

SUBJECT:

Request that the Board adopt Board Order WT-15-16, proposed rules affecting chapter NR 151 Wis. Adm. Code, and limited incorporation by reference of those proposed revisions to ch. NR 243 relating to runoff management and nonpoint source performance standards in areas of the state with shallow soils over Silurian bedrock

PRESENTER'S NAME AND TITLE: Mary Anne Lowndes, Runoff Management Section Chief

SUMMARY:

The department has found that, on shallow soils in the Silurian bedrock area of the state, groundwater standards will not be attained by implementing the statewide agricultural performance standards and prohibitions in ch. NR 151, Wis. Adm. Code. This is because Silurian bedrock has the capacity to allow rapid transport of contaminants without attenuating those contaminants. The performance standards in the proposed rule are designed to minimize the risk for pathogen delivery to groundwater.

No significant changes were made to the requirements within the draft rule. Based on public comments received, clarification changes were made to sections of the rule, including definitions for closed depressions, defined channels, soil texture, and infield bedrock verification. NR 151.075(10), (11) was modified for easier understanding of solid and liquid manure application rates, time, methods and exemptions from pre-tillage (no-till, perennial or established crops). Section NR 151.09 was amended to reference implementation and enforcement procedures of cropland performance standards.

The statement of scope of this rule was approved by the NRB at the August 2016 meeting. From July 7 through August 7, 2017, the Department solicited comments on the economic impact analysis. The NRB authorized public hearings through passive review. Public hearings were held on September 15, 2017 in Green Bay and Madison. The rule is expected to be a Level 2 - moderate economic impact.

RECOMMENDATION: That the Board adopt Board Order WT-15-16.

LIST OF ATTACHED MATERIALS (check all that are applicable):

- ☐ (choose one)
☒ Fiscal estimate and economic impact analysis (EIA) form
☒ Response summary

- ☒ Attachments to background memo
☒ Board order/rule
☐ (insert document name)

Approved by	Signature	Date
Pam Biersach, Director, Bureau of Watershed Management		01/10/17
Joe Liebau, Jr., Acting Administrator, Office of Business Support and Science		1/10/17
Daniel L. Meyer, Secretary 		1/10/17

cc: Board Liaison - AD/8

Program attorney - LS/8

Department rule officer - LS/8

DATE: November 7, 2017

TO: All Members of the Natural Resources Board

FROM: Daniel L. Meyer, Secretary

SUBJECT: Background memo on Board Order WT-15-16, relating to performance standards for mechanical applications of manure on shallow soils in the Silurian bedrock area to reduce the risk of manure pathogens from reaching groundwater.

1. Subject of Proposed Rule:

Chapter NR 151, Wis. Adm. Code, establishes, among other things, performance standards and prohibitions for agricultural facilities and practices designed to achieve water quality standards. The proposed rule establishes a targeted performance standard where Silurian bedrock is present that is designed to comply with water quality standards in that targeted area.

2. Background:

The department has found that, in areas of the state where Silurian bedrock is present, groundwater standards will not be attained by implementing the statewide agricultural performance standards and prohibitions in ch. NR 151, Wis. Adm. Code. This is because Silurian bedrock has the capacity to allow rapid transport of contaminants without attenuating those contaminants. Silurian bedrock is located in the eastern portions of the state, including areas in Brown, Calumet, Dodge, Door, Fond du Lac, Kenosha, Kewaunee, Manitowoc, Milwaukee, Outagamie, Ozaukee, Racine, Walworth, Washington and Waukesha counties.

3. Why is the rule being proposed?

Section NR 151.004, Wis. Adm. Code, authorizes the department to promulgate targeted performance standards if statewide performance standards and prohibitions are insufficient to achieve surface water and groundwater quality standards in the defined targeted areas and targeted performance standards would attain surface water and groundwater quality standards in those areas.

The department has found that in Silurian bedrock areas of Wisconsin, water quality standards or groundwater standards will not be attained using statewide performance standards and prohibitions but the implementation of targeted performance standards would attain water quality standards or groundwater standards. The proposed rule contains targeted performance standards.

4. Summary of the rule.

This rule identifies "Silurian bedrock" as the targeted area where certain rock formations are overlain by soils of 20 feet or less and establishes performance standards that will apply. The performance standards in the proposed rule are designed to minimize the risk for pathogen delivery to groundwater. Within the Silurian bedrock area, the rule sets forth manure spreading rates and practices that vary according to the

soil depth and texture. The most restrictive practices apply to those limited areas of the highest risk for pathogen delivery. Less restrictive requirements apply in areas with 5 to 20 feet to bedrock.

5. How does this proposal affect existing policy?

These rules are consistent with current department policy, established in s. 283.11, Wis. Stats., to protect, maintain and improve the quality and management of the waters of the state, ground and surface, public and private.

6. Has Board dealt with these issues before?

These will be the first significant revisions to NR 151 agricultural performance standards since 2010. The scope statement for these rules was approved by the board at its August 2016 meeting. The board authorized hearings at its August 2017 meeting.

7. Who will be impacted by the proposed rule? How?

CAFOs in the Silurian bedrock areas will be required to comply with the standards in the rule through their WPDES permit, regardless of any local ordinance and absent cost sharing. Large CAFOs are not eligible for cost sharing under chs. NR 153 and 154, but are required to comply with the livestock performance standards in NR 151. A cross reference to the targeted performance standard language will be added to ch. NR 243, Wis. Adm. Code.

Non-permitted farms in Silurian bedrock areas will be required to comply with the standards in the rule in certain limited situations. Where construction of appropriate best management practices is needed for compliance and those practices are eligible for cost share under chs. NR 153 and NR 154, Wis. Adm. Code, non-permitted farms will be required to comply only where cost share is offered. Certain practices are not eligible for cost share under chs. NR 153 and 154, Wis. Adm. Code.

8. Soliciting public input on economic impact synopsis

The department solicited public input on the economic impact analysis and received several comments from the Lincoln Township Board (Kewaunee Co.), Dairy Business Association (DBA), Clean Wisconsin, Midwest Environmental Advocates, and Wisconsin League of Conservation Voters. Comments received are related to the cost for implementation of the rule and the economic value of protecting drinking wells and human health. The variables used to estimate the economic impact (manure hauling, tillage, rental rates, etc.) were consistent with the recommendations from DBA and did not change our economic impact estimate. The potential costs of well replacement, illness, or property value loss resulting from groundwater contamination do not affect the cost of compliance with the proposed rule.

The department recognizes there is substantial complexity when assessing costs for complying with the proposed rule and such complexity makes it difficult to estimate all costs of compliance for multiple farms each having a different number of cropland acres with different depths of shallow bedrock soils, as well as different manure storage capacity. Some cost-share dollars will be available to cover 70 percent of the costs associated with implementing the new targeted performance standards through state grant programs.

9. Environmental Analysis

Pursuant to s. NR 150.20(2)(a)22., Wis. Adm. Code, permanent rules are integrated analysis actions and an additional environmental analysis is not required.

10. Small Business Analysis

The department's draft Economic Impact Analysis includes information on the effect on small business. In discussions with the Technical Advisory Committee, the department considered how the impact on small business could be reduced. The proposed rules allow flexibility for farmers and options for achieving compliance with the targeted performance standards.

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

1. Type of Estimate and Analysis

☒ Original ☐ Updated ☐ Corrected

2. Administrative Rule Chapter, Title and Number

NR 151 - Runoff Management and NR 243 - Animal Feeding Operations

3. Subject

WT-15-16 - New agricultural performance standards for farms that apply manure in areas of the state with shallow soils over Silurian bedrock (sensitive areas).

4. Fund Sources Affected

☐ GPR ☐ FED ☐ PRO ☐ PRS ☐ SEG ☐ SEG-S

5. Chapter 20, Stats. Appropriations Affected

6. Fiscal Effect of Implementing the Rule

☐ No Fiscal Effect ☐ Increase Existing Revenues ☐ Increase Costs
☐ Indeterminate ☐ Decrease Existing Revenues ☒ Could Absorb Within Agency's Budget
☐ Decrease Cost

7. The Rule Will Impact the Following (Check All That Apply)

☐ State's Economy ☒ Specific Businesses/Sectors
☐ Local Government Units ☐ Public Utility Rate Payers
☒ Small Businesses (if checked, complete Attachment A)

8. Would Implementation and Compliance Costs Be Greater Than \$20 million?

☐ Yes ☒ No

9. Policy Problem Addressed by the Rule

The purpose of the proposed revisions to ch. NR 151, Wis. Adm. Code, and limited incorporation by reference of those proposed revisions to ch. NR 243 is to establish agricultural nonpoint source performance standards targeted to abate nonpoint source pollution in areas of the state with shallow soils overlaying Silurian bedrock. Pursuant to s. 281.16(3)(a), Stats., the Department of Natural Resources is directed to promulgate by rule nonpoint source performance standards and prohibitions that are designed to comply with state surface water quality standards and ground water standards. The Department has found that groundwater and surface water standards will not be attained by simply implementing the statewide performance standards and prohibitions in Silurian bedrock areas and that targeted performance standards are necessary to attain groundwater and surface water standards.

10. Summary of the businesses, business sectors, associations representing business, local governmental units, and individuals that may be affected by the proposed rule that were contacted for comments.

The Department convened a technical advisory committee to provide input on the performance standards. The technical advisory committee included farm representatives, custom manure applicators, nutrient management planners, environmental advocacy groups, county land conservation departments, researchers, and DATCP, among others. The technical advisory committee did not directly coordinate with the Department on development of this EIA but discussions at technical advisory committee meetings included comments regarding potential costs.

11. Identify the local governmental units that participated in the development of this EIA.

Dane County and Kewaunee County land conservation departments participated in the technical advisory committee.

12. Summary of Rule's Economic and Fiscal Impact on Specific Businesses, Business Sectors, Public Utility Rate Payers, Local Governmental Units and the State's Economy as a Whole (Include Implementation and Compliance Costs Expected to be Incurred)

This rule package proposes agricultural performance standards that will apply in Silurian bedrock areas, including: manure prohibitions; reduced manure spreading rates; incorporation and injection requirements; fertilizer and manure application timing requirements; manure pathogen reduction requirements; soil depth verification; and manure and fertilizer setback requirements from public and private wells and from direct conduits to groundwater. Farms within the following counties may have Silurian bedrock areas; Brown, Calumet, Dodge, Door, Fond du Lac, Kenosha, Kewaunee,

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

Manitowoc, Milwaukee, Outagamie, Ozaukee, Racine, Sheboygan, Walworth, Washington, and Waukesha.

Within the Silurian bedrock area, the rule sets forth spreading rates and practices that vary according to the depth to bedrock. Not all of these practices are required to be applied together throughout the sensitive area. Instead, the practices to follow are dependent on soil depth ranges over Silurian bedrock, including 0-2 feet, 2-3 feet, 3-5 feet, and 5-20 feet. The total number of farmers affected and the total number of acres of cropland where changes in practices may be required are unknown. In addition, because the rule provides options for compliance, total costs are difficult to assess. CAFOs that operate in the Silurian bedrock area will be required to comply with the standards in the rule through their WPDES permit. Non-permitted farms that operate in the Silurian bedrock area will be required to comply in certain circumstances. Where construction of appropriate best management practices is needed for compliance and those practices are eligible for cost-sharing, non-permitted farms will be required to comply only where cost share is offered. Non-permitted farms may be required to adopt certain changes absent cost share if a local unit of government adopts a local ordinance requiring farms to adopt changes consistent with the rule. The Department has prepared a preliminary draft economic analysis for review and comment; the preliminary analysis is attached. The economic impact is estimated to be moderate (less than \$20 million).

13. Benefits of Implementing the Rule and Alternative(s) to Implementing the Rule

Implementation of the proposed rule will help protect groundwater from pathogen contamination to protect public health. Benefits to protection of groundwater and public health are significant but have not been quantified. The average cost to replace a contaminated well is \$12,000 per well. The rule includes alternatives because it provides farmers with options on how to comply. One alternative to implementing the rule is to do nothing; this alternative does not ensure that water quality standards will be met in the areas identified in the rule. Another alternative is to expand the rule provisions to apply to more sensitive areas statewide; the Department chose to propose rule revisions targeted to those areas of the state identified as most vulnerable for contamination.

14. Long Range Implications of Implementing the Rule

The protection of public health and avoidance of groundwater contamination is a long term benefit. For farmers, changes in practice may be required. For non-permitted operators, those changes will be required only if accompanied by cost share dollars for those practices that are eligible for cost share.

15. Compare With Approaches Being Used by Federal Government

The federal government does not directly regulate discharges to groundwater in Silurian bedrock areas.

16. Compare With Approaches Being Used by Neighboring States (Illinois, Iowa, Michigan and Minnesota)

This rule is consistent with neighboring states in creating manure spreading setback requirements for direct conduits to groundwater. The proposed rule is tailored to the conditions present in Wisconsin's Silurian bedrock.

17. Contact Name	18. Contact Phone Number
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This document can be made available in alternate formats to individuals with disabilities upon request.

ADMINISTRATIVE RULES
Fiscal Estimate & Economic Impact Analysis

ATTACHMENT A

1. Summary of Rule's Economic and Fiscal Impact on Small Businesses (Separately for each Small Business Sector, Include Implementation and Compliance Costs Expected to be Incurred)

See section 12 above. The impacts to small businesses are expected to be the same as impacts to other businesses.

2. Summary of the data sources used to measure the Rule's impact on Small Businesses

See section 12 above and the attached preliminary draft economic analysis.

3. Did the agency consider the following methods to reduce the impact of the Rule on Small Businesses?

- ☒ Less Stringent Compliance or Reporting Requirements
☐ Less Stringent Schedules or Deadlines for Compliance or Reporting
☐ Consolidation or Simplification of Reporting Requirements
☒ Establishment of performance standards in lieu of Design or Operational Standards
☐ Exemption of Small Businesses from some or all requirements
☒ Other, describe:

The rule allows options and flexibility for ways to comply with the new requirements.

4. Describe the methods incorporated into the Rule that will reduce its impact on Small Businesses

The requirements vary based on soil depth. The more restrictive requirements only apply to the most vulnerable areas, and become less restrictive as soil depth increases. Within each soil depth there is flexibility in compliance.

5. Describe the Rule's Enforcement Provisions

Permitted CAFO farms will be required to comply with this rule through their WPDES permit. Non permitted farms may be required to comply in limited circumstances when cost sharing is required and available through state grant programs, or when cost sharing is not required. Local units of government may implement this rule through an ordinance.

6. Did the Agency prepare a Cost Benefit Analysis (if Yes, attach to form)

☐ Yes ☒ No

Preliminary Economic Impact Analysis
WT 15-16

This rule package proposes agricultural performance standards that will apply in Silurian bedrock areas. The performance standards are designed to minimize the risk for pathogen delivery to groundwater in these areas. Silurian bedrock is located in the eastern portion of the state, including areas of Brown, Calumet, Dodge, Door, Fond du Lac, Kenosha, Kewaunee, Manitowoc, Milwaukee, Outagamie, Ozaukee, Racine, Sheboygan, Walworth, Washington and Waukesha counties.

Within the Silurian bedrock area, the rule sets forth spreading rates and practices that vary according to the depth to bedrock. Not all of these practices are required to be applied together throughout the Silurian bedrock area. Instead, the practices to follow are dependent on soil depth ranges over Silurian bedrock, including 0-2 feet, 2-3 feet, 3-5 feet and 5-20 feet. The rule provides options for compliance, depending on soil depth. The department's preliminary draft economic analysis considers the costs for various changes in practice that may result from the proposed rule requirements.

Restrictions on Manure Application

In areas with less than 2 feet of soil depth above Silurian bedrock or saturation, the rule prohibits the mechanical application of manure. Most of the croplands with less than two feet of soil over Silurian bedrock are located in Door and Kewaunee counties. Permitted CAFOs are already required to follow this prohibition, so CAFO farms will incur no additional cost. For non-permitted farms, increased costs may include the price of commercial fertilizer needed for fields where mechanical application of manure is not allowed. Other costs may include renting additional farmland on which to spread manure if a farmer cannot shift manure application to other fields. The department estimates the cost for farmers who convert to commercial fertilizer would be approximately \$150¹ per acre; the average price per acre for renting additional crop land in Wisconsin is \$134¹ per acre. These compliance options - use of commercial fertilizer and renting additional crop land - may also be used for areas with more than 2 feet of soil depth to bedrock.

Cover Crop or Pre-Tillage Requirements

For areas of the state with 2-3 feet, 3-5 feet, and 5-20 feet of soil depth above Silurian bedrock, the rule contains requirements for how producers apply liquid and/or solid manure to minimize the risk of leaching pathogens through the soil column into groundwater. Pre-tillage and incorporation or injection requirements apply unless cropland is in long term no-till or has perennial or established crops. Establishing a cover crop is a cost shareable best management practice through the state runoff management grant program. The state provides a flat rate cost share for cover crops of \$25 per acre.

Cropland that does not implement perennial or cover crops will have to be tilled prior to liquid manure application to break up macropores and reduce the risk of manure leaching through the soil column. No mechanical application of liquid manure is allowed unless pre-tillage is completed and manure is injected or incorporated within 24 hours. In areas with 2-3 feet and in areas with 3-5 feet of soil depth, no mechanical application of solid manure is allowed unless the

manure is incorporated within 72 hours. The department estimates the cost of tillage (pre-tillage or incorporation) would be approximately \$15ⁱⁱ per acre.

If a farmer chooses incorporation or injection, the rule prohibits the incorporation or injection of manure at specified depths, depending on the amount of soil above the Silurian bedrock. The department estimates the average cost to inject manure is \$80ⁱⁱⁱ per acre, while the average cost to incorporate manure with tillage equipment is \$15 per acre. Given these options, the department anticipates that farmers will choose incorporation over injection.

Reduced Application Rates

The rule provides specified manure application rates as a compliance option for all soil depths greater than 2 feet. Liquid manure application rates are based on the type of soil. Reduced application in some areas may increase the manure hauling cost to other croplands. The department estimates the increased hauling may cost approximately \$3 per acre of cropland if a farmer chooses to comply by reducing application.

Timing of Manure Application

If a farmer chooses the timing of manure application for compliance (manure must be applied within 10 days of planting or to a growing crop), additional manure storage capacity may be required. Any cost associated with holding manure for a longer time before land application would be building more manure storage, which is a cost shareable best management practice through the state runoff management grant program (cost share rate for manure storage 70%). The department estimates the cost of additional storage would be approximately \$500^{iv} per cow.

Pathogen Treatment Facilities

Other options to comply with the requirements include reducing pathogens in manure before application using pathogen treatment facilities (manure digesters and manure composting). For liquid manure the average capital cost to construct a complete digester system that reduces pathogens to 500,000 CFU/ml or less is estimated to be \$1,500 per cow^v. Given this cost, the department anticipates that producers will choose other less costly compliance options such as reduced application rates or timing of manure application.

Setback Requirements

Setbacks and restrictions apply throughout the Silurian bedrock area where manure applications are prohibited. These setbacks include the following features: community system, private system, direct conduit to groundwater, channels, closed depression and slopes draining to Silurian bedrock greater than 6% with a defined channel. Compliance actions in those areas could include increased use of commercial fertilizer and possibly the leasing of additional croplands for manure application. The department estimates the cost for farmers who convert to commercial fertilizer would be approximately \$150 per acre; the average price per acre for renting additional crop land in Wisconsin is \$134 per acre.

Summary

Based on the department's preliminary analysis, the department estimates the cost of the requirements of this rule to be a moderate economic impact (less than \$20 million). The costs would be shared through the state cost share grant programs and between cropland owners within the Silurian bedrock area.

ⁱ United State Department of Agriculture, Economic Research Service. "Commodity Costs and Returns: Corn, 2010-2015". Accessed June 6, 2017. <https://www.ers.usda.gov/data-products/commodity-costs-and-returns/>

ⁱⁱ University of Wisconsin, Eau Claire. "Wisconsin Agricultural Land Prices" <http://counties.uwex.edu/eauclaire/files/2014/04/Wisconsin-Ag-Land-Prices-2008-2013.pdf>

ⁱⁱⁱ University of Idaho Extension, 'Cost of Liquid Manure Application Systems,' Bulletin 888, 2014.

^{iv} University of Wisconsin Center for Dairy Profitability, 'Transitioning in Steps: Costs of Modernization,' February, 2005.

^v Cooperative Extension System, "Economics of Anaerobic Digesters for Processing Animal Manure," October 27, 2015. <http://articles.extension.org/pages/19461/economics-of-anaerobic-digesters-for-processing-animal-manure>



WISCONSIN LEGISLATIVE COUNCIL RULES CLEARINGHOUSE

Scott Grosz
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Legislative Council Deputy Director

CLEARINGHOUSE REPORT TO AGENCY

[THIS REPORT HAS BEEN PREPARED PURSUANT TO S. 227.15, STATS. THIS IS A REPORT ON A RULE AS ORIGINALLY PROPOSED BY THE AGENCY; THE REPORT MAY NOT REFLECT THE FINAL CONTENT OF THE RULE IN FINAL DRAFT FORM AS IT WILL BE SUBMITTED TO THE LEGISLATURE. THIS REPORT CONSTITUTES A REVIEW OF, BUT NOT APPROVAL OR DISAPPROVAL OF, THE SUBSTANTIVE CONTENT AND TECHNICAL ACCURACY OF THE RULE.]

CLEARINGHOUSE RULE 17-062

AN ORDER to create NR 151.015 (2), (7m), (8c), (8g), (8L), (8p), (8t), (8x), (15n), (15w), (17), and (18r), 151.075, and 243.143, relating to runoff management and non-point source performance standards and Concentrated Animal Feeding Operation (CAFO) rule revisions to incorporate by reference those performance standards, and affecting small business.

Submitted by **DEPARTMENT OF NATURAL RESOURCES**

08-30-2017 RECEIVED BY LEGISLATIVE COUNCIL.

09-22-2017 REPORT SENT TO AGENCY.

MSK:REL

LEGISLATIVE COUNCIL RULES CLEARINGHOUSE REPORT

This rule has been reviewed by the Rules Clearinghouse. Based on that review, comments are reported as noted below:

1. STATUTORY AUTHORITY [s. 227.15 (2) (a)]

Comment Attached

YES ☐

NO ☒

2. FORM, STYLE AND PLACEMENT IN ADMINISTRATIVE CODE [s. 227.15 (2) (c)]

Comment Attached

YES ☒

NO ☐

3. CONFLICT WITH OR DUPLICATION OF EXISTING RULES [s. 227.15 (2) (d)]

Comment Attached

YES ☐

NO ☒

4. ADEQUACY OF REFERENCES TO RELATED STATUTES, RULES AND FORMS
[s. 227.15 (2) (e)]

Comment Attached

YES ☒

NO ☐

5. CLARITY, GRAMMAR, PUNCTUATION AND USE OF PLAIN LANGUAGE [s. 227.15 (2) (f)]

Comment Attached

YES ☒

NO ☐

6. POTENTIAL CONFLICTS WITH, AND COMPARABILITY TO, RELATED FEDERAL
REGULATIONS [s. 227.15 (2) (g)]

Comment Attached

YES ☐

NO ☒

7. COMPLIANCE WITH PERMIT ACTION DEADLINE REQUIREMENTS [s. 227.15 (2) (h)]

Comment Attached

YES ☐

NO ☒



WISCONSIN LEGISLATIVE COUNCIL RULES CLEARINGHOUSE

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CLEARINGHOUSE RULE 17-062

Comments

[NOTE: All citations to “Manual” in the comments below are to the Administrative Rules Procedures Manual, prepared by the Legislative Reference Bureau and the Legislative Council Staff, dated December 2014.]

2. Form, Style and Placement in Administrative Code

a. In the rule summary, a date should be given for the deadline to submit comments on the proposed rule. [s. 1.02 (2) (a) 13., Manual.]

b. SECTIONS 1 to 12 of the proposed rule could be combined. When two or more subunits of the same rule section are affected by the same treatment, and any intervening subunits are unaffected, they may be included in the same SECTION of the proposed rule. [s. 1.04 (2) (a) 4., Manual.]

c. In s. NR 151.015 (8g), the phrase “, but not limited to” should be removed. [s. 1.01 (9) (f), Manual.]

d. In s. NR 151.015 (8l), the numbering should be changed to “(8L)” to distinguish the letter “l” from the numeral one.

e. The numbering for s. NR 151.015 (8t) “long term no till” and sub. (8x) “mechanical application” should be changed because they should come after the definition of “livestock facility” in current s. NR 151.015 (9).

f. In s. NR 151.015 (15w), the parentheses should be removed. [s. 1.01 (6), Manual.]

g. In s. NR 151.015 (17), the acronym “WGNHS” should be spelled out. [s. 1.01 (8), Manual.]

h. In s. NR 151.075 (2), the phrase “shall not” should be changed to “may not”. [s. 1.01 (2), Manual.]

i. In s. NR 151.075 (3), the sentence should be rephrased to specify whether the activities listed are prohibited. For example, it could be rephrased as the following: “Manure may not be mechanically applied...”. A similar issue occurs in the first sentences of subs. (5), (6), and (15), where the directed or prohibited nature of the action should be specified using “shall” or “may not”. [s. 1.01 (2), Manual.]

j. In s. NR 151.075 (10) (a) (intro.), the phrase “all of” should be added before “the following”. In sub. (10) (b) (intro.), the phrase “all of the following apply” should be added before the colon. The same issue occurs in subs. (11) (intro.) and (12) (intro.). In sub. (13) (intro.), the phrase “any of the following” should be inserted before the colon. In addition, each subunit within those materials should end with a period, rather than a semicolon and the word “and”. [s. 1.03 (3) and (4), Manual.]

4. Adequacy of References to Related Statutes, Rules and Forms

In s. NR 151.075 (13) (c), the phrase “as defined in s. NR 151.002 (11m)” should be added after “direct conduit to groundwater”.

5. Clarity, Grammar, Punctuation and Use of Plain Language

a. Throughout the rule analysis, the word “shall” should be changed to “must”. In addition, the notation “Wis. Stats.” should be changed to “Stats.”.

b. In s. NR 151.015 (8t), it appears that “no till” should be hyphenated. This issue also occurs in s. NR 151.075 (10) (c), (11) (c), (12) (b), (14), and (15).

c. In s. NR 151.075 (2), in order to be consistent with the rest of this section, it appears that the word “mechanical” should be added before “manure application”.

d. In s. NR 151.075 (10) (a) 1., the phrase “Solid manure is” should be added before “Incorporated”. In sub. (10) (a) 2. a., it appears that “at the” should be added before “UW A2809”. This issue also occurs in sub. (11) (a) 2. a. and (b) (intro.). In sub. (10) (a) 2. a., b., and c., it appears that “Manure” should be changed to “Solid manure”.

e. In s. NR 151.075 (12) (b), the phrase “pre-tillage or incorporation is not required if cropland or pastures meet long term no till, or has perennial or established crops” is used; however, in other parts of the rule the phrase “pre-tillage or incorporation is not required if cropland or pastures meet long term no till, or has perennial or establish crop” is used. [See, for example, sub. (12) (a) 3. b.] The rule should use either “crops” or “crop” consistently, and the entire rule should be checked for this issue. In addition, it appears that “an” or “a” should be added before “perennial”.

f. In s. NR 151.075 (13) (b), it appears that the word “and” should be changed to “or”.

g. In s. NR 151.075 (13) (d), it is unclear what a “defined channel” means. In addition, it is unclear how the prohibition in sub. (13) (d) relates to other prohibitions listed in sub. (13). For example, reading sub. (13) (a) and (d) together, is the rule intended to mean that mechanical

manure application is prohibited within 100 feet of defined channels that lead to 1,000 feet of a community water system as defined in s. NR 811.02?

h. In s. NR 151.075 (14), what is a "rain event"?

Response to Comments

Public Participation

Overview

The department conducted hearings in Green Bay and Madison on September 15, 2017. The majority of the attendees were general public indicating support of rules to protect groundwater. There were approximately 60 attendees at the Green Bay location and 25 attendees in Madison. Approximately half of the meeting attendees provided testimony.

The Dairy Business Association attended and provided comments to support the protection of groundwater, but requested updated bedrock mapping resources and more consistency with setbacks. The River Alliance and Clean Wisconsin attended and provided supporting comments and recommendations to clarify sections of the rule. There were several comments made related to increasing the rule restrictions and applying it to other areas of the state with shallow soils over carbonate bedrock. Several comments were also made regarding small farms with the majority of their spreadable acres prohibited from receiving manure (shallow soils less than 2 ft.). These comments were also submitted electronically and are summarized below.

During the public comment period, written comments were received by the general public, farmers, agronomists, Manitowoc County, Door County, Kewaunee County Wisconsin Manufactures and Commerce (WMC), Midwest Environmental Advocates (MEA), Clean Wisconsin, Dairy Business Association (DBA), River Alliance, Wisconsin Farm Bureau Federation, Clean Water Action Council, Wisconsin Pork Association, Alliance for the Great Lakes, WIB Agri-business Coalition, and the Wisconsin League of Conservation Voters. On September 22, 2017, the Wisconsin Legislative Council Rules Clearinghouse reported to the department on its review of the proposed rule package.

Comments and responses

The following is a summary of hearing testimony and written comments received during the comment period and at public hearings. They are grouped by subject area and many are paraphrased to represent similar or nearly identical comments from several people.

Wisconsin Legislative Council Rules Clearinghouse comments (17-062): All clearinghouse comments were related to form, style, placement, punctuation, or language clarity and were incorporated into the rule as suggested.

A notable clarification was made to incorporate the following Clearinghouse comment:

5g. Comment 5g. requests clarification in s. NR 151.075(13)(d) to describe how the prohibition in sub. (13)(d) relates to other prohibitions listed in sub. (13).

DNR response to comment: *The language in (13)(d) was revised to identify the setback applies to defined channels that lead to private well, community wells, and direct conduits to groundwater, not to the setback distance of private wells, community wells, and direct conduits to groundwater.*

1. The proposed rule is a good start and we commend the proposed rules for:
 - requiring that farms control the rate at which they apply manure to vulnerable areas.
 - creating larger boundaries around private wells and likely contamination points, like sinkholes and fissures, where manure could not be spread.

However, the rules don't go far enough. We ask that:

- the rules be strengthened to prohibit manure application on soil less than three feet deep over bedrock;
- the DNR map and collect geologic and water quality data in other parts of the State to prevent a crisis similar to what's happening in Kewaunee County;
- the DNR require all farms to have a winter manure spreading plan, to ensure manure is managed appropriately during vulnerable periods when the ground is frozen and runoff to waterways and groundwater is more likely.
- rule should address all sensitive soils over fractured bedrock in Wisconsin, including the southwestern part of the state.

DNR response to comment: *No change to the rule was made in regards to this comment. The main purpose of the targeted performance standards is to reduce the risk for pathogen contamination of groundwater from manure applications on shallow bedrock soils. The department recognizes there are shallow bedrock soils in other parts of the state; however the Silurian area has been identified (i.e., 2007 Karst Report, documented brown water events, groundwater research/studies) as a priority for developing a targeted performance standard for mechanically applying manure over shallow soils.*

The 250 ft. setback in the proposed rule is consistent with NR 151 definition of sites susceptible to groundwater contamination in NR 151.015(18) and is more protective than the current setback requirements in NRCS 590 (50 ft.) and NR 243 (100 ft.). The proposed rule 2 ft. prohibition of mechanical application of liquid and solid manure on fields over bedrock is more protective than NRCS 590 (allows manure application on bedrock soils less than 2 ft.) and is consistent with NR 243 prohibitions. The additional practices required for applications on bedrock soils 2-20 ft. (pathogen reduction, timing, rates, methods) help mitigate the risk to public health and groundwater contamination.

This proposed rule prohibits winter applications of manure on all bedrock soils less than 5 feet and requires compliance with the 2015 NRCS 590 standard. The 2015 NRCS 590 standard requires developing and implementing a winter spreading plan for manure applications and has 300 ft. setbacks from direct conduits to groundwater.

2. The proposed rule requiring verification of depth to bedrock is not practical to implement. We believe that in-field verification should not be required of farmers. They should be able to rely on up-to-date map data instead. A farmer should only have to do in-field verification if he or she wants to prove that the soil is deeper than maps indicate. In addition, boring holes in the soil to verify depth to bedrock will create direct conduits to groundwater.

DNR response to comment: *The option of using the maps was added to the rule. The definition of infield bedrock verification provides some options for available data that may be used to determine depth to bedrock, and would not create new conduits to groundwater. The Silurian bedrock maps are a starting point for identifying shallow bedrock areas. The targeted performance standard requires completing bedrock depth verification for 0-5 ft. bedrock soils or using Silurian bedrock map information before manure spreading to confirm map accuracy and ensure compliance with the rule. Infield bedrock verification is not required for 5-20 ft. bedrock soils. Bedrock maps are currently available for determining bedrock depths within fields. As new bedrock depth information becomes available, the DNR will work to update Silurian bedrock maps. Bedrock verification methods are technical standards which are promulgated by DATCP. The department will work with DATCP to help further define bedrock verification methods for inclusion in ATCP 50.*

NR 151.075(5) has been amended with the following to ensure infield bedrock verification does not create additional conduits to groundwater: If infield bedrock verification uses drill cores or other subsurface investigations, they shall be backfilled with soil within 72 hours of being created.

3. Infield bedrock verification is a technical standard that is needed before a performance standard can be implemented.

DNR response to comment: *Bedrock verification methods are technical standards which are promulgated by DATCP. The department will work with DATCP to help further define bedrock verification methods for inclusion in ATCP 50. Bedrock maps are currently available for determining bedrock depths within fields. Some of these maps are currently available using SnapMaps feature within SnapPlus software. As new bedrock depth information becomes available, the DNR will work to update Silurian bedrock maps.*

4. The rule needs to have consistent and practical standards to protect groundwater quality:

- The proposed 250 ft. setback from private wells is different than the setback requirement in NR 243 (100 ft).

DNR response to comment: *The 250-foot setback from private wells is consistent with the definition of "site that is susceptible to groundwater contamination" in NR 151.015(18). In addition, this setback is consistent with several existing rules that apply to the land application of pathogen containing wastes, including NR 204, 113, 214, 206 and 110. The larger setback distance provides greater protection than the 100 ft. NR 243 and 50 ft. NRCS 590 setbacks.*

- Those restrictions include various compliance options with a focus on pre-tillage, incorporation, no-till and cover crops. One of those practices proposed in the draft rule is reduced manure application rates for shallow soils in the targeted area. While this concept makes sense, we need to ensure the values in Table 1 of the proposed rule are agronomically sound while also being environmentally protective.

DNR response to comment: *The weekly manure application rates in this rule are consistent with existing rates described in NR 214 to prevent the hydraulic overloading of the soil. The rate and incorporation requirements for liquid manure reduces the risk for loss to shallow fractured bedrock areas through vertical and lateral movement and reflect the intent of the rule which is public health and groundwater protection. The exemptions for no-till, established or perennial crops and to meet T, provide flexibility for complying with the targeted standards and existing performance standards.*

5. Farm Bureau, DBA, WI Pork Association all believe that the sensitive area (Silurian bedrock) is properly defined under NR 151.004 for the creation of this targeted performance standard.

DNR response to comment: *This comment is consistent with the existing draft rule. The department believes that existing NR 151 standards have been substantially implemented statewide by way of the process of implementation described in statute and rules, NR 151 and NR 243. Statutes set forth implementation as a process for the agency to follow. If the goal for implementation were an end-result number (such as acres under a nutrient management plan), the statute and rules should have set forth that end result, rather than setting forth a process. The department recognized the Silurian area as a priority for developing a targeted performance standard for mechanically applying manure over shallow soils.*

6. WMC asserts that the comparison with approaches used by neighboring states (Illinois, Iowa, Michigan, and Minnesota) included in the Fiscal Estimate & Economic Impact Analysis does not provide sufficient detail.

DNR response to comment: *A review of other states requirements for manure applications on shallow soils over bedrock found limited similarities with the proposed rule. There were similarities in technical standards and existing rules statewide from NRCS 590, NR 151 and NR 243 that apply to timing of manure applications and setback distances to some direct conduits (wells, sinkholes). Some of these requirements appear to protect groundwater from nitrogen leaching, not manure pathogen contamination.*

- *Minnesota has no specific requirements for manure applications on shallow soils over fractured bedrock. Minnesota recommends at least 2 ft. of soil between manure and fractured bedrock and avoid fall applications of manure (N loss).*
- *Iowa requires 200 ft. setbacks from sinkholes and wells when manure is not incorporated and 0 ft. setback when manure is incorporated. There are no specific requirements for spreading manure over shallow bedrock soils in Iowa.*

- *Michigan's Generally Accepted Agricultural Management Practices (GAAMP) provide general recommendations to keep manure within the root zone of plants. GAAMPs have no specific manure setback recommendations from direct conduits (wells, sinkholes) and no recommendations for spreading manure in shallow bedrock soils.*

7. WMC asserts that the reference of available mapping tools from other agencies (NRCS, Wisconsin Geological and Natural History Survey) used in the definition of Silurian bedrock in NR 151.015(17) is delegating authority to those agencies for determining where the regulatory requirements apply.

DNR response to comment: *Section 227.21, Wis. Stats., explicitly allows an agency to adopt standards established by technical societies and organizations of recognized national standing by incorporation the standards in its rules by reference.*

Also, this rule contains no requirement to use any particular map. The map is one available tool to identify Silurian bedrock areas. Infield bedrock verification methods or Silurian bedrock map information must be used where Silurian bedrock soil depth is less than 5 feet. The department seeks to make the maps available to minimize costs to farmers, but a farmer is free to use another method to identify depth to bedrock. The rule's requirements ultimately apply based on the depth to bedrock, and not to the use of any map.

Also, those cross-referenced materials are simply a reference, and do not grant authority to other entities; the department acknowledges that even if it were to require the use of any material incorporated by reference, that requirement cannot include future amendments thereto.

8. How will farms stay in business and comply with this rule if the majority of their cropland is less than 2 ft. to bedrock and is prohibited from spreading their manure?
DNR response to comment: *Implementation of this rule will have varying impacts on farms. Where cost shareable practices are identified in technical standards, cost sharing of these practices is required for compliance with this rule. There is also a section in ch. NR 151.097 that addresses a variance to any performance standard in the rule. This section would also apply to performance standards developed under s. NR 151.004. The section identifies what conditions must be met to apply for and for the department to grant a variance.*
9. DNR must include "Implementation and enforcement procedures" language within the proposed targeted performance standard and/or revise NR 151.09 or NR 151.095 to include the proposed NR 151.75 targeted performance standards. This will ensure that the targeted performance standards can be implemented effectively and consistently within the Silurian bedrock areas of the state.
DNR response to comment: *The department agrees with this comment and has added the amendment to NR 151.09(1) for including NR 151.075 as a cropland performance standard for implementation and enforcement procedures.*

10. Definitions and some sections of the proposed rule are broad and need clarification to better understand compliance requirements related to closed depressions, defined channels, soil texture, application rates and exemptions.

DNR response to comment: The department agrees with several comments and recommendations to clarify proposed definitions and sections of the rule, including:

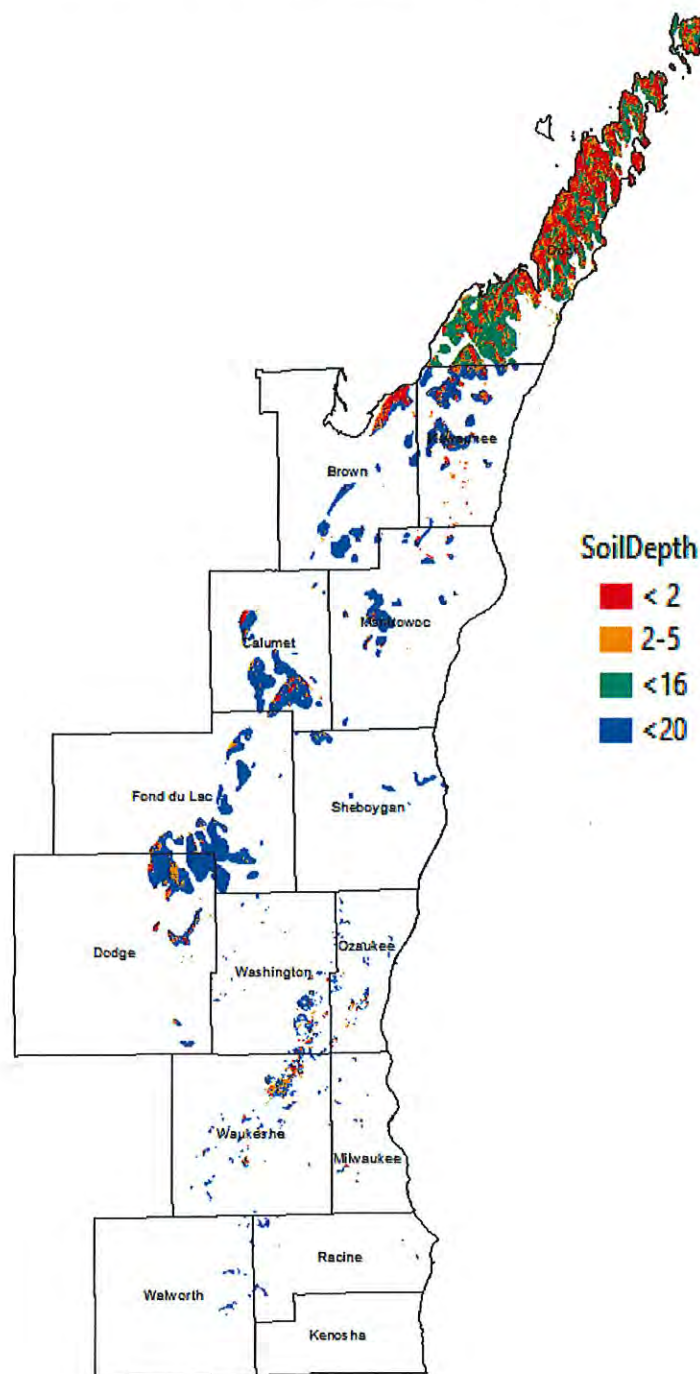
- NR 151.015(2) “Closed depression,” the definition was revised to include a description of the feature where the 100 ft. setback applies.
- NR 151.015(3) “Concentrated flow channel” definition was added that is consistent with the definition that already exists in NRCS 590.
- NR 151.015(8h) “Infield bedrock verification” definition was amended to clarify that one not all options can be used and that the uneven crop growth patterns must be linked to fracture traces in a field.
- NR 151.015(8t) “Liquid manure” definition was amended to include 11% solids for non-CAFO farms.
- NR 151.015(13j) “Mechanical application” was amended to delete the second sentence defining pasture.
- NR 151.015(17) “Silurian bedrock” definition was revised to delete reference to the Maquoketa Formation.
- NR 151.015(18g) “Soil texture” definition was added to understand the requirements for implementing reduced application rates for compliance.
- NR 151.015 (18r) “Solid manure” definition was amended to include 11% solids as the threshold for non-CAFO farms.
- NR 151.075(5) “Infield bedrock verification” was amended to include the requirement to backfill bores holes used to verify bedrock depth and prevent the creation of direct conduits to groundwater.
- NR 151.075(10), (11), and (12) were modified for easier understanding of solid and liquid manure application rates, time, methods and exemptions from pre-tillage and incorporation or injection (no-till, perennial or established crops). These changes were applied consistently throughout the soil depth ranges (2-3 ft., 3-5 ft., 5-20 ft.). Included in this modification was addition of an exemption for pre-tillage if needed to meet T.
- NR 151.075(5) and (12) were amended with notes regarding Silurian Bedrock map information.
- NR 151.075(13)(d) and NR 151.075(15) were modified to change “Defined channel” to “Concentrated flow channel”.

11. Maps are not accurate and associated requirements for the 5-20 ft. Silurian bedrock soils are impractical and should not be included in this rule. We support 0-5 ft. Silurian bedrock maps and requirements.

DNR response to comment: *The 5-20 ft. rule requirements reflect completed groundwater studies which document liquid manure can travel beyond 20 ft. depths via soil macropores and reach fractured bedrock. Karst report 2007 found soils up to 20 ft. depth to bedrock present a “high” or “significant” risk for groundwater contamination. The 5-20 ft. rule requirements provide more flexibility and are less*

stringent than the 0-5 ft. rule requirements while providing reasonable protections of public health and groundwater quality.

Bedrock maps are currently available for determining bedrock depths within fields for 0-2 ft., 2-5 ft., and 5-20 ft. for all Silurian bedrock counties except Door Co. (5-16 ft.). The DNR has collected and then updated the 20 ft. Silurian bedrock maps with more current information (see map below). As additional bedrock depth information becomes available, the DNR will update maps accordingly.



The statement of scope for this rule, SS 064-16, was approved by the Governor on July 13, 2016, was published in Register No. 727 A3 on July 18, 2016, and was approved by the Natural Resources Board on August 3, 2016.

ORDER OF THE STATE OF WISCONSIN NATURAL RESOURCES BOARD CREATING RULES

The Wisconsin Natural Resources Board proposes to **amend** NR 151.09(1); to **create** NR 151.015 (2), (2m), (7m), (8d), (8h), (8p), (8t), (11m), (13j), (15n), (15w), (17), (18g), (18r), (22m), NR 151.075, and NR 243.143 relating to runoff management and non-point source performance standards and Concentrated Animal Feeding Operation (CAFO) rule revisions to incorporate by reference those performance standards, and affecting small business.

WT-15-16

Analysis Prepared by the Department of Natural Resources

1. Statutes Interpreted: ss. 281.15, 281.16 and 283.31, Stats.

2. Statutory Authority: ss. 281.16(3)(a), 283.11, 283.31, 160.19 and 227.11(2)(a), Stats.

3. Explanation of Agency Authority: Pursuant to s. 281.15, Stats., the department shall set water quality standards to be applicable to the waters of the state. Those water quality standards appear in chs. NR 102 through NR 105, Wis. Adm. Code, for surface water quality standards and ch. NR 140, Wis. Adm. Code, for groundwater quality standards.

Pursuant to s. 281.16(3)(a), Stats., the department, in consultation with the department of agriculture, trade and consumer protection (DATCP), is directed to promulgate by rule performance standards and prohibitions for agricultural facilities and agricultural practices that are designed to comply with state surface water quality standards and groundwater quality standards. Chapter NR 151, Wis. Adm. Code, establishes, among other things, performance standards and prohibitions for agricultural facilities and practices designed to achieve water quality standards.

Pursuant to ss. 283.11 and 283.31(3), Stats., the department is authorized to promulgate rules to administer the WPDES permit program and to include conditions in WPDES permits that are necessary to achieve compliance with surface water and groundwater quality standards.

Pursuant to s. 160.19, Stats., authorizes the department to promulgate rules for facilities, activities and practices affecting groundwater which are designed to minimize the level of substances in groundwater and to maintain compliance with preventive action limits for groundwater standards to the extent technically and economically feasible. Section 160.19(4), Stats., directs the agency to review and revise its rules, if necessary, to achieve the objectives of s. 160(19)(2) and (3), Stats., regarding compliance with preventive action limits and enforcement standards.

Pursuant to s. 227.11(2)(a), Stats., the department has general authority to promulgate rules to administer the specific statutory authority granted in chs. 281 and 283, Stats.

4. Related Statutes or Rules: Section NR 151.004, Wis. Adm. Code, authorizes the department to promulgate targeted performance standards if statewide performance standards and prohibitions are insufficient to achieve surface water and groundwater quality standards in the defined targeted areas and targeted performance standards would attain surface water and groundwater quality standards in those

areas.

Section NR 151.002(33), Wis. Adm. Code, defines a “performance standard” as a narrative or measurable number specifying the minimum acceptable outcome for a facility or practice.

Section NR 151.002(44), Wis. Adm. Code, defines “targeted performance standard” as a performance standard that will apply in a specific area, where additional practices beyond those contained in ch. NR 151 are necessary to meet water quality standards.

The department has found that in Silurian bedrock areas of Wisconsin, water quality standards or groundwater standards will not be attained using statewide performance standards and prohibitions but the implementation of targeted performance standards would attain water quality standards or groundwater standards. The proposed rules contain targeted performance standards.

Pursuant to s. 281.16(3), Stats., DATCP shall develop or specify the best management practices, conservation practices or technical standards used to demonstrate compliance with a performance standard developed under s. NR 151.004, Wis. Adm. Code. Section NR 151.002(45), defines “technical standard” as a document that specifies design, predicted performance and operation and maintenance specifications for a material, device or method. The department has consulted with DATCP in the development of the proposed rules and DATCP is expected to promulgate its related implementation rules in ch. ATCP 50, Wis. Adm. Code, Soil and Water Resource Management Program.

Chapter NR 243, Wis. Adm. Code, regulates Concentrated Animal Feeding Operations (CAFOs), which are farms required to obtain a Wisconsin Pollutant Discharge Elimination System (WPDES) permit under s. 283.31(3), Stats.

Section 283.31, Stats., provides authority to include terms and conditions in a WPDES permit to comply with water standards, ground water standards and federal requirements.

Section 283.13(5), Stats., provides authority to include more stringent limitations in WPDES permits when necessary to meet water quality standards or other federal or state requirements.

Section 92.15(2), Stats., provides that a local unit of government may enact regulations of livestock operations that are consistent with and do not exceed the performance standards, prohibitions, conservation practices and technical standards under s. 281.16(3), Stats.

Section 281.16(3)(e), Stats., provides that an existing facility is not required to comply with the agricultural performance standards or prohibitions unless cost sharing is made available.

Section 281.16(3)(e), Stats., states that the department shall promulgate criteria for determining whether cost sharing is available under s. 281.65, Stats.

Section 281.65(1), (4)(e) and (8), Stats., provides authority for the department to promulgate rules regarding eligible costs related to compliance with agricultural nonpoint source performance standards, specifications and best management practices.

Chs. NR 153 and 154, Wis. Adm. Code, identify grant programs, best management practices and cost share conditions to implement the performance standards in ch. NR 151, Wis. Adm. Code.

5. Plain Language Analysis: The department has found that, in areas of the state where Silurian bedrock is present, groundwater and surface water standards will not be attained by implementing the statewide

agricultural performance standards and prohibitions in ch. NR 151, Wis. Adm. Code. This is because Silurian bedrock has the capacity to allow rapid transport of contaminants without attenuating those contaminants. Silurian bedrock is located in the eastern portions of the state, including areas in Brown, Calumet, Dodge, Door, Fond du Lac, Kenosha, Kewaunee, Manitowoc, Milwaukee, Outagamie, Ozaukee, Racine, Walworth, Washington and Waukesha counties.

This rule identifies “Silurian bedrock” as the targeted area where certain rock formations are overlain by soils of 20 feet or less and establishes performance standards that will apply. The performance standards in the proposed rule are designed to minimize the risk for pathogen delivery to groundwater. Within the Silurian bedrock area, the rule sets forth manure spreading rates and practices that vary according to the soil depth and texture. The most restrictive practices apply to those limited areas of the highest risk for pathogen delivery. Less restrictive requirements apply in areas with 5 to 20 feet to bedrock.

Before mechanically applying manure in the Silurian bedrock area, the proposed rule requires a farmer to verify the depth of soils to bedrock where County soil maps provide an initial indication of less than 5 feet of depth to bedrock. The farmer’s field verification will establish the boundary of areas where the depth is less than 5 feet and what that depth actually is. This will determine which practices the farmer will need to employ to apply manure on those fields. The methodology to verify depth to bedrock (such as number of borings per acre, time of year taken, etc.) or tools available for this effort is a technical standard, and so will be developed by DATCP rather than DNR. Representatives from DATCP have worked closely with the department in the development of this rule and DATCP is expected to promulgate in ch. ATCP 50 the best management practices, conservation practices or technical standards used to demonstrate compliance with this rule.

CAFOs in the Silurian bedrock areas will be required to comply with the standards in the rule through their WPDES permit, regardless of any local ordinance and absent cost sharing. Large CAFOs are not eligible for cost sharing under chs. NR 153 and 154, but are required to comply with the livestock performance standards in NR 151. A cross reference to the targeted performance standard language will be added to ch. NR 243, Wis. Adm. Code.

Non-permitted farms in Silurian bedrock areas will be required to comply with the standards in the rule in certain limited situations. Where construction of appropriate best management practices is needed for compliance and those practices are eligible for cost share under chs. NR 153 and NR 154, Wis. Adm. Code, non-permitted farms will be required to comply only where cost share is offered. Certain practices are not eligible for cost share under chs. NR 153 and 154, Wis. Adm. Code. Non-permitted farms may be required to adopt certain changes absent cost share if a local unit of government adopts a local ordinance requiring farms to adopt changes consistent with the rule.

6. Summary of, and Comparison with, Existing or Proposed Federal Statutes and Regulations:

The federal government does not directly regulate discharges to groundwater in Silurian bedrock areas.

7. Comparison with Similar Rules in Adjacent States: A review of other states requirements for manure applications on shallow soils over bedrock found limited similarities with the proposed rule. There were similarities in technical standards and existing rules statewide from NRCS 590, NR 151 and NR 243 that apply to timing of manure applications and setback distances to some direct conduits (wells, sinkholes). Some of these requirements appear to protect groundwater from nitrogen leaching, not manure pathogen contamination.

- Minnesota has no specific requirements for manure applications on shallow soils over fractured bedrock. Minnesota recommends at least 2 ft. of soil between manure and fractured bedrock and avoid fall applications of manure (N loss).
- Iowa requires 200 ft. setbacks from sinkholes and wells when manure is not incorporated and 0 ft.

setback when manure is incorporated. There are no specific requirements for spreading manure over shallow bedrock soils in Iowa.

- Michigan's Generally Accepted Agricultural Management Practices (GAAMP) provide general recommendations to keep manure within the root zone of plants. GAAMPs have no specific manure setback recommendations from direct conduits (wells, sinkholes) and no recommendations for spreading manure in shallow bedrock soils.

8. Summary of Factual Data and Analytical Methodologies Used and How Any Related Findings Support the Regulatory Approach Chosen:

The department convened a Technical Advisory Committee to discuss current NR 151 performance standards and groundwater conditions in sensitive areas, including Silurian bedrock areas of the state. The department identified Silurian bedrock as highest priority as a targeted performance standard area.

9. Analysis and Supporting Documents Used to Determine the Effect on Small Business or in Preparation of an Economic Impact Report:

The department has prepared a preliminary draft Economic Impact Analysis that includes cost estimates based on available cost data.

10. Effect on Small Business (initial regulatory flexibility analysis): The department's draft Economic Impact Analysis includes information on the effect on small business. In discussions with the Technical Advisory Committee, the department considered how the impact on small business could be reduced. The proposed rules allow flexibility for farmers and options for achieving compliance with the targeted performance standards.

11. Agency Contact Person: Mike Gilbertson, Water Resources Management Specialist, Wisconsin Department of Natural Resources, P.O. Box 7921, WT/3, Madison, Wisconsin 53707, mike.gilbertson@wisconsin.gov.

12. Deadline for Written Comments: Written comments were submitted to the agency contact person, listed above, by October 4, 2017.

SECTION 1. NR 151.015(2) is created to read:

NR 151.015(2) "Closed depression" means a topographical basin where water ponds to a seasonal high water mark, has no external drainage, and drainage may occur either through direct conduits to groundwater or low areas where water ponds and infiltrates into the groundwater. Closed depressions may be identified using topographic maps and visual interpretation, ArcGIS tools, or other methods. A seasonal high water mark may include, but is not limited to, areas that collect and retain water for extended time periods (days or weeks) that result in areas of reduced or no crop growth.

NR 151.015(2m) is created to read:

NR 151.015(2m) "Concentrated flow channel" means 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. Concentrated flow channel may also include non-vegetated channels caused by ephemeral erosion, intermittent streams, drainage ditches and drainage ends identified on the NRCS soil survey and may be identified as contiguous up-gradient deflections of contour lines on the USGS 1:24,000 scale topographic map.

NR 151.015(7m) is created to read:

NR 151.015(7m) “Established crop” means a growing annual crop, perennial crop or cover crop that provides vegetative cover of the soil.

NR 151.015(8d) is created to read:

NR 151.015(8d) “Incorporation” has the meaning given in s. NR 243.03(28).

NR 151.015(8h) is created to read:

NR 151.015(8h) “Infield bedrock verification” means determining bedrock depth using available data which may include well construction reports, location of drill cores or other subsurface investigations, location of quarries and natural bedrock outcrops, geophysical investigations, and uneven crop growth patterns that are linked to fracture traces in the field.

NR 151.015(8p) is created to read:

NR 151.015(8p) “Injection” has the meaning given in s. NR 243.03(29).

NR 151.015(8t) is created to read:

NR 151.015(8t) “Liquid manure” has the meaning given in s. NR 243.03(32) when applied to facilities subject to ch. NR 243, Wis. Adm. Code and the meaning given in UW A2809 for all other agricultural facilities where manure is generated.

NR 151.015(11m) is created to read:

NR 151.015(11m) “Long term no-till” means no-till farming that has been implemented a minimum of 3 consecutive years.

NR 151.015(13j) is created to read:

NR 151.015(13j) “Mechanical application” means surface application, injection or incorporation of manure on cropland or pastures using manure hauling vehicles or equipment.

NR 151.015(15n) is created to read:

NR 151.015(15n) “Pathogens” has the meaning given in s. NR 204.03(38).

NR 151.015(15w) is created to read:

NR 151.015(15w) “Pre-tillage” means using mechanical equipment to reduce soil preferential flow paths, worm holes, root holes and cracks by turning and mixing the soil prior to and at least 2 inches below the depth of manure application.

NR 151.015(17) is created to read:

NR 151.015(17) “Silurian bedrock” means the area in Wisconsin where the bedrock consists of Silurian dolomite with a depth to bedrock of 20 feet or less. This area comprises portions of the following counties: Brown, Calumet, Dodge, Door, Fond du Lac, Kenosha, Kewaunee, Manitowoc, Milwaukee, Outagamie, Ozaukee, Racine, Sheboygan, Walworth, Washington and Waukesha. Areas where Silurian bedrock occurs in Wisconsin can be identified by the most current NRCS, Wisconsin Geological Natural History Survey, department of agriculture, trade and consumer protection, department of natural resources, county maps and/or infield bedrock verification methods.

NR 151.015(18g) is created to read:

NR 151.015(18g) “Soil texture” means the surface texture of the Silurian bedrock soil map unit.

NR 151.015(18r) is created to read:

NR 151.015(18r) “Solid manure” has the meaning given in s. NR 243.03(58) when applied to facilities subject to ch. NR 243, Wis. Adm. Code and the meaning given in UW A2809 for all other agricultural facilities where manure is generated.

NR 151.015(22m) is created to read:

NR 151.015(22m) “UW A2809” means the 2012 version of the University of Wisconsin – Extension Nutrient Application Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin (A2809).

SECTION 2. NR 151.075 is created to read:

NR 151.075 Silurian bedrock performance standards. (1) All crop producers and livestock producers that mechanically apply manure directly or through contract or other agreement to cropland or

pasture areas that meet the definition of Silurian bedrock under s. NR 151.015(17) must comply with this section.

(2) Mechanical manure application may not cause the fecal contamination of water in a well.

(3) Manure may not be mechanically applied on areas of cropland or pastures that have 24 inches or less of separation between the ground surface and apparent water table.

(4) Manure must be applied in conformance with a nutrient management plan that meets the requirements under all the following:

(a) The plan must be consistent with s. NR 151.07.

(b) The plan must be consistent with NRCS Technical Standard 590, dated December 2015.

(c) The plan must be designed and implemented consistent with this section to manage manure so as to reduce the risk of pathogen delivery to groundwater and prevent exceedances of groundwater water quality standards.

(d) The plan must use NRCS soil survey maps/information or other methods as a planning tool to identify Silurian bedrock within or adjacent to cropland and pastures.

(5) Manure may not be mechanically applied on croplands or pastures until infield bedrock verification or Silurian bedrock map information is used to identify areas where the Silurian bedrock soil depth is less than 5 feet. If infield bedrock verification uses drill cores or other subsurface investigations, they must be backfilled with soil within 72 hours of being created.

Note: Silurian bedrock map information developed by the department of agriculture, trade and consumer protection and/or department of natural resources, may be used alone or in combination to meet the requirements of this section.

Note: Silurian bedrock map information, available from the University of Wisconsin department of soil science, can be found at <https://snapplus.wisc.edu/maps/>.

(6) Manure may not be mechanically applied on croplands or pastures where the Silurian bedrock soil depth is less than 5 feet until such fields are evaluated and ranked for risk of pathogen

delivery to groundwater. Areas determined to have a high risk for pathogen delivery to groundwater must be avoided or must be lowest priority for manure application.

(7) Mechanical application of manure and headland stacking of manure is prohibited on soils with 5 feet or less to Silurian bedrock when soils are frozen or snow covered.

(8) Mechanical application of manure is prohibited within Silurian bedrock having soil depths less than 5 feet when rainfall greater than one inch is forecast within 24 hours of planned application.

(9) Mechanical application of manure is prohibited for soils with less than 2 feet to Silurian bedrock.

(10) For soils with 2 to 3 feet to Silurian bedrock, all the following apply:

(a) No mechanical application of solid manure unless all the following are met:

1. Solid manure is incorporated within 72 hours to no more than 4 inches below ground.

2. At least one of the following is implemented:

a. Solid manure is applied at a rate no greater than 15 tons/acre/year, or the rate that supplies the crop nitrogen recommendation from UW A2809, whichever is less.

b. Solid manure is applied in compliance with UW A2809 and within 10 days of the planting date or applied on a perennial or established crop.

c. Solid manure is composted or treated to reduce pathogen levels via practices to a fecal coliform bacteria density of less than 500,000 colony-forming units or most probable number per gram total solids on a dry weight basis.

(b) No mechanical application of liquid manure unless all the following are met:

1. Pre-tillage is completed, unless exempt under sub. (c) or (d);

2. Liquid manure is injected or incorporated within 24 hours to no more than 4 inches below ground, unless exempt under sub. (c).

3. At least one of the following is implemented:

a. Total liquid manure application is applied in compliance with UW A2809, or limited to Table 1, whichever is less, to prevent hydraulic overloading of the soil.

Table 1. Silurian Bedrock Maximum Liquid Manure Application Rates			
Soil Texture	2 to 3 Feet Depth (gal/ac/yr)	3 to 5 Feet Depth (gal/ac/wk)	5 to 20 Feet Depth (gal/ac/wk)
Sand	6,750	6,750	13,500
Sandy Loam	13,500	13,500	27,000*
Loam	13,500	13,500	27,000*
Silt Loam	13,500	13,500	27,000*
Clay Loam	13,500	13,500	20,000*
Clay	6,750	6,750	13,500

*It is anticipated that this rate would exceed the UW A2809 annual (crop year) application rate.

b. Liquid manure is applied in compliance with UW A2809 and within 10 days of the planting date or applied on a perennial or established crop.

c. Liquid manure is treated to substantially reduce pathogen levels via practices to a fecal coliform bacteria density of less than 500,000 most probable number or colony-forming units per 100 milliliter sample.

(c) Pre-tillage, incorporation or injection is not required if cropland or pastures meet long term no-till or have a perennial or established crop. Each surface application of liquid manure must not exceed 6,750 gallons per acre.

(d) Pre-tillage is not required if demonstrated to the department that a field cannot meet s. NR 151.02 over an eight-year crop rotation using a combination of the following practices: tillage, crops, contouring, filter strips, or cover crops.

(11) For soils with 3 to 5 feet to Silurian bedrock, all the following apply:

(a) No mechanical application of solid manure unless all the following are met:

1. Incorporated within 72 hours to no more than 6 inches below ground.

2. At least one of the following is implemented:

a. Manure is applied in accordance with UW A2809 annual application rate, or at a rate of 15 tons/acre/year, whichever is less.

b. Manure is applied in compliance with UW A2809 and within 10 days of the planting date or applied on a perennial or established crop.

c. Manure is composted or treated to reduce pathogen levels via practices to a fecal coliform bacteria density of 500,000 colony-forming units, or most probable number per gram total solids on a dry weight basis.

(b) No mechanical application of liquid manure unless all the following are met:

1. Pre-tillage is completed unless exempt under sub. (c) or (d).

2. Liquid manure is injected or incorporated within 24 hours to no more than 6 inches below ground, unless exempt under sub. (c).

3. At least one of the following is implemented:

a. Total liquid manure application is applied in compliance with UW A2809, or limited to sub.

(10)(b)3. Table 1 rates, whichever is less, to prevent hydraulic overloading of the soil.

b. Liquid manure is applied in compliance with UW A2809 and within 10 days of the planting date or applied on a perennial or established crop.

c. Liquid manure is treated to substantially reduce pathogen levels via practices to a fecal coliform bacteria density of less than 500,000 most probable number or colony-forming units per 100 milliliter sample.

(c) Pre-tillage, incorporation or injection is not required if cropland or pastures meet long term no-till or have a perennial or established crop. Each surface application of liquid manure must not exceed 6,750 gallons per acre.

(d) Pre-tillage is not required if demonstrated to the department that a field cannot meet s. NR 151.02 over an eight-year crop rotation using a combination of the following practices: tillage, crops, contouring, filter strips, or cover crops.

(12) For soils with 5 to 20 feet to Silurian bedrock, all the following apply:

(a) No mechanical application of liquid manure unless all the following are met:

1. Pre-tillage is completed unless exempt under sub. (b) or (c).

2. Liquid manure is injected or incorporated within 24 hours to no more than 6 inches below ground, unless exempt under sub. (b).

3. At least one of the following is implemented:

a. Total liquid manure application is applied in compliance with UW A2809, or limited to sub. (10)(b)3. Table 1 rates, whichever is less, to prevent hydraulic overloading of the soil.

b. Liquid manure is applied in compliance with UW A2809 and within 10 days of the planting date or applied on a perennial or established crop.

c. Liquid manure is treated to substantially reduce pathogen levels via practices to a fecal coliform bacteria density of less than 500,000 most probable number or colony-forming units per 100 milliliter sample.

(b) Pre-tillage, incorporation or injection is not required if cropland or pastures meet long term no-till or have a perennial or established crop. Each surface application of liquid manure must not exceed 10,000 gallons per acre.

(c) Pre-tillage is not required if demonstrated to the department that a field cannot meet s. NR 151.02 over an eight-year crop rotation using a combination of the following practices: tillage, crops, contouring, filter strips, or cover crops.

Note: Silurian bedrock map information for soils with 5 to 20 feet to Silurian bedrock, developed by the department of agriculture, trade and consumer protection and/or department of natural resources, may be used alone or in combination to meet the requirements of this section.

(13) Mechanical manure applications are prohibited within any of the following.

(a) 1000 feet of a community water system as defined in s. NR 811.02.

(b) 250 feet of a private water system or a non-community water system as defined in s. NR 812.07.

(c) An area within 300 feet upslope or 100 feet downslope of a direct conduit to groundwater as defined in s. NR151.002(11m).

(d) 100 feet of a concentrated flow channel that leads to a water system included in sub. (a) or (b) or direct conduit to groundwater in sub. (c).

(14) Mechanical manure applications are prohibited on or within 100 feet of Silurian bedrock in a closed depression unless the manure is injected or incorporated within 24 hours or prior to precipitation capable of producing runoff, whichever comes first. The prohibition of mechanical application of manure does not apply to areas following long term no-till practices or with a perennial or established crop.

(15) No surface application of manure on slopes of 6 percent or greater in cropland and pasture areas that have concentrated flow channels that drain to a closed depression in Silurian bedrock, unless the material is incorporated within 24 hours or prior to precipitation capable of producing runoff, whichever comes first. The prohibition of surface application of manure does not apply to areas following long term no-till practices or with a perennial or established crop.

(16) Practices must retain land applied manure on the soil where they are applied with minimal movement to maintain setback distances specified in subs. (13) and (14).

SECTION 3. NR 151.09 is amended to read:

NR 151.09. Implementation and enforcement procedures for cropland performance standards. (1) Purpose. The purpose of this section is to identify the procedures the department will follow in implementing and enforcing the cropland performance standards pursuant to ss. 281.16 (3) and 281.98, Stats. This section will also identify circumstances under which an owner or operator of cropland is required to comply with the cropland performance standards. In this section, “cropland performance standards” means performance standards in ss. NR 151.005, 151.02, 151.03, 151.04, ~~and~~ 151.07, and 151.075.

SECTION 4. NR 243.143 is created to read:

NR 243.143. Silurian bedrock performance standards. Owners or operators that mechanically apply manure directly or through contract or other agreement to cropland or pasture areas that meet the definition of Silurian bedrock under s. NR 151.015(17) must comply with s. NR 151.075.

SECTION 5. EFFECTIVE DATE. This rule takes effect on the first day of the month following publication in the Wisconsin Administrative Register as provided in s. 227.22 (2) (intro.), Stats.

SECTION 16. BOARD ADOPTION. This rule was approved and adopted by the State of Wisconsin Natural Resources Board on [DATE].

Dated at Madison, Wisconsin _____.

STATE OF Wisconsin DNR
DEPARTMENT OF NATURAL RESOURCES

BY _____
Daniel L. Meyer, Secretary

(SEAL)