corrective action to prevent offsite movement.
 - (3) Modify the application (rate, method, depth of injection, timing) to eliminate runoff or drainage to subsurface tiles.
 - (4) Notify the Wisconsin Department of Natural Resources (WDNR) in the event that a spill or accidental release of any material or substance when required by the Agricultural Spill Law (s.289.11, Wis. Stats.) or the terms of a WPDES permit. Refer to the Wisconsin Conservation Planning Technical Note WI-1, Part IV, for contact information and "Agricultural Spills and How to Handle Them," Pub-RR-687-2002, August 2002.
 - l. Where nutrient application decisions are based on plant tissue analysis, the sampling and testing of plants and the resulting nutrient recommendations shall be done in accordance with University of Wisconsin recommendations in the references section of this standard. Nutrient recommendations for cranberries may be based on plant analysis as defined by appropriate publications in the references section of this standard.
 - m. Where *gleaning/pasturing* occurs, verify through computations that the nutrients deposited as manure within a field, do not exceed the N and P requirements of this standard.
2. Nutrient Application Prohibitions
- a. Nutrients shall not be spread on the following features.
 - (1) Surface water, established *concentrated flow channels*, or non-harvested *permanent vegetative buffers*.
 - (2) A non-farmed wetland, sinkhole, nonmetallic mine, or well.
 - (3) The area within 50 feet of a potable drinking water well shall not receive mechanical applications of manure.
 - (4) Areas contributing runoff within 200 feet upslope of *direct conduits to groundwater* such as a well, sinkhole, fractured bedrock at the surface, *tile inlet*, or nonmetallic mine unless the nutrients are *effectively incorporated* within 72 hours.
 - (5) Land where vegetation is not removed mechanically or by grazing, except to provide nutrients for establishment and maintenance, unless necessary in an emergency situation.
 - (6) Fields exceeding *tolerable soil loss (T)*. Erosion controls shall be implemented so that tolerable soil loss (T) over the crop rotation will not be exceeded on fields that receive nutrients.
 - b. When frozen or snow-covered soils prevent effective incorporation at the time of application and the nutrient application is allowed, implement the following:
 - (1) Do not apply nutrients within the *Surface Water Quality Management Area (SWQMA)*

except for manure deposited through winter cleaning/pasturing of plant residue.

- (2) Do not apply nutrients to locally identified areas delineated in a *conservation plan* as contributing nutrients to direct conduits to groundwater or surface water as a result of runoff.
- (3) Do not exceed the P removal of the following growing season's crop when applying manure. Liquid manure applications are limited to 7,000 gallons per acre. The balance of the crop nutrient requirement may be applied the following spring or summer. Winter applications shall be conducted according to Section VII.B.
- (4) Do not apply nutrients on slopes greater than 9%, except for manure on slopes up to 12% where cropland is contoured or contour strip cropped.

- (5) Do not apply N and P in the form of commercial fertilizer. An exception is allowed for grass pastures and on winter grains that do not fall within a prohibition area defined by V.A.2.

3. Nutrient Application Restrictions

- a. When unincorporated liquid manure applications (less than 12% solids) occur on non-frozen soils within a SWQMA, use Table 1 to determine maximum acceptable rates. No applications are allowed on *saturated soils*.

Sequential applications may be made to meet the desired nutrient additions consistent with this standard. Prior to subsequent applications soils shall be evaluated using Table 1 or wait a minimum of 7 days.

Surface Texture Class ¹	Max Application Rate gal/acre		Allowable Soil Moisture Description for Applications
	< 30%*	≥ 30%*	
Fine	3000	5000	Easily ribbons out between fingers, has a slick feel.
Medium	5000	7500	Forms a ball, is very pliable, slicks readily with clay.
Coarse	7000	10000	Forms a weak ball, breaks easily.

¹ Fine – clay, silty clay, silty clay loam, clay loam

Medium – sandy clay, sandy clay loam, loam, silt loam, silt

Coarse – loamy sand, sandy loam, sand. This category also includes peat and muck based on their infiltration capacity.

* Crop residue or vegetative cover on the soil surface after manure application.

- b. For all nutrient applications on non-frozen soil within a SWQMA use one or more of the following practices as appropriate to address water quality concerns for the site:

- (1) Install/maintain permanent vegetative buffers (harvesting is allowed unless restricted by other laws or programs). Refer to NRCS Field Office Technical Guide (FOTG), Section IV, Standard 393, Filter Strip, or ATCP 48 for land in drainage districts.
- (2) Maintain greater than 30% crop residue or vegetative cover on the soil surface after nutrient application.
- (3) Incorporate nutrients within 72 hours leaving adequate residue to meet tolerable soil losses.
- (4) Establish cover crops promptly following application.

B. Criteria to Minimize Entry of Nutrients to Groundwater

To minimize N leaching to groundwater on *high permeability soils*, or soils with less than 20 inches to bedrock, or soils with less than 12 inches to *apparent water table*, or within 1000 feet of a municipal well, apply the following applicable management practices:

Note: A list of soils with a high potential for N leaching to groundwater is provided in Appendix I of the Wisconsin Conservation Planning Technical Note WI-1.

1. Where sources of N are applied:
 - a. No fall commercial N applications except for establishment of fall-seeded crops. Commercial N application rates, where allowed, shall not exceed 30 pounds of available N per acre.
 - b. On irrigated fields, including irrigated manure, apply one of the following management strategies:
 - (1) A split or delayed N application to apply a majority of crop N requirement after crop establishment.
 - (2) Utilize a nitrification inhibitor with ammonium forms of N.

2. When manure is applied in late summer or fall to meet the fertility needs of next year's crop and soil temperatures are greater than 50°F, apply one of the following options:
 - a. Use a nitrification inhibitor with liquid manure and limit N rate to 120 pounds available N per acre.
 - b. Delay applications until after September 15 and limit available N rate to 90 pounds per acre.
 - c. Apply to fields with perennial crops or fall-seeded crops. N application shall not exceed 120 pounds available N per acre or the crop N requirement, whichever is less.
3. When manure is applied in the fall and soil temperatures are 50°F or less, limit available N from manure application to 120 pounds per acre or the crop N requirement, whichever is less.

Note: The restrictions in B. 2. and 3. do not apply to spring manure applications prior to planting. The balance of the crop N requirements may be applied the following spring or summer.

4. Where P enrichment of groundwater is identified as a conservation planning concern, implement practices to reduce delivery of P to groundwater.

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

1. Where manure, organic byproducts, or fertilizers are applied:
 - a. Avoid building soil test P values when possible beyond the non-responsive soil test range for the most demanding crop in the rotation. For most agronomic crops in Wisconsin, the non-responsive soil test range is 30 to 50 parts per million (ppm) Bray P-1 soil test.
 - b. Establish perennial vegetative cover in all areas of concentrated flow resulting in reoccurring gullies.
2. Develop a P management strategy when manure or organic by-products are applied during the crop rotation to minimize surface

water quality impacts. Use either the *Phosphorus Index (PI)* in section a., or Soil Test Phosphorus Management Strategy found in section b. The single strategy chosen, either a. or b., shall be applied uniformly to all fields within a farm or tract.

Note: First year available N in manure applied to fields prior to legume crop establishment shall not exceed the first year's annual N removal by legumes and companion crop. See Wisconsin Conservation Planning Technical Note WI-1, Part II B.4. Available N applied cannot exceed the N need or legume crop N removal of the next crop to be grown.

- a. **PI Strategy** – The planned average PI values for up to an 8-year rotation in each field shall be 6 or lower. P applications on fields with an average PI greater than 6 may be made only if additional P is needed according to UWEX soil fertility recommendations. Strategies for reducing the PI, algorithms, and software for calculating the Wisconsin PI can be found at <http://wpindex.soils.wisc.edu/>.
- b. **Soil Test Phosphorus Strategy** - Management strategies based on soil test phosphorus may be used. Operations using this strategy shall have a conservation plan addressing all soil erosion consistent with the current crops and management or use the erosion assessment tools included with the Phosphorus Index model. In crop fields where ephemeral erosion is an identified problem, a minimum of one of the following runoff-reducing practices shall be implemented:
 - Install/maintain contour strips and/or contour buffer strips. Refer to NRCS FOTG, Section IV, Standard 585, Strip Cropping, and/or Standard 332, Contour Buffer Strip.
 - Install/maintain filter strips (NRCS FOTG, Section IV, Standard 393, Filter Strip) along surface waters and concentrated flow channels that empty into surface waters that are within or adjoin areas where manure will be applied.

- Maintain greater than 30% crop residue or vegetative cover on the soil surface after planting.
- Establish fall cover crops.

Available phosphorus applications from all sources shall be based on the following soil test P values (Bray P-1).

- (1) Less than 50 ppm soil test P: nutrient application rates allowed up to the N needs of the following crop or the N removal for the following legume crop.
- (2) 50-100 ppm soil test P: P application shall not exceed the total crop P removal for crops to be grown over a maximum rotation length of 8 years.
- (3) Greater than 100 ppm soil test P: eliminate P applications, if possible, unless required by the highest P demanding crop in the rotation. If applications are necessary, applications shall be 25% less than the cumulative annual crop removal over a maximum rotation length of 8 years.
- (4) For land with potatoes in the rotation, total P applications shall not exceed crop removal over a maximum rotation length of 8 years if soil tests are in the optimum, high, or excessively high range for potatoes.

D. Additional Criteria to Minimize N and Particulate Air Emissions

Where air quality is identified in a conservation plan as a resource concern, apply a management strategy that minimizes nutrient volatilization and particulate losses while maintaining tolerable soil erosion levels for wind and water.

E. Additional Criteria to Protect the Physical, Chemical, and Biological Condition of the Soil

1. Nutrients shall be applied in such a manner as not to permanently degrade the soil's

structure, chemical properties, or biological condition.

2. To the extent practical, nutrients shall not be applied to flooded or saturated soil when the potential for soil compaction and/or the creation of ruts is high.

VI. Considerations

The following are optional management considerations and are not required practices.

- A. Promote seeding and stabilization of concentrated flow channels, installation and maintenance of vegetative filter strips, riparian buffers and other buffer strips adjacent to surface water and wetlands in conjunction with other conservation practices in order to reduce the amounts of sediment and nutrients that reach surface water and/or groundwater.
- B. Corn nitrogen recommendations in A2809 can be adjusted for the effects of current corn and nitrogen fertilizer prices using the N rate calculator available at <http://www.uwex.edu/ces/crops/NComparison.htm>. Additional management practices that can be utilized to improve N use efficiency can be found in the Wisconsin Conservation Planning Technical Note WI-1, Part II.
- C. Apply nutrients not specifically addressed by this standard (i.e., secondary and micro nutrients) based on recommendations found in UWEX Publication A2809.

Since specific environmental concerns have not been identified for potassium (K), K additions in manure or bio-solids will be determined by rate limits for the N or P in those materials. Commercial fertilizer K applications equal to crop removal will avoid building soil test K levels. K may be applied equal to crop removal at any soil test K level. Dairy producers should monitor K levels in forages and take additional steps to reduce soil K levels if consumption of forage with high K levels becomes an animal health problem.

- D. To minimize N leaching on medium and fine-textured soils, avoid fall commercial N applications for crops to be seeded the following spring. When commercial N is applied in the fall, use ammonium forms of N and delay N application until soil temperatures drop below 50°F. Use of a nitrification inhibitor with fall-applied N is recommended.

- E. Irrigated fields should use irrigation scheduling strategies with the intent of minimizing leaching losses and improving water use efficiency and not exceeding intake/infiltration capacity of the soil.
- F. Consider the use of animal feeding strategies based on published nutrition research findings (National Research Council, etc.) to reduce excess P in rations when manure applications are made to cropland.
- G. Consider delaying surface applications of manure or other organic byproducts if precipitation capable of producing runoff is forecast within 24 hours of the time of planned application.
- H. Consider modifications to the crop rotation to provide crop fields for the application of manure during the summer crop growing season.
- I. Manure top-dressed on existing forages should not exceed the nutrient equivalent of 35 pounds N – 25 pounds P₂O₅ – 80 pounds K₂O (first year availability per acre) or no more than 10 tons of solid manure per acre per harvest. Additional management considerations can be found in “Applying Manure to Alfalfa,” North Central Regional Research Report 346.
- J. For fields directly adjacent to, or with areas of concentrated or channelized flow that drain directly to, Outstanding, Exceptional or nutrient impaired surface waters, avoid raising soil test P levels to the maximum extent practicable. In addition, implement conservation practices that reduce delivery of nutrients to these waters. For operations using the P-Index in high environmental risk areas, the P-Index values should be reduced to the maximum extent practicable by applying additional conservation practices.
- K. Where residual nitrate carryover is probable, the preplant soil nitrate test is recommended to adjust N application rates.

VII. Plans and Specifications

- A. The minimum requirements for a nutrient management plan are specified in the previous sections of this standard and expanded in Part I of the Wisconsin Conservation Planning Technical Note WI-1. Include in a nutrient management plan:
 - a soil map and aerial photograph of the site;

- current and planned crops and crop yields; realistic yield goals;
 - results of soil, plant, manure, or organic byproduct sample analysis;
 - recommended nutrient application rates;
 - documentation of actual nutrient applications including the rate, form, timing, and method. Revise the plan to reflect any changes in crops, yields, tillage, management, and soil or manure analyses;
 - the location of sensitive areas and the resulting nutrient application restrictions;
 - guidance for implementation, maintaining records;
 - each field's tolerable and actual soil losses;
 - soil test P-ppm; P balance, or P Index level where applicable;
 - other management activities required by regulation, program requirements, or producer goals;
 - a narrative to explain other implementation clarifications.
- B. Winter Spreading Plan – The plan shall identify those areas of fields that meet the restrictions for frozen or snow-covered ground identified in this standard. If necessary, land application of manure on frozen and snow-covered ground shall occur on those fields accessible at the time of application that represent the lowest risk of runoff and deliverability to areas of concentrated and channelized flow and surface waters. Low-risk fields shall be identified using either the P-Index or an approved conservation plan. In general, fields most suitable for land application during frozen and snow-covered ground conditions include those fields:
- with low slope,
 - with low erosion,
 - with high levels of surface roughness,
 - with the greatest distance to surface waters and areas of concentrated flow,
 - with no drainage to Outstanding/ Exceptional/nutrient impaired water bodies,
 - with low delivery potential during active snowmelt.
- Refer to section VIII.E for storage/infield stacking of manure during periods of active snowmelt.
- C. Persons who review or approve plans for nutrient management shall be certified through any certification program acceptable to the NRCS (NRCS General Manual, Title 180, Part 409.9, NRCS TechReg) or other appropriate agencies within the state.
- D. Industrial wastes and byproducts and municipal sludge are regulated by the Wisconsin Department of Natural Resources (WDNR). They must be spread in accordance with a Wisconsin Pollution Discharge Elimination System (WPDES) permit as obtained from the WDNR.
- E. Plans for nutrient management shall be developed in accordance with policy requirements of the NRCS General Manual Title 450 Part 401.03 and Title 190, Part 402. the contents of this standard, the procedures contained in the National Planning Procedures Handbook, and NRCS National Agronomy Manual, Section 503.
- F. Plans for Nutrient Management that are elements of a more comprehensive conservation plan shall recognize other requirements of the conservation plan and be compatible with the other requirements. A Comprehensive Nutrient Management Plan (CNMP) is a conservation system unique to animal feeding operations (AFO). The CNMP will be developed to address the environmental risks identified during the resource inventory of an AFO. A CNMP will require use of all the applicable criteria in this technical standard along with the additional criteria located in NRCS National Planning Procedures Handbook, Subpart B. Part 600.54.

VIII. Operation and Maintenance

- A. Document the actual nutrient application including the rate, form, timing, and method of the application. Revise the plan to reflect any changes in crops, tillage or management, soils, and manure tests.
- B. Evaluate the need to modify field operations to reduce the risk of large nutrient losses during a single runoff event based on current field conditions or forecasted weather events.
- C. Minimize operator exposure to potentially toxic gases associated with manure, organic wastes, and chemical fertilizers, particularly in enclosed areas. Wear protectives clothing appropriate to the material being handled.

- D. Protect commercial fertilizer from the weather, and agricultural waste storage facilities from accidental leakage or spillage. See Wisconsin administrative rules and county or local ordinances concerning regulations on siting, design, operation, and maintenance of these facilities.
- E. During periods when land application is not suitable, manure shall be stored in a manure storage facility designed in accordance with the criteria contained in NRCS FOTG Standard 313, Waste Storage Facility. Temporary management of manure shall be in accordance with the criteria for temporary unconfined stacks of manure contained in Table 7 of Standard 313.
- F. When cleaning equipment after nutrient application, remove and save fertilizers or wastes in an appropriate manner. If the application equipment system is flushed, use the 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 potable drinking water wells.
- G. The application equipment shall be calibrated to achieve the desired application rate.

IX. References

- Cranberry Tissue Testing for Producing Beds in North America (1995) Davenport et al., Oregon State Univ. Ext. Serv. Pub. CM8610.
- Mineral Nutrition for Fruit Crops, Roper, Univ. of Wisconsin Dept. of Horticulture Pub.
- National Research Council (NRC) Nutrient Requirements of Dairy Cattle, National Academy Press, 7th Revised Edition, 2001.
- Nitrogen for Bearing Cranberries in North America (2000) Davenport et al., Oregon State Univ. Ext. Pub.
- North Central Regional Research Report 346. Applying Manure to Alfalfa, December 2003.
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- TechReg Website: <http://techreg.usda.gov>
- USDA, NRCS, General Manual, Title 180, Part 409 Conservation Planning Policy, Wisconsin Supplement 409.9, Minimum Criteria to Achieve an NRCS Certified Conservation Planner Designation.

USDA, NRCS, General Manual, Title 190, Part 402, Nutrient Management.

USDA, NRCS, National Agronomy Manual, October 2002.

USDA, NRCS, National Planning Procedures Handbook, Amendment 4, March 2003.

USDA, NRCS, National Handbook of Conservation Practices, Subpart B, Part 600.54, Element Criteria for CNMP Development.

USDA, NRCS, Wisconsin Conservation Planning Technical Note WI-1, Companion Document to NRCS FOTG Standard 590, Nutrient Management.

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University of Wisconsin-Extension (UWEX) Publication A2100, Sampling Soils for Testing, May 2, 2001.

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University of Wisconsin-Extension (UWEX) Publication A3340, Corn Fertilization.

University of Wisconsin-Extension (UWEX) Publication A3392, Guidelines for Applying Manure to Cropland and Pasture in Wisconsin. August. 1995.

University of Wisconsin-Extension (UWEX) Publication A3422, Commercial Vegetable Production in Wisconsin, 2005.

University of Wisconsin-Extension (UWEX) Publication A3512, Wisconsin's Preplant Soil Profile Nitrate Test, 1990.

University of Wisconsin-Extension (UWEX) Publication A3517, Using Legumes as a Nitrogen Source, September 1997.

University of Wisconsin Extension (UWEX) Publication A3557, Nutrient Management: Practices for Wisconsin Corn Production, September 1994.

University of Wisconsin-Extension (UWEX) Publication A3568, A Step-by-Step Guide to Nutrient Management, May 1992.

University of Wisconsin-Extension (UWEX) Publication A3624, Soil Nitrate Tests for Wisconsin Cropping Systems, 1994.

University of Wisconsin-Extension (UWEX) Publication A3634, Nitrogen Management on Sandy Soils, 1995.

University of Wisconsin-Extension (UWEX), Nitrogen Source and \$ Rate of Return Calculator, Rankin, <http://www.uwex.edu/ces/crops/NComparison.htm>

University of Wisconsin-Extension (UWEX), NPM Program, Know How Much You Haul!, ipcm.wisc.edu.

University of Wisconsin-Extension (UWEX) Publication A3769, Recommended Methods of Manure Analysis, 2003.

University of Wisconsin Soil and Forage Analysis Lab Sampling for plant analysis: <http://uwlab.dyndns.org/marshfield/> (Click on Lab procedures and then plant analysis).

Wisconsin Administrative Code, Department of Agriculture, Trade and Consumer Protection, Chapter 48, Drainage Districts.

Wisconsin Phosphorus Index: <http://wpindex.soils.wisc.edu/>.

X. Definitions

Apparent Water Table (V.B) - Continuous saturated zone in the soil to a depth of at least 6 feet without an unsaturated zone below it.

Budgeting (II) - Document present and prior year's crop, estimated nutrient removal by these crops and known nutrient credits. When nutrients are applied for future crop needs in the rotation, implement a tracking process to allow adjustment of subsequent nutrient applications so that the total amount of nutrients applied to the farm or tract complies with this standard and is documented in the plan. Required as a component for all nutrient management plans (VII.A.; Wisconsin Conservation Planning Technical Note WI-1 Part 1 B.d. (1), (2); C.6.).

Concentrated Flow Channel (V.A.2.a.(1)) - A natural channel or constructed channel that has been shaped or graded to required dimensions and established in perennial vegetation for the stable conveyance of runoff. This definition may include non-vegetated channels

caused by ephemeral erosion. These channels include perennial and intermittent streams, drainage ditches, and drainage ends identified on the NRCS soil survey and not already classified as SWQMAs.

Concentrated flow channels are also identifiable as contiguous up-gradient deflections of contour lines on the USGS 1:24,000 scale topographic map. The path of flow to surface water or direct conduits to groundwater must be documented. For construction, refer to NRCS FOTG Standard 412, Grassed Waterway, for more information.

Conservation Plan (V.A.2.b.(2)) - A plan developed and field verified by a conservation planner to document crop management and the conservation practices used to control sheet and rill erosion to tolerable levels (T) and to provide treatment of ephemeral soil erosion. A conservation plan must be signed by the land operator and approved by the county land conservation committee or their representative. A conservation plan will be needed for designating winter spreading restrictions other than those specifically listed in this standard, and when implementing the soil test P management strategy where the soil erosion assessment is not calculated with the Wisconsin Phosphorus Index model. A conservation planner must develop conservation plans using the minimum criteria found in the USDA, NRCS National Planning Procedures Handbook and the Wisconsin Field Office Technical Guide and be qualified by one of the following:

1. Meeting the minimum criteria in the NRCS General Manual, Title 180, Part 409.9(c), NRCS Certified Conservation Planner Designation.
2. Meeting criteria established by the county land conservation committee.
3. Meeting the NRCS TechReg Certified Conservation Planner Option 1, 2, 3.

Direct Conduits to Groundwater (V.A.2.a.(4)) - Wells, sinkholes, swallets (a sinkhole or rock hole that intercepts a stream, diverting all or a portion of it to the groundwater), fractured bedrock at the surface, mine shafts, non-metallic mines, tile inlets discharging to groundwater quarries, or depressionnal groundwater recharge areas over shallow fractured bedrock. For the purpose of nutrient management planning, these features will be identified on the NRCS soil survey and/or USGS 1:24,000 scale topographic map, or otherwise determined through

on-site evaluation and documented in a conservation plan.

Documented yields (V.A.1.b.) - Crop production yield-records documented by field for at least two consecutive years that are used to determine phosphorus and potassium fertility recommendations. Yield record documentation may include measurements of harvested crop weight, volume, or the use of calibrated yield-monitors.

Effectively Incorporated (V.A.2.a.(4)) - Means the mixing with the topsoil or residue or subsurface placement of nutrients with topsoil by such means as injector, disc, sweep, mold-board plow, chisel plow, or other tillage/infiltration methods. Nutrients will not run off the field or drain to subsurface tiles during application.

Fields (III) - A group or single nutrient management unit with the following conditions: similar soil type, similar cropping history, same place in rotation (i.e., second year corn fields, established alfalfa), similar nutrient requirements, and close proximity. Examples include: alternate strips in a contour strip system, pasture, variable rate nutrient application management units, and other management units where grouping facilitates implementation of the nutrient management plan.

Gleaning / Pasturing (V.A.1.m.) - An area of land where animals graze or otherwise seek feed in a manner that maintains the vegetative cover over all the area and where the vegetative cover is the primary food source for the animals. Livestock shall be managed to avoid the routine concentration of animals within the same area of the field. Manure deposited near a well by grazing of livestock does not require incorporation.

High Permeability Soils (V.B) - Equivalent to drained hydrologic group A that meet both of the following criteria:

1. Permeability = 6 inches/hour or more in all parts of the upper 20 inches and
2. Permeability = 0.6 inches/hour or more in all parts of the upper 40 inches.

Use the lowest permeability listed for each layer when evaluating a soil. For a multi-component map unit (complex), evaluate each component separately. If the high permeability components meet the criteria and cannot be separated, the entire map unit should be considered as high permeability.

Major Nutrients (V.A.1.a) - Nitrogen (N), phosphorus (P), and potassium (K).

Note (V.A.1.i.) - Any section labeled as a 'note' is to be considered a recommendation rather than a requirement. The note is included in the criteria section to ensure subject continuity.

Permanent Vegetative Buffer (V.A.2.a.(1)) - A strip or area of perennial herbaceous vegetation situated between cropland, grazing land, or disturbed land (including forest land) and environmentally sensitive areas (as defined in NRCS Technical Standard 393, Filter Strip).

Phosphorus Index (PI) (V.C.2) - The Wisconsin Phosphorus Index (PI) is an assessment of the potential for a given field to deliver P to surface water. The PI assessment takes into account factors that contribute to P losses in runoff from a field and subsequent transport to a water body, including:

- Soil erosion as calculated using the current approved NRCS soil erosion prediction technology located in Section I of the NRCS FOTG.
- Estimated annual field rainfall and snowmelt runoff volume.
- Soil P concentrations as measured by routine soil test P (Bray P-1).
- Rate and management of P applications in the form of fertilizer, manure, or other organic material.
- Characteristics of the runoff flow pathway from the field to surface water.

The algorithms and software for calculating the Wisconsin PI can be found at <http://wpindex.soils.wisc.edu/>.

Rotation (III) - The sequence of crops to be grown for up to an 8-year period as specified by the conservation plan or as part of the soil erosion assessment calculated with the Wisconsin Phosphorus Index model.

Saturated Soils (V.A.3.a) - Soils where all pore spaces are occupied by water and where any additional inputs of water or liquid wastes cannot infiltrate into the soil.

Surface Water Quality Management Areas (SWQMA) (V.A.2.b.(1)) - For the purposes of nutrient management planning, Surface Water Quality Management Areas are defined as follows:

1. The area within 1,000 feet from the ordinary high-water mark of navigable waters that consist of a lake, pond or flowage, except that, for a navigable water that is a glacial

pothole lake, "surface water quality management area" means the area within 1,000 feet from the high-water mark of the lake.

2. The area within 300 feet from the ordinary high-water mark of navigable waters that consists of a river or stream that is defined as:
 - Perennial streams (continuous flow) identified on the NRCS soil survey and/or USGS 1:24,000 scale topographic map as solid lines,
 - Otherwise determined through an onsite evaluation and documented in an approved conservation plan.

Areas within the SWQMA that do not drain to the water body are excluded from this definition.

Tile Inlet (V.A.2.a.(4)) - The interception of surface runoff within a concentrated flow channel or field depression, by a constructed device designed to direct runoff into an underground tile for conveyance to surface or groundwater.

Tolerable Soil Loss (T) - For sheet and rill erosion (V.A.2.a.(6)) - T-value means the maximum rate of soil erosion established for each soil type that will permit crop productivity to be sustained economically and indefinitely. Erosion calculations shall be based on current approved erosion prediction technology found in NRCS FOTG Section I or the soil loss assessment calculated using the Phosphorous Index Model. Tolerable soil erosion rates shall be determined using the RUSLE2 Related Attributes Report located in Section 2, e-FOTG, Soil Report.

Department of Agriculture, Trade and Consumer Protection

Proposed Livestock Facility Siting (ATCP 51)

**Public Hearing Summary - Final
August 2005**

DATCP estimates that approximately **800 people attended** one or more of the 12 public hearings conducted during the weeks of March 14th and March 21st, 2005. DATCP's records also show that about **140 people testified** during the hearings. The breakdown of attendance and testimony is shown in Table 1 below.

Table 1: Attendance and Testimony at Public Hearings

Location	Attended	Testified	Percent
Jefferson – afternoon	92	14	15.2%
Jefferson – evening	25	2	8%
Green Lake – afternoon	60	13	21.7%
Green Lake – evening	21	1	4.7%
Richland Center – afternoon	108	18	16.7%
Richland Center – evening	13	4	30.8%
Manitowoc – afternoon	118	17	14.4%
Manitowoc – evening	68	17	25%
Wausau – afternoon	89	24	27%
Wausau – evening	10	4	40%
Eau Claire – afternoon	160	20	12.5%
Eau Claire – evening	19	4	21.0%
TOTALS	783	138	17.6%

DATCP received an **additional 400 written comments** on the proposed rule, for **a total of 538 comments**. Attendees at the public hearings provided over half of the written comments. DATCP also received 156 letters from individuals and groups representing a variety of interests, including: 14 letters from large farm operations; 32 letters from the Wisconsin Cattlemen's Association; 20 letters from environmental organizations and non-farm residents; 18 letters from local governments and their associations; 23 letters from farm service providers, lenders and cooperatives; and 51 letters from other farmers and farm organizations. The total comments received in support and opposition to the rule is summarized in Table 2. Not all comments indicated support or opposition.

Table 2: Summary of comments on proposed ATCP 51

Support	Support with Changes	Oppose	Undecided/ No comment	TOTAL
52 (10%)	181 (34%)	160 (29%)	149 (27%)	538 (100%)

Most oral and written testimony provided specific suggestions to improve the proposed rule. Table 3 categorizes the most common comments received on the proposed rule.

Table 3: Common comments and suggested changes to proposed ATCP 51**

	Comment/Suggested Change	Number of Comments <i>(Many commented on more than one topic)</i>
1	Remove odor index	172
2	Revise odor index --Use BMPs instead --add more BMPS --allow innovation --change factor scores/weights --don't use sq. footage for odor generation --change negative numbers to positive numbers -- remove good neighbor/discretionary points	162
3	Review setbacks for existing structures --not reasonable --measure from center of road --grandfather existing or allow variances	112
4	Research odor more (Discovery and Pioneer Farms)	104
5	Remove land spreading odor standard	57
6	Support odor standard	34
7	Be conscious of costs – costs too much	32
8	Provide cost-sharing to everyone --especially for NM and if waste storage is required	24
9	Enforce the rule – who will do it? Should be done.	21
10	Let local government set own “reasonable” fees--\$500 too low	19
11	Nutrient Management should be based on crop need, not AU	18
11	Check rule definitions --pasture/facility	18
13	Regulate other industries for odor	17
14	Adjust Animal Units	15
15	Let local governments set own standards	14
15	Regulate air emissions, not odor	14
17	Give local governments time to change ordinances -- up to 1 year	11
18	Only regulate over 1000 AU	9
19	Make rules statewide	6
19	Remove mortality management	6
19	Change feed storage --% moisture --leachate collection from expanded existing structures --sealant allowed?	6

N:\ARM\Livestock Facility Siting\Rule Comments\Hearings summary-final.doc

Hearing Comments and DATCP Responses

(NOTE: see Proposed Livestock Facility Siting Rule (ATCP 51) Changes after Public Hearing document for complete discussion of all post-hearing changes to the rule.)

General

Definitions

Comments: Several definitions in the rule were unclear, incorrect, or absent.

DATCP Response: DATCP revised, removed, and added several definitions to increase the rule's clarity.

Worksheets and Standards

Animal Units

Comments: Animal unit equivalencies for Jersey cows and poultry are too high. Also, the rule should only apply to facilities over 1000 animal units.

DATCP Response: No Change. DATCP is required by the Livestock Facility Siting Law (Wisc. ss. 93.90 (1)(1m)(a)) to use the animal unit equivalencies found in Wisc. Admin Code NR 243. DATCP will work with industry groups to identify options. The law also requires the application apply to facilities of 500 AU or more (or a lower threshold if included in a local ordinance prior to July 19, 2003). The specific size threshold for each siting standard is identified in the rule.

Setbacks

Comments: The proposed setbacks for structures were not reasonable. Also, existing structures should be grandfathered. Larger setbacks should be required for manure storage. Setbacks should be required to meet state standards from both public and private wells.

DATCP Responses: Revised the rule to allow local setbacks as long as the setbacks do not exceed the state maximums. Existing structure will be grandfathered, and expansion of those structures will be allowed as long as the structures do not encroach on the setbacks. New manure storage structures must be setback 350 feet from road and property lines. Livestock facility structures must meet the setbacks from wells required in Wis. Admin Codes NR 811 and NR 812.

Odor Management for Facilities

Comments: Most of the comments received opposed the odor management for facilities standard, although some comments supported the standard. Most comments suggested removing the standard entirely or proposed revisions including: using best management practices (BMPs) instead of the odor index, adding more BMPs, allowing for innovative practices, changing the formula, changing the output to reflect positive numbers, and removing good neighbor points. Many comments also suggested conducting additional research on odor and odor management practices.

DATCP Response: Retained the odor management standard, but made substantial revisions including: establishing a positive scoring system, changing the format to use tables, giving credit for facilities located in a favorable wind direction, selecting more reasonable annoyance thresholds, developing a system to allow for innovative BMPs, including a low density credit, measuring separation distance more fairly, simplifying the cluster concept, expanding exemptions from the standard, eliminating the good neighbor points, and providing a lower and more accurate odor generation number for large manure storage lagoons. DATCP also established a maximum level of predicted odor a facility may generate, regardless of separation score. Local governments retain *limited* discretion to approve facilities that are within 30 points of meeting the odor management. The rule also allows applicants to use an automated spreadsheet in lieu of the hard-copy worksheet calculations. Finally, DATCP has committed to pursuing odor and air emission research with the University of Wisconsin, livestock operations and other partners.

Odor Management for Landspreading

Comments: The odor management from landspreading standard is unreasonably complex for producers to implement and conflicted with the nutrient management standard. Other comments indicated that odor from landspreading is expected, short-term odor and not an issue.

DATCP Response: Eliminated the odor management for landspreading standard. The Livestock Facility Siting Law does not pre-empt local regulation of manure applications.

Nutrient Management

Comments: Most comments supported the nutrient management requirements with the exception of the sections that allow local discretion, which violates the livestock facility siting law. Some comments also felt the standard should require a minimum of six months storage and prohibit spreading of liquid manure in the winter.

DATCP Response: Continued to use the new NRCS standard for nutrient management, but increased the exemptions to exclude criteria D, E, and considerations. Also added a NOTE in the rule and on worksheet 3 that indicates that the land to animal units ratio is an evaluation tool, and is not designed as a standard for management nutrients on fields.

Runoff Management

Comments: The construction site erosion control standard is covered under separate law and should be eliminated. Also, DATCP should simplify the requirements for subsurface leachate collection from large feed storage areas.

DATCP Response: Eliminated construction site erosion control standard and included in "Notice of other laws" section of application. Simplified requirements for subsurface collection for large feed storage by clarifying that certain soil types may not require a sub-liner and by eliminating different standards for feed storage inside and outside of the water quality management area (WQMA).

Mortality Management

Comments: The mortality management standard duplicates existing state law that regulates the disposal of dead animals (s 95.5)

DATCP Response: Eliminated the mortality management standard, and referenced the existing law in the "Notice of other laws" section of the application.

Administrative

Scope of Rule

Comment: The scope of the rule is unclear. Also, limit the authority of local government to require any additional information as part of the application

DATCP Response: Added NOTE to clarify that scope of law does not require local regulation and only applies to those political subdivisions that choose to regulate. Amended rule to limit local government's authority to require any additional information as part of the application.

Local Ordinances

Comment: Local governments need time to adopt the standards into ordinance.

DATCP Response: Amended rule to allow local governments up to six months to adopt the standards into local ordinance. Also added requirement that local governments submit copies of the ordinance to DATCP.

Rule Costs

Comment: The \$500 application fee is not sufficient to cover local governments costs related to processing and reviewing the application. Additional comments that completing the application will be too costly for livestock operators and that cost-sharing should be required.

DATCP Response: Raised the maximum application fee local governments may charge to \$1000. No change regarding cost-sharing; the livestock facility siting law does not require (or prohibit) cost-sharing to help operators meet the siting standards.

Enforcement

Comment: How the permits and siting standards will be enforced should be included in the rule. Local government enforcement of permit conditions should consider extenuating circumstances.

DATCP Response: No change. Enforcement of the permits is a local responsibility and enforcement procedures must be in local ordinance. Added NOTE stating that local governments should consider extenuating circumstances (e.g. weather concerns) in taking action to respond to permit violations.

Other Administrative

Comment: Require local governments to make a completion determination after additional information is submitted (if original application was incomplete). Require inclusion of farmer on rule technical review panel.

DATCP Response: Amended rule to require that local governments provide a notice of completeness within 14 days of receiving additional information to complete the application. Also, require local governments to submit applications to DATCP after they have been approved or denied. Expanded NOTE in rule to require inclusion of farmer on the technical review (or other) panel when it is reconvened in four years to review the siting standards.



State of Wisconsin
Jim Doyle, Governor

Department of Agriculture, Trade and Consumer Protection
Rod Nilsestuen, Secretary

Proposed Odor Management Standard Final Report

Revised -- August 16, 2005

BACKGROUND

The Department of Agriculture, Trade, and Consumer Protection's (DATCP) proposed Livestock Facility Siting Rule (ATCP 51) includes an odor management standard that livestock operations must meet in order to receive local approval to site or expand beyond a given threshold. For those farms requiring local approval, the odor management standard will apply to new operations over 500 animal units (AU) and expanding operations over 1,000 animal units.

The proposed odor management standard predicts the amount of chronic, annoying odor generated from livestock facility structures that may reach the nearest affected neighbor or high use building. It does not require facilities to be odor free and does not predict acute, temporary odor from activities such as agitating manure pits or landspreading of manure. The odor management standard is important because it assists local communities with siting decisions and allows producers to consider the true cost of odors, and factor the cost of odor management practices into their facility plans.

Odor from livestock facility structures is predicted by assigning an odor generation number to each type of facility and manure management type, waste storage type, and animal lot type. To calculate the predicted **odor generation** from the facility, the odor generation number is multiplied by the size of the applicable structures and by any multipliers allowed for odor reduction practices used on the facility. The **separation score** is determined by figuring the distance of the odor source from the nearest affected neighbors, the density of neighbors, and the prevailing wind direction. The total **odor score** is the difference between the separation score and predicted odor generation. Local governments must approve facilities that have odor generation of 350 or less and receive a total odor score of 500 or more to pass the odor management standard.¹

PURPOSE OF FIELD TRIALS

The purpose of the odor standard field trials was to determine if the proposed odor management standard is practical, reasonable and cost-effective and produces results that will allow for expansion of the agricultural industry while protecting neighbors from unreasonable odors. Department staff analyzed the results of the odor trials to determine if the proposed odor management standard meets those criteria.

¹ Local governments may approve—but do not have to approve-- facilities with predicted odor generation between 350 and 380. Local governments may approve—but do not have to approve---facilities with total odor separation scores between 470 and 500.

METHODOLOGY

Random Sample

The department tested the proposed odor management standard on a statistically reliable random sample of 24 dairy operations that have a Wisconsin Pollutant Discharge Elimination System (WPDES) permit from the DNR.² The sample operations were randomly selected from the 104 dairy farms permitted to have 1,000 animal units or more, located throughout the state.

Department staff calculated the predicted odor generation and a total odor score for each of the randomly selected operations. The scores were determined for the existing operation, and answered the question, "If this operation—at its current size, management and location – were to be sited today, would it pass the odor management standard?" Staff did not calculate odor generation and odor scores for any potential future expansions of these facilities.

The random sample did not include any beef, poultry, or pork operations. These operations constitute a very small percentage of the WPDES (1,000 AU or greater) permitted operations in Wisconsin. However, operations of these types passed the hearing draft proposed odor index. All operations of any type that passed the hearing draft proposal will also pass under the revised odor standard in the final rule.

DBA Sample

The department also provided producer groups the opportunity to test the proposed standard on farms of their choice. The Dairy Business Association (DBA) accepted this invitation and was given the necessary information and tools to complete the tests. The DBA trials specifically included farms currently expanding or considering future expansions and the resulting scores are for the facilities following their possible expansion. The DBA had complete freedom to select the farms, define the number of animal units to be housed at these farms, and determine the appropriate specifications and size of the livestock facility structures. The DBA sample included three farms visited in February 2005 during a previous set of public field trials. DATCP staff verified that DBA calculated its trials correctly. However, DATCP staff did not review and validate the facility specifications provided or the proposed expansion plans, and cannot ensure that the proposed plans would comply with other facility siting requirements or state and local permits.

SUMMARY OF RESULTS

Random Sample

22 of 24 operations (92%) passed the proposed odor management standard in the final rule.

2 of 24 operations (8%) would not pass the proposed odor management standard without additional odor management practices or additional separation distance. One of these operations did not pass because it exceeded the total predicted odor generation, while one operation would not pass because it did not have an adequate odor score.

² The trial results reflect what would be the actual outcome if *all* the operations had been tested. For example, since 92% of the sample passed the proposed odor management standard, the department believes the actual percentage of farms of this size that would pass would fall between 87% and 97%.

DBA Sample

21 of 23 examples (91%) passed the proposed odor management standard in the final rule.

2 of 23 examples (9%) would not pass the proposed odor management standard without additional odor management practices or additional separation distance.

ANALYSIS OF RESULTS

Random Sample

Operations in the random trial ranged from 888 to 4,900 animal units, with an average size of 1,851 animal units (~1,300 cows). The structures from these operations averaged over 1,600 feet from the nearest affected neighbor, ranging from a low of 500 feet to a high of almost 3,000 feet. Three of the 24 farms were exempt from the standard because all facility structures were more than 2500 feet from the nearest affected neighbor. The average predicted odor generation was 164, ranging from a low of 27 to a high of 389, and the average total odor score was 752, ranging from a high of 1036 to a low of 423. One of the two operations that did not pass the odor management standard from the random trial would need additional practices to lower their predicted odor generation below 350. The other operation would need to either use additional practices or expand its separation distance to receive an odor score of more than 500. *See Appendix A for more detail.*

DBA Sample

The examples in the DBA trials included possible expansions and were, therefore nearly twice the average size of those in the random trial. The facility structures in this group were almost half the distance from neighbors than those in the random group, with an average distance of 987 feet from the nearest affected neighbor. Although these example farms were nearly twice as big and twice as close as compared to the randomly sampled facilities, some of these operations passed the odor standard because the facilities use -- or plan to use -- management practices to control odor, including practices such as manure storage covers, anaerobic digesters, composting, and aeration. These practices helped the DBA sample keep its average predicted odor generation fairly low and allowed some facilities to compensate for the closer proximity to neighbors. Since most of these operators made these facility investments without the benefit of the odor standard, it would seem that these producers are willing to invest in practices to manage odor, particularly those that may have other benefits such as anaerobic digesters, as part of their decision to build or expand. One of the two examples that did not pass the proposed odor management standard had structures very close to neighbors and would almost certainly need to increase separation distance in order to pass the standard. The other example that did not pass would need to both add practices to pass the standard. *See Appendix B for more detail.*

Future Expansion - Random Sample

The department's random trials were conducted under the premise of "if they were to be permitted today" to act as examples of farms that may require siting permits. To consider what the results might mean for potential expansions at the trial farms, facilities with predicted odor generation of less than 300 and a total odor score of 600 or greater are fairly well-positioned for modest future expansion at their current location with minimal or no changes to their odor management practices. Facilities with predicted odor generation greater than 300 or an odor score between 500 and 600 will need to look carefully at their expansion plans and locations of their structures, and may need to use additional odor management practices or generate additional separation distance in the future.

CONCLUSION

92% of the randomly sampled operations and 91% of the DBA submitted examples passed the proposed odor management standard, and most of the remaining operations could pass the standard with either additional odor management practices or separation distance. Given the number of farms that are passing and the practices they are using to control odor, the proposed odor management standard appears to be practical, reasonable, and cost-effective for both existing and expanding farms. Even when using odor management practices, however, some operations may not pass the proposed odor management standard due to inadequate separation distance or high predicted odor generation. The department believes that as the industry develops new odor management technologies these constraints may be overcome and more of these operations will pass the odor standard.

Random Trials				
(Statistical representation of current WPDES permitted dairy facilities)				
Farm #	Animal Units	Adjusted Weighted Distance (feet)	Predicted Odor Generation	Odor Separation Score
1	1607	1400-1499	27	809
2	2640	3100-3199	255	1001
3	2800	2000-2099	349	661
4	980	1400-1499	192	644
5	888	2100-2199	389	567
6	2000	1300-1399	216	594
7	1960	Exempt	Exempt	---
8	1288	900-999	100	616
9	1170	2200-2299	38	1036
10	1270	1200-1299	107	678
11	1100	Exempt	Exempt	---
12	4900	Exempt	Exempt	---
13	1400	900-999	141	575
14	1050	1200-1299	161	624
15	1260	2400-2499	122	1019
16	1330	1100-1199	134	627
17	1120	600-699	93	564
18	2370	700-799	106	569
19	1050	800-899	43	652
20	3500	1100-1199	338	423
21	1450	1000-1099	122	616
22	1124	2700-2799	140	808
23	3206	1000-1099	115	623
24	2940	500-599	86	554
Number Passing or Exempt				22
Per Cent Passing or Exempt				92

DBA SELECTED EXAMPLE FARMS
(Some existing, some possible expansions)

EXAMPLE	Animal Units	Adjusted Weighted Distance (feet)	Predicted Odor Generation	Odor Separation Score
1	1946	2400-2499	259	882
2	2400(E)	2400-2499	268	873
3	1254	1700-1799	168	751
4	2508(E)	1700-1799	319	600
5	2680	1800-1899	238	741
6	3680(E)	1700-1799	348	571
7	2000	1400-1499	241	595
8	2500(E)	1300-1399	253	557
9	2800	450-499	73	555
10	2860	700-799	105	570
11	4200(E)	700-799	115	560
12	2000	900-999	164	552
13	2750(E)	900-999	165	551
14	2800	2000-2099	349	661
15	5005(E)	2000-2099	591	419
16	1680	300-399	42	572
17	4600(E)	500-599	126	514
18	4620	900-999	204	512
19	425	450-498	17	716
20	850(E)	450-499	66	562
21	505	100-199	81	506
22	1010(E)	100-199	152	432
23	1470	600-699	156	501
Number Passing				21
Per Cent Passing				91

(E) = Calculations include the facilities and practices associated with a possible expansion.

FISCAL ESTIMATE

DOA-2048 (R 10/94)

 ORIGINAL UPDATED
 CORRECTED SUPPLEMENTAL

LRB or Bill No. / Adm. Rule No.

Ch. ATCP 51

Amendment No. (If Applicable)

Subject:

Implementing the Livestock Facility Siting Law

Fiscal EffectState: No State Fiscal Effect

Check 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 3. Increase Revenues
 Permissive Mandatory Permissive Mandatory
2. Decrease Costs 4. Decrease Revenues
 Permissive Mandatory Permissive Mandatory
5. Types of Local Gov. Unit Affected:
 Towns Villages
 Counties Cities
 Other
 School Districts
 WTCS Districts
Fund Source Affected:
 GPR FED PRO PRS SEG SEG-S
Affected Ch. 20 Appropriations:
20.115(7)(qd)**Assumptions Used in Arriving at Fiscal Estimate****Background**

The livestock siting statute (2003 Wisconsin Act 235) is designed to improve the local regulatory climate for the livestock industry. The proposed rules implement the livestock siting law, s.93.90 Wis. Stats.

Certain aspects of the existing system of local regulation impose barriers to the siting and expansion of livestock facilities. These barriers, including the uncertainty of the local government permitting processes and siting standards that vary by jurisdiction, can hamper the state's competitiveness in attracting and retaining a strong livestock industry. Although the livestock facility siting law is not the only change needed to make Wisconsin's agricultural sector more competitive, improvements in local livestock facility siting regulations can create a more attractive business climate for livestock producers. The proposed rule intends to make local livestock facility siting regulation more predictable, less time consuming and less arbitrary.

Wisconsin's farms and agricultural businesses generate more than \$51.5 billion in economic activity annually and provide jobs for 420,000 people, according to a March 2004 study by University of Wisconsin-Extension community development specialist Steve Deller. The dairy and livestock industry generates over half of that total economic impact. Industry trends show that Wisconsin needs to produce more milk to retain processors and jobs in the state. This need for more milk will be met primarily through the growth of dairy operations. However, in order to grow their operations, dairy farmers must be able to plan and site their facilities through a predictable, fact and science-based process. Research suggests that the type and extent of local livestock facility siting regulation currently existing in Wisconsin and other Midwestern states can adversely impact and inhibit business decisions to site or expand livestock facilities.

Measures such as the proposed rule are vital to strengthening our state economy. However, the siting legislation created new responsibilities for both state and local governments, which may impose additional costs on livestock operations, and state and local governments. These costs, outlined below, are minor in comparison to the economic benefits of a more standardized and rational framework for local livestock siting regulation.

Impact of the Proposed Rule on State Government

The proposed rule creates new responsibilities at the state level to oversee local permit decisions. The most significant of these new responsibilities are administering the state livestock siting standards and the proposed livestock facility siting review board (LFSRB). The board's primary authority is to determine if local governments properly followed state siting standards in making their permitting decisions.

The annual costs associated with the LFSRB depends on the number of appeals filed with the board, which in turn depends on the number of permits or licenses issued by local governments. DATCP has estimated the number of

new and expanded facilities subject to the proposed rule by focusing on dairy expansions and the area of greatest growth in the livestock industry. In its *2004 Dairy Producer Opinion Survey*, the Wisconsin Agricultural Statistics Service (WASS) projected that the number of cows in Wisconsin will increase modestly from 1,240,000 to 1,260,000 in a five-year period from 2004 to 2009. WASS data indicates that significant growth will occur in herds subject to possible regulation under the livestock facility siting law, with declines in cows coming from exiting farms. From 2004 to 2009, the number of herds with 200 – 499 animal units is expected to increase by 27% (from 700 to 890 operations). During this same period, herd sizes over 500 animal units are expected to increase by 65% (from 200 to 330 operations). If growth were evenly distributed across the five years, Wisconsin would experience about 64 dairy expansions per year. Using different data, Bruce Jones, a University of Wisconsin-Madison agricultural economist, predicted that dairy farms with 100 or more cows would expand production roughly nine percent per year (*The Changing Dairy Industry*). Taking into account greater efficiency in milk production, an increase of nine percent per year suggests a growth rate of up to 90 new or expanded dairy facilities per year. In making this projection, it is assumed that gains in milk production will be realized by state's largest dairy operations (5-8% of the total dairy operations). To achieve a nine-percent gain in 2,226 million pounds produced in 2003, for example, the state would need to produce a total of 2,470 million pounds of milk. If this increase came entirely from the 1000 largest dairies, we need 90 new or expanded dairies.

Facility expansions will not always require a farmer to apply for a local permit or license. There are some counties and other local governments that do not regulate the siting of livestock operations. In these jurisdictions, livestock facilities may be built or expanded without a permit and without meeting new state livestock facility siting standards. Given the existing local livestock facility siting regulations, DATCP assumes that 75% of the projected dairy expansions will be regulated locally. In addition, there will be a small number of permit applications from new and expanding livestock facilities other than dairy expansions. Using the above assumptions, DATCP estimates that between 50 and 70 new and expanding livestock facilities will generate local facility siting permit applications annually.

Records from other state-level siting appeals boards show that appeals to the LFSRB likely will be more frequent in the initial years of the proposed rule's implementation, and then taper off as the process becomes more institutionalized and understood. DATCP estimates that between ten and twenty percent of local permit decisions will result in appeals to the LFSRB in the first two years. This means that the siting review board will be expected to process between five and fourteen appeals annually within the 60-day statutory deadline for reviewing local decisions. Assuming the number of appeals fall within this range, DATCP estimated its needs as follows: 1) \$52,000 (salary, fringe, and supplies and services) to hire a program assistant to coordinate the LFSRB meetings, and 2) \$15,000 for an operating budget to cover copying, mailing, travel, meetings, meals, training, and other necessary expenses. These cost estimates for the LFSRB are based on the department's actual costs to coordinate and administer the Land and Water Conservation Board. In addition, DATCP staff is needed to develop and maintain livestock facility siting standards, and provide technical and educational assistance to the agricultural industry and local governments. The estimated cost for this staff is \$88,000, which includes \$10,000 in program support.

The total cost to state government to implement the proposed rules is estimated to be \$155,000 annually. DATCP received \$30,000 to administer the LFSRB, but no additional funds to administer the program. DATCP reassigned 1.4 FTE to administer the livestock facility siting program because no new staff was approved to administer this program.

Impact of the Proposed Rule on Local Government

Local governments that elect to regulate livestock facility siting already incur the costs associated with implementing their local regulations. They must process permit applications according to specific timelines, conduct hearings as required, develop and maintain files for each application, deny and or approve permits based on locally-determined standards, and monitor compliance with permits. The proposed rule does not require that local governments regulate livestock facility siting, and local governments that want to avoid these basic costs can do so by not regulating.

Local governments that voluntarily choose to enact a local livestock siting regulation may encounter some minor new incremental costs to implement the state standards and procedures required under the proposed rules. The required application and worksheets may involve more paperwork than applications previously used by local governments. Local governments may incur new costs processing this paperwork in order to meet the deadlines required under the new law. Some local governments may choose to hire technical experts to review the application worksheets. They may also need to prepare more elaborate written decisions to deny or approve each permit. In addition, should they choose to do so, they may face costs to modify their ordinances to incorporate new state standards and procedures, particularly if they plan to include unique local standards that must be supported by findings of fact establishing a public health and safety justification. Any additional costs incurred under these

circumstances are permissive in nature. The proposed rule itself does not mandate new costs for local government.

Any increased workload will depend on each affected local government's interest in adopting the state standards and existing capacity and expertise. In general, counties will be better equipped to absorb new responsibilities and costs with existing staff and resources than towns and villages. For example, a county may choose to have its Land Conservation Department review the permit paperwork, while towns and villages may want to utilize outside technical expertise to provide this service. While most local governments will have no additional costs in any given year due to the small number of anticipated permit applications, some local governments in areas with substantial livestock expansion activity may see an increase in their existing costs.

Local governments may realize some cost savings as a result of the new law. While the paperwork under the proposed siting law is more extensive, local governments may save time and money by having the applications arrive in a uniform manner. In addition, because the new law limits local governments to considering state standards when making their permit decision, local governments should spend less time and resources in gathering and evaluating evidence necessary to make their decision. For example, local governments will no longer be forced to hold extra public hearings and deliberations to address issues outside the scope of the state standards. Local governments will consequently save the costs of publicly noticing and staffing these meetings (average of \$30 per hour), as well as the per diem costs (average of \$35 per member per meeting) of local officials sitting on the decision-making boards. Eliminating one unneeded public hearing potentially could save a local government several hundred dollars. Since the operations under 500 animal units are exempt from meeting key siting standards, some local governments may raise their threshold for regulation to 500 animal units. By doing this, they will avoid the costs of issuing local approvals to smaller facilities. Also, local governments will save money on permit decisions that are appealed, as they will no longer be responsible for appeal proceedings. Under the proposed rules, permit decisions will now be appealed to the LFSRB. For local governments in areas where livestock facility siting is particularly controversial, the costs savings generated through a more predictable permitting process will likely offset the incremental costs associated with the process. Savings will vary between political subdivisions.

Given the range of existing capacity, DATCP estimates a wide-range in the incremental costs to local governments to implement the rule. While the new law will help a number of local governments reduce costs related to local approval, there will be local governments that need about 10 hours of staff and expert assistance per permit application. Local governments may use existing staff or outside assistance to meet this need. At an average cost of \$50 to \$100 per hour, this would result in a range of \$500 to \$1000 per permit application. In addition, record keeping costs, including preparation of the record for possible appeals, would add another \$100-\$500 per permit application. The proposed rule allows local governments to recoup up to \$1000 from applicants to help cover these additional costs. Therefore, DATCP estimates the net incremental cost to local governments to implement the proposed rule to be \$500 or less per permit application. Given the estimate of 50 to 70 local approvals per year, DATCP estimates net aggregate local government costs (statewide costs for all political subdivisions) would range from \$5000 to \$35,000. However, this does not fully account for cost-savings that local governments are likely to realize as a result of the streamlined approval process created by the new law.

Agency/prepared by: (Name & Phone No.)	Authorized Signature/Telephone No.	Date
DATCP Dave Jelinski ph. 608-224-4621	 Barb Knapp, ph. 608-224-4746	8/25/05

FISCAL ESTIMATE WORKSHEET

2004 SESSION

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

ORIGINAL UPDATED
 CORRECTED SUPPLEMENTAL

LRB or Bill No/Adm. Rule No. Ch. ATCP 51	Amendment No.
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SUBJECT
Implementing the Livestock Facility Siting Law

I. One-time Cost or Impacts for State and/or Local Government (do not include in annualized fiscal effect):
Costs are recurring; see below.

II. Annualized Cost:	Annualized Fiscal Impact on State funds from:	
A. State Costs by Category	Increased Costs	Decreased Costs
1. State Operations - Salaries and Fringes	\$-0	\$ - 0
2. (FTE Position Changes)	(-0 FTE)	(-0 FTE)
3. State Operations - Other Costs	\$30,000	- 0
4. Local Assistance	0	- 0
5. Aids to Individuals or Organizations	0	- 0
TOTAL State Costs by Category	\$30,000	\$ - 0
B. State Costs by Source of Funds	Increased Costs	Decreased Costs
1. GPR	0	\$ - 0
2. FED	0	- 0
3. PRO/PRS	0	- 0
4. SEG/SEG-S	\$30,000	- 0
III. State Revenues -	Increased Revenue	Decreased Revenue
<small>Complete this section only when proposal will increase or decrease state revenues (e.g., tax increase, decrease in license fees)</small>		
• GPR Taxes	\$ 0	\$ - 0
• GPR Earned	0	- 0
• FED	0	- 0
• PRO/PRS	0	- 0
• SEG/SEG-S	\$0	- 0
TOTAL State Revenues	\$ 0	\$ - 0

NET ANNUALIZED FISCAL IMPACT

	<u>STATE</u>	<u>LOCAL</u>
NET CHANGE IN COSTS	\$30,000	\$5000 - \$35,000
NET CHANGE IN REVENUES	\$ 0	\$ 0

Agency Prepared by: (Name & Phone No.) DATCP Dave Jelinski, ph. 608-224-4621	Authorized Signature/Telephone No. <i>Barb Knapp</i> Barb Knapp, (608) 224-4746	Date 8/25/05
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