



Matt Blunt, Governor • Doyle Childers, Director

## DEPARTMENT OF NATURAL RESOURCES

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April 4, 2008

Water Docket  
Environmental Protection Agency  
Mail Code 2822T  
1200 Pennsylvania Avenue, NW.  
Washington, DC 20460  
Attention: Docket ID No. OW-2005-0037

To Whom It May Concern:

We appreciate the opportunity to comment on the U. S. Environmental Protection Agency's "Revised National Pollutant Discharge Elimination System Permit Regulations for Concentrated Animal Feeding Operations; Supplemental Notice of Revised Rulemaking" (Water Docket ID No. OW-2005-0037) (Notice). This letter is a joint submission from the Missouri Department of Agriculture, the Missouri Department of Natural Resources and the Missouri University Extension Commercial Agriculture Program at the University of Missouri. These three agencies collaborate on agricultural and nutrient management issues in Missouri. More specific comments are included in the appendix attached to this letter.

We are disappointed that EPA has not chosen to share all the regulatory language in this Notice. Even after participating in the EPA Webcast and the ASIWPCA conference call, we continue to have significant questions as to how EPA proposes to implement some aspects of this Notice. Recognizing the need for EPA to finish this rulemaking in a prompt manner, Missouri did not request an extension of this comment period but encourages EPA to offer a short comment period once the complete regulatory language is available. As the delegated authorities, state regulatory agencies will likely be able to point to any problematic language and help EPA avoid implementation difficulties as states have done in the past on nutrient management planning.

We are very supportive and appreciative of EPA's inclusion of a narrative option for the Nutrient Management Plan (NMP) in its Notice. Missouri has highly variable weather conditions from year to year and within a single year. The narrative approach provides the highest level of protection of water quality while affording producers the necessary flexibility to choose cropping patterns and to make the wisest use of the nutrients available during the five-year cycle. We have always favored the use of agronomic rates as the basis for manure and litter applications. The narrative approach provides the producers the best tools for proper application based on crop needs without the onus of repeated public notice requirements when weather or other factors require agronomically-justified adjustments to be made to nutrient application or crop choice within a permit cycle. Because rates can be adjusted to crop needs without the delays inherent in

public notice and review, the narrative method makes it easier to follow best management practices and to adjust application rates within the permit period to meet agronomic needs. Missouri's recommended changes in the soil testing requirements (as outlined in the appendix) reflect the fact that testing need only occur every few years if the narrative approach is used except when the NMP indicates a potential for unjustified nutrient accumulation. These changes could be easily accommodated into the proposed regulation.

In contrast, Missouri has some serious concerns about other aspects of EPA's proposals for implementing NMP's. While the Notice includes a clear description of the principles of nutrient management, the current text does not provide a consistent, proper process for determining a manure application rate. Only the narrative approach is consistent with Missouri's "agronomical needs" approach to nutrient management, an approach jointly created by our staffs and those of the Natural Resources Conservation Service here in Missouri. The linear approach does not provide a rational method for accounting for annual manure test results and, because it establishes only maximum application rates, would not be as protective of water quality in situations when nutrient uptake by plants is less than estimated at the start of the permit cycle. While the matrix approach provides additional flexibility to producers compared to the linear approach, it also fails to address the complexities inherent in adjusting manure application rates over a five-year timeframe. As such, Missouri does not feel that either of these approaches would be protective of water quality and can not support their use in Missouri.

The methods for implementing the NMP and the definition of the "terms" of the NMP that need to be included in the permit application and subject to public notice are still unclear. For the narrative approach Missouri is strongly supportive of an interpretation that allows the methodologies (sampling, measurement and agronomic calculations) to be used to define the "terms" of the NMP. This approach would provide three advantages. First, producers in Missouri would be able to meet this requirement readily by choosing standard methods that are jointly produced and used by the Natural Resources Conservation Service, the Missouri Department of Natural Resources and the University of Missouri to meet both agricultural and environmental needs. Second, an NMP based on these standard methods would be able to streamline the review process without requiring the unreasonable additional review burden on Missouri. Finally, after some educational effort such an approach would provide the public with an accessible method for understanding and reviewing the terms of the NMP.

Missouri encourages EPA to consider some flexibility in allowing operators to land apply nutrients on fields not included in their nutrient management plan. If the narrative approach is being used, the application of manure or litter on a newly identified field, if done under the terms of the existing nutrient management plan, should be as protective of water quality as any land application that is done on lands expressly listed in the permit. This is especially true if the newly added acres are within the same watershed as the existing application area. The public notice provisions of the proposed regulation would unnecessarily delay the availability of additional acreage with no water quality benefit under EPA's proposed system. While wholesale changes in application areas would constitute a significant change in the permit and warrant public notice, smaller scale changes do not rise to that level of concern and should be accommodated accordingly.

April 4, 2008

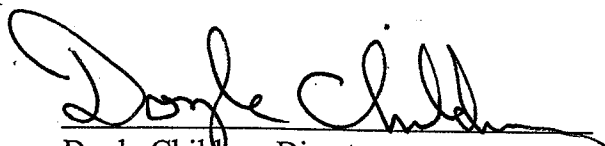
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Missouri can not provide a well-informed comment on EPA's specific proposal on certification because the conditions that would allow a producer to qualify are still only vaguely defined. The most significant operational difference between a certification and permit appears to be that an operator choosing to become certified would forfeit the ability to take advantage of the operational flexibility provided by a permit during extreme wet weather. We strongly recommend that EPA make every effort to make the distinction between a permit and certification very clear to producers who will be facing a decision as to whether to continue permit coverage or to seek certification for their operations. Our staffs will coordinate efforts to do so in Missouri.

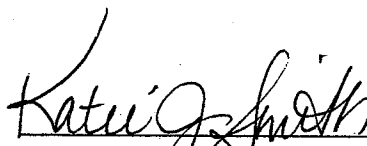
EPA specifically asked for comment on the February 27, 2009 deadline for implementation. This deadline is completely unrealistic given that states and operators still do not have a clearly defined NMP, a definition of the "terms of the NMP" for inclusion in the permit, or a method for determining whether certification is applicable to any specific operation. State rulemaking generally takes at least one year and, given the complexity of the issues and the potential for as many as three different NMP methodologies, rulemaking for this topic will likely take even longer. We strongly urge EPA to delay implementation for eighteen months to allow states the time to work with stakeholders, as encouraged by EPA, to promulgate state rulemaking. Such a delay would also provide a much more reasonable timeframe for producers to judge which method of nutrient management planning is best for them and to meet all the requirements of the NMP method chosen.

Thank you once again for the opportunity to comment. If you have any questions about these comments please contact Darrick Steen of the Missouri Department of Natural Resources. He can be reached at [darrick.steen@dnr.mo.gov](mailto:darrick.steen@dnr.mo.gov) or at (573) 571-1403.

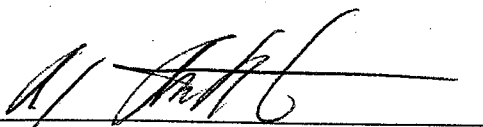
Sincerely,



Doyle Childers, Director  
Department of Natural Resources



Katie Smith, Director  
Department of Agriculture



Rex Ricketts, Director  
University of Missouri Extension  
Commercial Agriculture Program

Enclosure

## Appendix - Missouri Comments on Water Docket ID No. OW-2005-0037

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### I. Key recommendations

- We commend EPA for a clear description of the principles of nutrient management in the 2008 Notice but the current text provides a flawed picture of the process of determining a manure application rate.
- In the revised rule EPA should clearly state and endorse the concept that a defined decision map will lead to a predictable determination of a field-specific maximum allowable manure application rate.
- We fully support the narrative approach as the most protective of water quality while giving the CAFO operator the ability to adjust manure application strategies in a predictable way in response to the inevitable changes in physical and economic environments during the term of the permit.
- We suggest the following wording in the narrative approach for phosphorus soil testing:  
A key difference of this approach is that it would require additional soil testing for phosphorus if manure applications are planned on fields where phosphorus application have already exceeded recommended or planned removal rates for the planning cycle. This ensures that all manure applications fall under the terms of the permit that require phosphorus applications are based on current soil test information.
- The linear approach should be eliminated because it does not provide a rational method for accounting for annual manure test results and is less protective of water quality.
- The matrix approach should be eliminated because the approach provides little benefit to the farmer while failing to address the real complexities of adjusting manure application rates.
- We support EPA efforts revise the terms used to define changes to the nutrient management plan in the 2008 final rule. But the revisions must include specific wording clearly stating that substantial changes to narrative approach only occur when the operation changes the system used to determine maximum allowable manure application rates.

### II. The nutrient management planning process.

To be successful, the nutrient management requirements of the CAFO rule must be based on an accurate understanding of nutrient management principles and the nutrient management process. The 2008 draft supplemental notice of proposed rule making (Notice) has made significant and important steps toward accurately defining principles of nutrient management process compared to the 2006 proposal. Unfortunately these statements are followed by a poorly constructed and inaccurate description of the process used by nutrient management planners to determine a rate of manure application for a specific field. This over-simplification of the process used to develop manure application rates leads directly to some of the flawed logic used to develop the approaches for expressing terms of the nutrient management plan.

EPA is to be commended for carefully considering comments submitted in 2006 about nutrient management planning and endorsing an accurate description of the key principles in the 2008 proposed rule preamble. The proposed rule preamble correctly states that

- “Rates of application are field-specific and are designed to ensure that crops receive sufficient nutrients to meet yield goals, while minimizing the amounts of nutrients that could be transported from the field.” (FR, 2008; pg. 12329)
- “... rates of application depend on the information on which they are based, such as information about the field, crops, and nutrient content of the manure.” (FR, 2008; pg. 12329)
- “... this information can change, and in order to address changing circumstances during the period of a permit (ordinarily five years), there is a need for some flexibility in establishing rates of application.” (FR, 2008; pg. 12329)

The second statement correctly establishes that a rate of application is an inevitable product of the information upon which it is based. Recognition that specific rates can and will change during a five-year permit cycle on many if not most fields receiving manure is an important cornerstone to developing effective rules governing nutrient management planning. In our 2006 comments we forcefully argued that the terms and condition of the CAFO permit should focus on how the CAFO determined an application rate on a specific field, not the planned rate for that field. From the statements above, it appears that EPA now endorses the concept that the rate of application is a product of the information used to determine the rate.

We would suggest the following edits to the second point:

... rates of application depend on the information on which they are based including but not limited to phosphorus loss assessment, crop selection and nutrient content of the manure.

Furthermore, we emphasize our contention that a permit condition that states how an operation calculates a manure application rate will likely result in changes in planned rates of manure application to a field during the term of a permit but the process used to determine that rate will be unchanging and therefore is an appropriate permit condition.

The “Rates of Application” section of the Notice (FR, 2008; section III B 3, pg 12329-12334) also includes a detailed description of the EPA’s understanding of the process used to develop a manure application rate. This scenario is then used to justify many elements of the three approaches for expressing terms of the nutrient management plan. Unfortunately, flawed understanding of the nutrient management process expressed in the Notice leads to flawed proposals for the terms of the nutrient management plan. As a first step in producing a feasible rule we believe it is essential that the final rule outline an accurate and more universal understanding of the process used to develop a manure application rate.

Starting on page 12329, the Notice suggests the following sequence of decisions to reach a manure application rate:

1. Determine residual nutrients in the soil considering the fertilizer value from sources such as crop residues.

2. Assess potential for nutrient transport by evaluating the "capacity of the field for manure, litter, or process wastewater application, generally depending on the capacity of the soil to retain phosphorus." Transport potential is typically done using the Phosphorus Index.
3. Determine the crop or crops to be planted including a realistic yield goal.
4. Determine the rate of nutrients to be applied based on nutrient recommendations typically set by the State land grant university.
5. Determine the "amount of manure, litter, or process wastewater, in tons or gallons, to be land applied in order to meet, but not exceed, crop nutrient needs..."

Erroneously, the preamble specifically states that this decision making process is a linear sequence of events.

We respectfully submit that the following process is a much more accurate description of the process of developing a planned manure application rate for a specific field and a specific crop:

1. Determine the planned crop sequence for the field including the justification for proposed yield goals.
2. Determine the rates of nutrients needed by each crop based on recommendations set by the State Land Grant University that includes the state's recommendations accounting for residual nutrients in the soil from sources such as crop residues, nitrogen fixed by legume crops and nutrients from previous manure applications.
3. Establish the sequence of tillage practices used in the crop rotation including the anticipated method of manure application.
4. Use the Revised Universal Soil Loss Equation, 2<sup>nd</sup> revision (RUSLE2) and the State's phosphorus index to establish whether nitrogen-based rates of manure, phosphorus-based rates of manure, or no manure should be applied to the field.
5. If the result is "no manure should be applied to the field", either stop consideration of manure application to the field or return to step one after making changes to planned conservation practices, crop rotation and/or tillage practices that may reduce phosphorus loss. Otherwise proceed to step 6.
6. Use the estimated manure test used for planning purposes to estimate plant-available nitrogen, phosphorus and potassium on a per ton or per volume basis using the state-approved availability factors and calculation method.
7. Establish the appropriate manure application rate for the field based on the manure test result, availability calculation and results of the phosphorus loss assessment.
8. Establish the appropriate application rates for supplemental fertilizer (non-manure) sources, if any are going to be applied.

In all states, this sequence needs to be followed starting with the first year of the plan and moving on to subsequent years for each field because manure applied in previous years can affect the recommended rate of application in subsequent years. For example, residual nitrogen mineralization from an application in year one will affect the recommended nitrogen rate for a crop grown in year two. Also, on phosphorus limited fields, the rate of application in a previous year may preclude manure application in a subsequent year because of a multiple year phosphorus application. In these situations, steps need to be added to the process to ensure the impact of previous manure applications were correctly incorporated into the calculation of manure application rate.

In some states, the phosphorus index includes the manure application rate as a component of the phosphorus index. The 2008 Notice is factually wrong when it states that "The outcome of the assessment of the potential for phosphorus transport does not typically change from year to year." This is true in some states, such as Missouri, where the phosphorus index was designed as an assessment tool to be used once every five years as part of the planning process. In states such as Iowa, Indiana and Pennsylvania the phosphorus index includes the rate of manure phosphorus as a factor in the phosphorus index. This means that every time you change the planned manure application rate you need to re-assess phosphorus loss for all manure applications on that field. That would require returning to step 4 in the sequence.

From this discussion of manure application rates it should be apparent that determination of manure application rate is difficult to standardize across many different types of operations and different environments. It is also frequently a circular process where multiple iterations are needed to establish manure application rates that meet phosphorus loss assessment criteria.

The overly simplistic linear planning scenario in the Notice does not capture the true complexity of the process and fails to describe the way many states establish manure application rates. We strongly encourage EPA to change its strategy in this section.

This section should instead focus on the important point that it is possible to define a decision map for any farm that will result in the determination of a maximum permissible manure application rate for that field at that time. The Notice can then provide an example scenario. There is no universal linear scenario and any attempt by EPA to suggest otherwise in the final rule will be viewed as a failure in the rulemaking process. It is critical that this section of the Notice be rewritten.

### III. The narrative approach to determining rates of application

We strongly support and appreciate the inclusion of the narrative approach as an option for the CAFO rule. The narrative approach is a natural extension of the logic that the maximum allowable rate of application on a particular field at a particular time is an inevitable result of the information used to determine that rate. We agree, as stated in the Notice that "...this approach would provide an accurate and verifiable means of achieving realistic production goals while minimizing transport of phosphorus and nitrogen from the field." This approach is most protective of water quality because it ensures that every manure application is made using the most up-to-date information using a pre-determined and pre-approved decision making process and it allows the CAFO operator to adjust manure application strategies in a predictable way in response to the inevitable changes in physical and economic environments during the term of the permit.

Our primary concern with the proposed narrative approach is the universal requirement for annual phosphorus soil testing on all fields. This seems a needlessly burdensome requirement that is out of step with State Land Grant University soil testing recommendations in most states.

In most states, phosphorus soil testing is used to establish long-term (three- to five-year) phosphorus fertilizer recommendations. Most State Land Grant Universities do not recommend more frequent soil testing when the rates of phosphorus manure and fertilizer application are

consistent with the rates recommended based on a soil test. Additional soil testing only is recommended if applied phosphorus significantly exceeded what was recommended for the soil testing cycle or, in high testing soils, if applied phosphorus exceeds what was removed by the crops during the soil testing cycle. We suggest the following change:

A key difference of this approach is that it would require additional soil testing for phosphorus if manure applications are planned on fields where phosphorus application have already exceeded recommended or planned removal rates for the planning cycle. This would ensure that all manure applications fall under the terms of the permit that require phosphorus applications are based on current soil test information.

With this wording, a farmer applying manure based on a soil test recommendation would not need to do additional soil testing. But a farmer applying manure annually based on nitrogen need and in excess of phosphorus removal or recommended phosphorus for the planning cycle would need additional soil tests. The reporting requirements needed to confirm this requirement are already part of the existing CAFO rule in the form of the field-by-field phosphorus balance.

If EPA insists on more frequent phosphorus soil testing, it is not apparent why fields that are not going to receive manure in a particular year require soil testing that year.

There is also some ambiguity in the current Notice on the ability of the operation to add crops to the crop rotation. Under the narrative approach there should be no need to reopen the permit if the CAFO grows a crop that was not originally anticipated in the permit application. To add a crop would require obtaining a fertilizer recommendation based on an approved source of information. The only aspect of an un-declared crop that would not be reviewed before annual reporting requirements is the yield goal for the crop. This could be dealt with through annual record keeping or by having the farm base current phosphorus application rates on what had been removed by previous crops.

#### IV. Linear approach to determining rates of application.

We do not understand the need for the linear approach. The approach fails to provide a viable mechanism to account for required annual manure test results. Most importantly, this approach clearly is less protective of water quality than the narrative approach.

The 2008 Notice provides conflicting definitions of how the linear approach would be implemented. Initially the Notice states "The terms of the NMP would include maximum application rates for each year of permit coverage, for each crop identified in the NMP, in tons of manure or litter, or gallons of manure or process wastewater, per acre, per year, for each field to be used for land application." (FR, 2008; pg. 12331). The Notice suggests that maximum rates of application are the "terms of the NMP" implying they cannot be changed without re-opening the permit. Yet later the Notice states that "... Large CAFOs would need to take into account the annual manure test results required by the 2003 final rule, so as to not exceed the nutrient needs of the crops, and limit actual rates of application by adjusting the amount of manure, litter, and process wastewater to be applied if the concentrations of nitrogen or phosphorus in the manure were higher than those projected in the plan." (FR, 2008; pg 12332, added emphasis by us). It is not apparent in the current version of the Notice how EPA can claim the rate of application is a term of the permit yet require operations to adjust maximum rates of application based on updated manure test results without requiring these operations to re-open their permit.



The reality is that operations should and must adjust manure application rates based on annual manure testing results and the linear approach has not articulated a mechanism to satisfactorily account for these changes. It should be eliminated as an option.

#### V. Matrix approach to determining rates of application.

The matrix approach is more realistic in that it provides a mechanism for operations to account for changes in the manure rate based on annual manure testing compared to the linear approach. The approach is less protective of water quality compared to the narrative approach because it fails to account for many of the complexities that couple application rate with phosphorus loss assessment.

The 2008 Notice states the matrix approach "...would express, for each year of permit coverage, rates of application as the maximum amount of plant available nitrogen and phosphorus, in pounds, from manure, litter, and process wastewater that could be land applied for a particular crop on a given field in a given year..." Furthermore, "...operators would be able to identify for each field alternative crops that they would reasonably expect to plant in a given year, along with allowable rates of application for nitrogen and phosphorus for each specified crop on the field." (FR, 2008; pg. 12332).

This strategy foresees and addresses one concern of farmers, the need to be able to adjust crop rotations to meet unforeseen environmental and market forces. However, it fails to fully address the complexity of the decision making process facing the farmer. The method assumes complete separation between the rate of nutrient application and the rate of manure application. In practice, the two can be linked in significant ways.

Manure application rates can be associated with changes in manure application method which would affect phosphorus loss assessments. In some states, elimination or reduction of a surface application of manure could increase the phosphorus loss assessment rating invalidating the basis of future applications. This is because in RUSLE2, surface-applied manure can reduce the predicted erosion rate in some situations.

EPA is assuming that a matrix of options would provide flexibility to the user of this system. The problem is that a five-year plan would have ever-increasing potential options as the plan progressed. Even a simple rotation with two possible crops and two possible manure application methods could have up to eight scenarios in the first year (two previous crops X two crops X two application methods). In year two the potential scenario list has increased to 27 (three potential manure options the previous year). This approach seems to lead to more complexity, not simplicity.

Our biggest question with this approach is why bother? The producer is going to need to establish a system for determining allowable manure application rates for each field. It seems most logical that the terms of all permits should be based on the narrative approach because it offers the clearest and most robust description of the CAFO operators approach.

#### VI. Changes to nutrient management plans.

The 2008 Notice includes a section suggesting changes to the 2006 rule's list of changes to an NMP that would constitute substantial changes to the terms of a facility's nutrient management plan and thus be considered a permit modification (FR, 2008; section III 4, pg. 12335). We completely agree that the terms proposed in the 2006 rule need to be revised and support EPA efforts to make these revisions in the 2008 final rule.

There is a need to further refine the list defining substantial changes in Section III 4a (FR, 2008, pg. 12335). The proposed wording in the 2008 Notice regarding the narrative approach needs to be clarified. We propose the narrative approach be handled independently of the other proposed methods. Furthermore, for the narrative approach we propose the following text to describe substantial changes to a Permitted CAFO's Nutrient Management Plan.

For the narrative approach. any changes to system used to determine maximum allowable manure application rates for the narrative approach.

This recommendation is based on discussed in the "Rates of Application" section of the Notice (FR, 2008; section III 3, pg 12329) that clearly acknowledged that a pre-determined and pre-approved decision making system will lead to predictable estimates of maximum allowable manure application rates.

We recommend elimination of the linear and matrix approaches which would provide an opportunity to further simplify this section. At a minimum, the text referring to the narrative approach should be eliminated from the current text and the narrative approach should be dealt with in a separate point using our suggested wording.