

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF: )  
 )  
CONCENTRATED ANIMAL FEEDING )  
OPERATIONS (CAFOs): PROPOSED )  
AMENDMENTS TO 35 ILL. ADM. CODE )  
PARTS 501, 502, AND 504 )

R12-23  
(Rulemaking- Water)

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JUN 18 2012

STATE OF ILLINOIS  
Pollution Control Board

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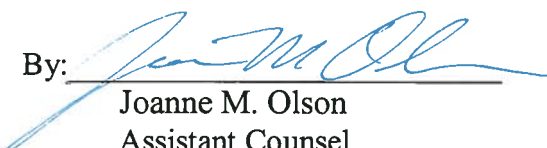
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To: Attached Service List

PLEASE TAKE NOTICE that I have filed today with the Illinois Pollution Control Board the Illinois Environmental Protection Agency's TESTIMONY OF BRUCE YURDIN, for the above-captioned proceeding, a copy of which is herewith served upon you.

ILLINOIS ENVIRONMENTAL  
PROTECTION AGENCY

By:   
Joanne M. Olson  
Assistant Counsel  
Division of Legal Counsel

DATED: June 14, 2012

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**TESTIMONY OF BRUCE YURDIN**

Qualifications/Introduction

My name is Bruce Yurdin, and I have been employed by the Illinois Environmental Protection Agency (“Illinois EPA or “Agency”) for approximately 32 years. I currently work as the manager of the Field Operation Section in the Division of Water Pollution Control. I have a B.S. in Biology from the University of Southern California and M.S. in Civil Engineering from Southern Illinois University. My primary responsibility at the Agency is to oversee inspection and enforcement activities in the water pollution control program, including the inspection of livestock facilities in the state. Today, I will address several parts of the proposed rule, including livestock facility inspection and compliance, winter application of livestock waste, land application requirements and limitations for facilities that are not regulated under an NPDES permit, the process for Concentrated Animal Feeding Operation (“CAFO”) designation, and recordkeeping and annual reporting.

Livestock Facility Inspection and Compliance

The purpose of any inspection conducted by the Illinois EPA is to determine compliance with applicable state law, Illinois Pollution Control Board regulations and permit conditions, to the extent that any given facility or location holds a permit. In the case of CAFOs, inspections should be conducted to determine compliance with the state and federal regulations for the

design, construction, operation and maintenance of the production and land application areas, including the livestock waste-handling facilities, with particular attention to the presence or absence of any wastewater discharges. While the Illinois EPA does not issue permits for the design or construction of CAFOs, the manner in which a particular CAFO is to handle livestock waste—its overall design—and the way in which the CAFO has been set up—its specific construction—both result in means to control waste containment units and runoff, and the methods and land area needed for agronomic application of the livestock waste. The basic elements of any inspection of a livestock operation will require an understanding of the design and construction and, more specifically, the separation of wastewater within and around a livestock waste-handling facility and the control and discharge of uncontaminated waters away from the site. Connections in and around treatment and containment units begin within the design. The efficiency and success of containment are carried out in the construction.

Operating and maintaining the waste-handling units properly avoids a variety of serious water pollution issues. Overloading a unit by failing to have an appropriate nutrient management plan (NMP) that sets out the details of waste removal and land application at agronomic rates can result in discharges to surface waters. The NMP that we require is the backbone of the NPDES permit for all CAFOs. Within that plan, the details of which are specified in proposed Part 502, Subpart E, we would require in this proposed rule the basic information we believe the producer will need to operate the waste management system and the Illinois EPA would need in order to complete a review during an inspection. Most of the elements in proposed Sections 502.505, 502.510 and 502.515 are required in the federal CAFO rule. These three sections constitute important components of the NMP requirements we propose in this rulemaking. The underlying

goal of these sections is to provide clear measures essential to planning for land application of livestock waste to the producer.

In Section 502.505 we ask for basic information concerning the location of the facility, animal numbers and facility size. In addition, as part of the basic components of land application planning, we ask for the cropping schedule, the location of each field in the plan and each field's proximity to surface waters, wells and other sensitive areas. Along with the requirement for realistic crop yield goals and existing soil and manure nutrient concentrations, the information required in Section 502.505 should allow the producer, as part of the permit application, and the Illinois EPA, as part of a facility inspection, to specify and determine compliance, respectively, the basis for proper, agronomic land application from the livestock facility.

In Section 502.510 we propose the producer provide additional details that show 1) the basis for nitrogen and phosphorus application rates, 2) the adequacy of the land area and storage volume for the amount of livestock waste produced, 3) that the mortality runoff is addressed and does not interfere with the operation of the livestock waste storage operations and 4) that chemical and other contaminants at the facility are properly disposed and do not become part of the livestock waste in the waste-handling system that would then be applied to the land. The intent, as is true for several other sections dealing with elements of the NMP, is to 1) comply with the mandates under the federal CAFO rule and 2) provide a comprehensive basis for the decisions made by the livestock producer that result in the management of the livestock waste storage facilities and the land application of the waste. So, for example, we propose the livestock producer provide information about clean water diversion in Section 502.510(b)(5) that would potentially reduce the amount of livestock waste a facility must handle, thereby

potentially altering the waste strength and the nutrient content. Diverting clean water consequently reduces the land area required for application of the waste to crop land.

In a similar manner, we propose in Section 502.515 the submittal of information regarding what USEPA in the federal CAFO rule refers to as the “terms” of the NMP, providing for two alternative means of addressing the development of the NMP—the “Linear” and “Narrative Rate” Approaches. These “terms” are the information, protocols, best management practices and other conditions in the NMP that are necessary to meet the provisions in Sections 502.505 and 502.510. USEPA describes the two approaches as equivalent alternatives to developing an NMP. As explained by USEPA in the 2008 Final CAFO Rule, published November 20, 2008:

Each approach provides a means by which a CAFO may articulate in its NMP annual maximum rates of application of manure, litter, and process wastewater by field and crop for each year of permit coverage and identify the minimum required terms of the NMP specific to that approach. One approach expresses field-specific maximum rates of application in terms of the amount of nitrogen and phosphorus from manure, litter, and process wastewater allowed to be applied. This is called the “linear approach.” The other approach expresses the field-specific rate of application as a narrative rate prescribing how to calculate the amount of manure, litter, and process wastewater allowed to be applied. This is called the “narrative rate approach”.

73 Fed. Reg. 70444. As expressed in Section 502.515(d), the Linear Approach details the terms of the application rate, for nutrients and crops, whereas the Narrative Rate Approach, as found in Section 502.515(e), establishes a method of determining application rate under various waste content and cropping conditions.

The terms of the NMP, as provided in the Approach used by the livestock producer, can be reviewed by the Illinois EPA during an on-site visit. Diversion of clean water, to use the same example, would be an important factor in our field review if discharges or a potential to discharge were observed. A review of the NMP may be necessary to determine if diversions

were planned or if new adjustments to the NMP or to the design, construction, operation and maintenance of the facility were needed.

#### Winter Application of Livestock Waste

Land application during winter conditions on frozen or snow and ice covered ground may increase the possibility of contaminated runoff. The federal CAFO rule directs states to consider timing of land application when developing technical standards for this very reason. In Section 502.630, we propose the technical standards for winter application.

We recognize that winter application may not be entirely avoidable and so have proposed a method of justifying when winter application can occur, and then the procedures for how that can take place. For winter application to occur, the producer must first demonstrate that alternatives to land application are not available and that adequate storage to get through the winter is not possible. Starting prior to December 1 of any year, the producer must determine the volume of livestock waste that will be generated and if storage will be readily available. We have proposed procedures for calculating the storage volume in a way that accounts for runoff, precipitation and other factors that could reduce available storage during that period. If adequate winter storage is not possible, and if no other alternatives are open to the livestock producer, then injection into the soil or incorporation within 24 hours of surface application, as a means of reducing runoff during winter application, must also be used or justifiably ruled out as possible methods.

Since contaminated runoff is the critical factor to reduce or eliminate when applying livestock waste in the winter, and since surface application results in a greater potential for runoff than does injection of the waste, we have proposed technical criteria for surface land application. In addition to a criterion for a setback to residences and a prohibition on any

livestock waste discharge, we are proposing the producer review and document the weather conditions prior to, during and after surface application. To assist the producer in this matter, we are proposing criteria on the means of determining predicted precipitation and changes in temperature that may increase the potential for runoff. These are tools that the producer can use in making a judgment on land applying on any given winter day. These criteria include web-based tools from the National Weather Service that can assist in that regard.

We are also proposing visual monitoring of the fields following land application, when daytime temperatures exceed 32<sup>0</sup> F, that will continue until ice and snow are no longer present. We are proposing six criteria that must be met in the fields before application can begin, including limiting application to sites with adequate erosion controls, having crop residue to slow surface runoff, applying to slopes of less than 5%, having erosion control factors less than the tolerable limit (“T”) as determined using the USDA’s Revised Universal Soil Loss Equation 2, or RUSLE2, having soil phosphorus levels of less than 300 pounds per acre, maintaining three times the otherwise normal setbacks (as specified in Section 502.615 and 502.645) except for field with less than 2% slopes in which case the setbacks must be twice the normal distance. In neither case dealing with setback distances are changes to the setbacks from farm residences applicable. Those setbacks remain at ¼ mile. Our proposal in this instance provides no greater setback with the understanding that, in the winter, there is no reason to believe odors will be worse.

Land Application Requirements and Limitations for Facilities that are not Regulated Under an  
NPDES Permit

The federal CAFO rule in 40 CFR 122.23(e)(1) and (2) specifies that for large unpermitted CAFOs to claim the agricultural stormwater discharge exemption those facilities



must have and adhere to site-specific nutrient management practices. In Illinois EPA's proposal, those practices are proposed in Section 502.102(b) for all permitted CAFOs. In this rulemaking, we intend that large unpermitted CAFOs follow the same procedures as those required of any permitted CAFO to claim that exemption. We do this for several reasons, but first a brief explanation of the stormwater discharge exemption as covered under the federal CAFO rule is needed.

The intent of establishing criteria by which an unpermitted facility could claim the exemption is to avoid situations where discharges occur and no information is available concerning the management practices at the livestock facility, and more properly, at the land application site that gave rise to the discharge. The federal rule now clearly establishes that the exemption applies and can be claimed only when a facility has employed nutrient management practices that encourage the appropriate agricultural use of nutrients in the livestock waste. This, simply stated, ensures the use of nutrients in such a way that is not excessive relative to crop uptake.

Large unpermitted CAFOs have the potential to produce more livestock waste, land apply more manure more frequently and have the greatest need to properly manage nutrient levels when they apply livestock waste to crops and therefore we have excluded them from Section 502.405(a), Field Application of Livestock Waste for Unpermitted Facilities. The rule we propose for unpermitted facilities claiming the agricultural stormwater exemption relies on the same technical land application criteria we have developed and proposed for all permitted CAFOs. In essence, our rationale is that the NMP criteria in Section 502.510(b) is relevant and should be used by both permitted CAFOs and unpermitted large CAFOs when it comes to documenting and justifying how a land application discharge may have occurred.

The various requirements in Section 502.510(b) apply to unpermitted large CAFOs claiming the agricultural stormwater exemption for the reasons stated above. All of the criteria in this subsection concern the proper management of the waste-handling facilities comprehensively, including such matters as diverting clean stormwater and having adequate storage and proper management of mortalities among other factors, so that livestock waste that must be land applied is not unduly increased in volume, increased in waste strength or containing other contaminants.

#### The Process for CAFO Designation

We propose to make changes to the process by which livestock facilities that are AFOs may be designated as CAFOs and therefore need an NPDES permit. In Section 502.106 we update the term “navigable waters” to “waters of the United States”. Two important changes we propose concern the deletion of one reference to a requirement for prior written notification to a livestock facility owner or operator by the Illinois EPA when we have made a designation, in Section 502.106(c), and the elimination of the reference to the 25-year, 24-hour discharge exemption, in Section 502.106(e). The provisions in Section 502.106(d) clearly refer to the “Agency’s notification that an NPDES permit is required.” It is the responsibility of the Illinois EPA to notify the owner or operator of our designation, the basis for that finding under the criteria in Section 502.106(a) and the information needed to make an application to the Agency for an NPDES permit within the now proposed extended timeframe of 90 days. We believe the criterion in Section 502.106(d) clearly identifies the Illinois EPA duty to properly notify the owner or operator of the designation, and we therefore are simply proposing to eliminate the duplication. In the second of these changes, since the 25-year, 24-hour storm exemption no longer exists within the federal CAFO rule, we propose to eliminate it here.

## Recordkeeping and Annual Reporting

The federal CAFO rule specifies that the owner or operator, as the permittee, retain several records related to the operation of the CAFO. In the Illinois EPA's proposal, the federal requirements are presented in Section 502.320. We are also proposing the livestock producer keep a few additional records. One of those includes recordkeeping of subsurface drainage systems that are part of the land application plan developed under Section 502.510(b)(13). The intent of these observations and records of the drainage system is to verify that land application related discharges did not occur or, if they did, that a record was kept and corrective action was taken and recorded.

We are also requiring that the quantity of waste removed during dewatering of the manure storage or waste containment area be kept, as proposed in Section 502.320(v). These data may be used by the producer in concert with the other federally required records to verify the operation of and storage volume available for these units.

In a similar manner, we are also requiring records of the soil-water conditions at the time of application to the fields, as proposed in Section 502.320(w)(2). These contemporaneous records by the CAFO owner or operator will be useful to document the conditions in the field at the time of application, particularly in regard to ponded water, and the presence of snow or ice in the field. Section 502.320(w)(5), the proposal for identifying the fields used in land application, is a corresponding record, necessary to track field locations with application amounts and field conditions.

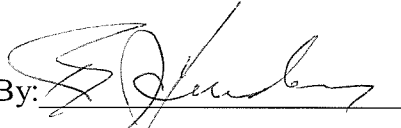
As stated in my testimony on winter application, weather conditions will serve as the basis for decisions on surface land applications. Keeping records, therefore, of the weather reports from the websites we propose the producer use is an important link in the decision-

making process. These records may also serve to verify weather conditions for non-winter surface application of livestock waste. We are proposing weather recordkeeping in Section 502.320(w)(9).

We are also proposing recordkeeping as part of the NMP, in Sections 502.510(b)(11), (12), (13) and (14). The first of the four subsections, Section 502.510(b)(11) would require the livestock producer to record the setback distance from residences when land applying. The second, in Section 502.510(b)(12), would require the livestock producer to document that the winter land application plan required in Section 502.630 was followed. The third, in Section 502.510(b)(13), would require the livestock producer to record the visual observations of the subsurface drainage systems prior to and following land application. Lastly, in Section 502.510(b)(14), the livestock producer would record the presence of and adherence to the producer's own spill prevention and control plan.

#### Conclusion

This concludes my pre-filed testimony. I will be supplementing the testimony as needed during the hearing and would be happy to address any questions.

By:   
Bruce J. Yurdin

June 13, 2012

Illinois Environmental Protection Agency  
1021 North Grand Avenue East  
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CERTIFICATE OF SERVICE

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STATE OF ILLINOIS  
Pollution Control Board

Joanne M. Olson, Assistant Counsel for the Illinois EPA, herein certifies that she has reviewed a copy of the foregoing NOTICE OF FILING and TESTIMONY OF BRUCE YURDIN upon persons listed on the Service List by mailing, unless otherwise noted on the Service List, a true copy thereof in an envelope duly addressed bearing proper first class postage and deposited in the United States mail at Springfield, Illinois on June 13, 2012.

ILLINOIS ENVIRONMENTAL  
PROTECTION AGENCY

By: 

Joanne M. Olson

Assistant Counsel

Division of Legal Counsel

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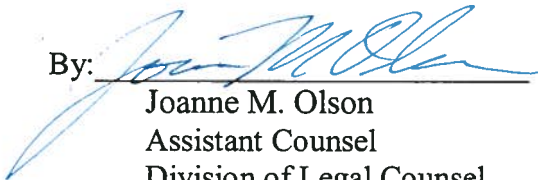
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PLEASE TAKE NOTICE that I have filed today with the Illinois Pollution Control Board the Illinois Environmental Protection Agency's TESTIMONY OF SANJAY SOFAT, for the above-captioned proceeding, a copy of which is herewith served upon you.

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By: \_\_\_\_\_



Joanne M. Olson  
Assistant Counsel  
Division of Legal Counsel

DATED: June 14, 2012

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**TESTIMONY OF SANJAY SOFAT**

Introduction

My name is Sanjay Sofat. I am currently employed by the Illinois Environmental Protection Agency (“Illinois EPA”), as Manager of the Division of Water Pollution Control (“DWPC”). I have been employed by Illinois EPA since 1999. Prior to my current position as Manager of DWPC, from 1999 to 2008, I served as an attorney for the Bureau of Water. I have held the position of Division Manager since July 2008. As a Division Manager, I am responsible for management of operations related to issuance of state and National Pollutant Discharge Elimination System (NPDES) permits; inspection, compliance and enforcement of wastewater and industrial sources including Concentrated Animal Feeding Operations (“CAFOs”); surface water monitoring; and development and implementation of water quality standards.

I have a bachelor’s degree in Mining Engineering from the National Institute of Technology (Rourkela, India), and a master’s degree in Mining Engineering from Southern Illinois University at Carbondale. I also have a Juris Doctor degree from Southern Illinois University at Carbondale.

As a delegated state for the NPDES program, Illinois is required to adopt laws and regulations that conform to the federal regulations. To meet this obligation, the Agency is proposing to amend the Board’s current agriculture related pollution regulations in Parts 501 and

502. The Agency proposal includes several substantive requirements that are mandated by the federal CAFO rule adopted in 2003 and 2008.

My testimony will address policy considerations underlying Illinois EPA's proposed state technical standards, the agricultural stormwater exemption, and the Agency's proposal to address the federal CAFO reporting rule. At the hearing, I will also respond to questions regarding the economic reasonableness of the Agency's proposal.

#### State Technical Standards

The federal rule requires that nutrient management technical standards be developed and adopted by the state permitting authorities. As part of the state technical standard, states are required to develop criteria for assessing nitrogen and phosphorus transport from fields to waters of the U.S., soil and manure sampling methods, and form, source, amount, timing, and method of application of nutrients. The state's proposed technical standards must provide a clear guideline for the user to determine application rates. States are allowed by United States Environmental Protection Agency ("USEPA") to include flexibilities as part of these technical standards by considering multi-year phosphorus application on fields that do not pose high risk of phosphorus runoff to nearby surface waters. A CAFO that land applies livestock waste must do so in compliance with the state technical standards that are designed to minimize nutrient transport from the field to surface waters.

Illinois' state nutrient management technical standards can be found in Subpart F of the Agency's rule proposal. These technical standards are split into two groups— production area requirements and land application requirements.

The Subpart F technical standards apply to all permitted dairy cows, cattle, swine, poultry, and veal CAFOs. If the above mentioned CAFOs are also subject to New Source Performance Standards (NSPS), then Subparts G and H requirements apply.

The New Source Performance Standards (“NSPS”) that apply to dairy cows and cattle other than veal CAFOs are found in Subpart G. These NSPS apply only if these CAFOs stable or confine 700 or more mature dairy cows or 1000 or more cattle other than mature dairy cows or veal calves. NSPS for both production area and land application areas for large dairy cows and cattle CAFOs are the same as those provided in Subpart F for existing dairy cows and cattle CAFOs.

Section 502.720 of Subpart G contains federal effluent limitations applicable to existing and new source sheep and horse CAFOs. Like the federal rule, the Agency’s proposal in Subpart G does not apply to CAFOs that stable or confine fewer than 10,000 sheep or 500 horses. Similarly, Section 502.730 of the Agency proposal contains federal effluent limitations applicable to dry lot or wet lot duck CAFOs. Like the federal rule, CAFOs with fewer than 5000 ducks are exempt from these effluent limitations.

New swine, poultry, and veal CAFOs that are large CAFOs, as defined in Section 502.103, are subject to the federal production area requirements found in Subpart H of the Agency’s proposal. However, these sources are subject to the land application area requirements identical to requirements imposed on the existing permitted swine, poultry, and veal CAFOs, as provided in Section 502.615 through 502.645 of the Agency’s proposal.

In brief summary of the Agency’s state technical standards proposal, Section 502.615 provides the criteria related to nutrient transport potential, whereas Section 502.620 provides a list of protocols a CAFO must follow to land apply livestock waste. In Section 502.625, the

Agency provides factors that CAFOs must consider in determining appropriate application rates of livestock waste. Protocols that CAFOs must follow to land apply livestock waste in winter on the assessed field is detailed in Section 502.630. The Agency's criteria related to manure and soil sampling methods is provided in Section 502.635. The protocols related to inspection of land application equipments are contained in Section 502.640. Section 502.645 sets forth the setback requirements applicable to the land application of livestock waste on the assessed fields.

To provide some insight into the Agency's decision, I will now describe some of the policy considerations made in developing Illinois' technical standards.

The Agency's decision to select proposed technical standards was influenced by several factors. The Agency's proposal includes best management practices identified by the federal regulations when found adequate and protective of water quality. However, the Agency's proposal goes beyond these requirements where the Agency finds it necessary to protect waters of the U.S. The Agency relied on the well established best management practices provided in the Livestock Management Facilities Act ("LMFA") where it found them to be proper and effective to meet federal requirements of state technical standards. These proposed best management practices based on the best management practices from the LMFA have been in use for several decades, and our experience shows that these best management practices have been operating well under Illinois conditions.

The federal CAFO rule requires small and medium CAFOs to comply with technology based requirements developed by the permitting authority on a case-by-case basis. Instead of taking this case-by-case approach for small and medium dairy cows, cattle, swine, poultry and veal CAFOs, the Agency chose to develop one set of technical standards that were protective of surface waters, regardless of the size of the livestock facility. Other than CAFOs that are subject



to NSPS requirements, the Agency's proposal requires all permitted dairy cows, cattle, swine, poultry, and veal CAFOs to comply with Subpart F technical standards. Both small and medium dairy cows, cattle, swine, poultry, and veal CAFOs, if in close proximity to surface waters, generate enough livestock waste that a discharge from these facilities could severely degrade water quality as well as harm aquatic life. The Agency believes that its approach is less confusing for owners and operators of dairy cows, cattle, swine, poultry, and veal CAFOs, as the same technical and effluent limitations apply regardless of operation size. Also the Agency's approach provides necessary business certainty to CAFO owners and operators. By including applicable effluent limitations and technical standards in the Agency proposal, instead of making a case-by-case determination, the Agency is providing these CAFOs upfront notice of the applicable requirements so that these facilities can design, construct, operate and maintain their facilities in the most cost effective manner to comply with applicable requirements. Also, the Agency's proposal affords these CAFOs more business flexibility to go from one size to another, as dairy cows, cattle, swine, poultry, and veal CAFOs of all sizes are subject to the same production and land application area requirements. See p.21 of Technical Support Document ("TSD").

As stated earlier, the federal rule requires states to develop criteria for assessing nitrogen and phosphorus transport from fields to waters of the U.S., as well as timing of application of nutrients in the livestock waste. Due to the complexity involved with this, as well as the lack of any existing regulations on these two concepts, early in the rule development process, the Agency decided to invite various stakeholders to help the Agency develop approaches that were effective for Illinois farming practices as well as protective of surface waters. A stakeholder workgroup was convened and the first meeting was held in December of 2009. Several meetings

were held in 2010 to discuss the phosphorus and nitrogen transport and winter time application of livestock waste concepts. The workgroup discussions also focused on other states’—neighboring states and a few states outside the Midwest— approaches to these two concepts. Following these meetings, the stakeholder workgroup provided extensive comments, draft concepts, and researched technical material to help the Agency draft proposals to address phosphorus and nitrogen transport from fields, and limitations on winter time application. The Agency offers its thanks to the members of the stakeholder workgroup for their contributions. Based on the input from the stakeholders workgroup, the Agency drafted Sections 502.615 and 502.630 that address phosphorus and nitrogen transport, and winter time livestock waste application concepts. The draft was shared with the workgroup for the first time in October of 2010. Later it was modified to accommodate USEPA’s comments, and a final draft of the proposal was shared with the workgroup, prior to submitting the Agency’s formal proposal with the Board.

In the absence of a phosphorus-index (“P-Index”) like those used by other states to quantify nutrient transport potential, the Agency’s proposal in Section 502.615 depends on several site specific physical factors and conservation practices to address the issue of nutrient transport from a field to waters of the U.S. To determine the suitability of a field for land application of livestock waste, each field is assessed based on several factors to determine runoff and erosion potential of that field. The field assessment then allows the applicant to determine the appropriate application rate— nitrogen based or phosphorus based— for the assessed field. Both the nitrogen based application and phosphorus based application of livestock waste are then subject to their own set of requirements to ensure that transport for nutrients from the assessed field is minimal.

Like other neighboring states, the Agency's proposal does not fully prohibit land application of livestock waste on frozen, ice covered or snow covered ground but allows application of livestock waste during winter time only under limited circumstances. The Agency recognizes that even a well designed, operated, and maintained facility could find itself in a situation where application of livestock waste during winter months becomes necessary to avoid greater harm to surface waters from an overflow. The proposed concept thus balances this need to apply livestock waste under emergency situations to the high risk posed by livestock waste runoff to surface waters. Improper application of livestock waste on frozen, snow or ice covered soil, fields without proper conservation practices and applications conducted prior to precipitation events are some of the factors that directly impact the runoff of livestock waste to surface waters. The Agency's proposal considers all these factors to minimize the risks posed by winter application of livestock waste. The key features of the winter application concept are as follows. The winter application of livestock waste is permissible only if a set of conditions are met, including that no practical alternative exists to handle/store or dispose of the livestock waste. As not all fields are suitable for the application of livestock waste during winter time, a site must be selected based on the criteria such as the presence of appropriate erosion controls, proper slope, buffers and setbacks, as outlined in the Agency's proposal. The application of livestock waste during winter time is then subject to timing, weather conditions, and reporting requirements. The Agency believes that the winter application concept contains proper controls to ensure that runoff of livestock waste to surface waters is minimized, while fulfilling a need to manage livestock waste during winter months in emergency situations.

### Agricultural Stormwater Exemption

Under the Clean Water Act, a discharge of pollutants from a point source into waters of the U.S. is subject to NPDES permitting requirements. As CAFOs are defined as point sources under the Clean Water Act, discharges from CAFOs must be authorized under an NPDES permit, with one exception. Discharges from the land application area that qualify as “agricultural stormwater discharges” are exempt from the NPDES permit requirement, as these discharges are exempt from the definition of a point source under the Clean Water Act. This exemption is however not automatic. Under the federal regulations, a precipitation related discharge is an agricultural stormwater discharge if the CAFO has applied livestock waste in accordance with site-specific nutrient management practices that ensure appropriate agricultural utilization of nutrients. The practices are considered to ensure appropriate utilization of nutrients if done in accordance with state technical standards.

To claim the agricultural stormwater exemption under the federal rule, unpermitted large CAFOs, at a minimum, must comply with the requirements of 40 CFR 122.42(e)(1)(vi) through (ix). These provisions of the federal rule focus on conservation practices that would minimize the runoff of pollutants from a field and protocols for testing livestock waste and soil. Protocols to land apply livestock waste consistent with site specific practices are required under these provisions to ensure agricultural utilization of nutrients. To show compliance with various practices and protocols, unpermitted large CAFOs are required to maintain certain records. The federal rule, however, does not provide a detailed framework of how to comply with requirements specified in 40 CFR 122.42(e)(1)(vi) through (ix).

The Agency's proposal in Section 502.102 provides Illinois' approach on the agricultural stormwater exemption. Under this proposal, both permitted and unpermitted large CAFO must meet all the requirements specified in Section 502.510(b).

In general, Section 502.510(b) contains nutrient management practices promoting proper management of the production area, livestock waste handling facilities, and land application areas. Focusing on all these areas of a CAFO is essential, as proper management of these areas affects how livestock waste is managed at a CAFO. For example, when clean water is diverted from the production area, this practice reduces the volume of the livestock waste produced by the CAFO, which in turn reduces the land application area necessary for application of the livestock waste consistent with proper agricultural utilization of nutrients. Practices such as proper management of mortalities, diversion of clean water from the production area, and prevention of direct contact of animals with waters of the U.S., help minimize contaminants in runoff from the field. Other practices include making timely adjustments of the livestock application rate, providing adequate storage and land application area, ensuring that agricultural utilization of nutrients in livestock waste is occurring. Practices such as adhering to a technically sound winter time land application plan and a spill prevention plan also help in minimizing contaminants in runoff as well as ensuring proper agricultural utilization of nutrients.

The key distinction between the federal rule and Agency's proposal is that unpermitted large CAFOs under the Agency's proposal are subject to some specific requirements that are not otherwise listed in the federal CAFO rule. The Agency believes that for a CAFO, whether a large facility that is permitted or unpermitted, to fully meet the basic intent behind the agricultural stormwater exemption, it must comply with all of the practices and protocols specified in Section 502.510(b). In the Agency's view, appropriate agricultural utilization of

nutrients in livestock waste occurs when livestock waste is applied consistent with nutrient management practices specified in Section 502.510(b). These protocols and practices only provide more specific practices where the federal rule, while requiring general nutrient management compliance, is silent on how to accomplish the basic objectives specified in 40 CFR 122.42(e)(1)(vi) through (ix).

As the Clean Water Act agricultural stormwater exemption depends on the protocols and practices that ensure agricultural utilization of nutrients in the livestock waste, the Agency's proposal does not distinguish between a permitted CAFO and an unpermitted large CAFO. This approach ensures that if a permitted CAFO is required to comply with a set of requirements to claim the agricultural stormwater exemption, the same set of requirements are complied with by an unpermitted large CAFO to claim the exemption. The Agency's approach is equitable because it requires both permitted and unpermitted large CAFOs to follow the same set of requirements to claim the agricultural stormwater exemption.

Another reason for the Agency to require the same set of requirements on unpermitted large CAFOs in claiming the agricultural stormwater exemption is that large facilities, generating a large amount of livestock waste, can cause significant water quality problems if a discharge occurs. As we know, application of livestock waste without proper protocols and practices can lead to accumulation of nutrients in soils. These excessive levels of nutrients can be released to the environment when wet weather conditions exist and controls are not instituted, either through adjustments in application rates or in the development and maintenance of best management practices. By subjecting unpermitted large CAFOs to the specific and general requirements of Section 502.510(b), the Agency is ensuring that a precipitation related discharge from these facilities minimizes the contribution of pollutants in runoff from fields into waters of the U.S.

rule, CAFO owners and operators in Illinois will be able to satisfy the state and federal requirements with the same set of information, thus avoiding unnecessary confusion and burden.

As drafted, the Agency's proposal provides that the reporting rule requirements are effective only if the federal reporting rule is adopted. Only those CAFOs that are subject to the federal reporting rule are required to supply the same information to Illinois EPA.

Conclusion

This concludes my pre-filed testimony. If necessary, I will be supplementing my testimony during the hearing.

By:   
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Sanjay Sofat

June 13, 2012

Illinois Environmental Protection Agency  
1021 North Grand Avenue East  
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## Reporting Rule

The USEPA proposed a rule on October 14, 2011 that would require CAFO owners or operators to provide specific information about their operations to the USEPA. As proposed, the rule requires basic operational information, such as contact information, location of the production area, the number and types of animals confined, the number of acres of land available for application of livestock waste, and permit status. As stated in the proposed rule, USEPA plans to take final action on the proposed rule by July 2012.

U.S. EPA's proposed rule provides two reporting options. The first option is broad in its scope. Under this option, all CAFOs, regardless of the size and permit status, must provide its operational information to US EPA, or the authorized state could provide the information on behalf of CAFOs within its jurisdiction. The second option is much more limited in its scope. Under this option, only CAFOs in watersheds with water quality problems associated with CAFO operations are required to submit this basic information to the USEPA. This additional information is intended to allow USEPA to more effectively and efficiently implement the NPDES program for CAFOs.

As the two options under the proposed federal rule vary considerably in their scope as to which CAFOs are required to report, the Illinois EPA chose not to propose similar reporting requirements at this time. Uncertainty exists under the federal reporting rule as to which CAFOs are required to submit the basic information. Instead of adding to this uncertainty by proposing another set of reporting requirements or choosing one of the federal options, the Agency's proposal depends on the outcome of the final federal reporting rule. The Illinois EPA chose a place holder approach to minimize conflicting or confusing requirements and to minimize unnecessary burden on the CAFO owners and operators. Upon adoption of the federal reporting



CERTIFICATE OF SERVICE

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JUN 18 2012

STATE OF ILLINOIS  
Pollution Control Board

Joanne M. Olson, Assistant Counsel for the Illinois EPA, herein certifies that she has received a copy of the foregoing NOTICE OF FILING and TESTIMONY OF SANJAY SOFAT upon persons listed on the Service List by mailing, unless otherwise noted on the Service List, a true copy thereof in an envelope duly addressed bearing proper first class postage and deposited in the United States mail at Springfield, Illinois on June 14, 2012.

ILLINOIS ENVIRONMENTAL  
PROTECTION AGENCY

By: 

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**BEFORE THE ILLINOIS POLLUTION CONTROL BOARD**

IN THE MATTER OF: )  
 ) R12-23  
CONCENTRATED ANIMAL FEEDING )  
OPERATIONS (CAFOs): PROPOSED ) (Rulemaking- Water)  
AMENDMENTS TO 35 ILL. ADM. CODE )  
PARTS 501, 502, AND 504 )

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**JUN 18 2012**  
**STATE OF ILLINOIS**  
**Pollution Control Board**


**NOTICE OF FILING**

To: **Attached Service List**

PLEASE TAKE NOTICE that I have filed today with the Illinois Pollution Control Board the Illinois Environmental Protection Agency's TESTIMONY OF DANIEL L. HEACOCK, for the above-captioned proceeding, a copy of which is herewith served upon you.

**ORIGINAL**  
**RETURN TO CLERK'S OFFICE**

ILLINOIS ENVIRONMENTAL  
PROTECTION AGENCY

By:   
Joanne M. Olson  
Assistant Counsel  
Division of Legal Counsel

DATED: June 14, 2012

1021 N. Grand Ave. East  
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**THIS FILING IS SUBMITTED ON RECYCLED PAPER**





**BEFORE THE ILLINOIS POLLUTION CONTROL BOARD**

IN THE MATTER OF: )  
 ) R12-23  
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**CLERK'S OFFICE**  
**JUN 18 2012**  
**STATE OF ILLINOIS**  
**Pollution Control Board**

**TESTIMONY OF DAN HEACOCK**

**Qualifications**

My name is Dan Heacock. I am employed by the Illinois Environmental Protection Agency (“Agency”) as the manager of the Facility Evaluation Unit in the Permit Section of the Division of Water Pollution Control, Bureau of Water. The duties of the Facility Evaluation Unit include reviewing Concentrated Animal Feeding Operations (CAFO) National Pollutant Discharge Elimination System (NPDES) applications for the permit program administered by the Agency. I have been employed in the permit programs of the Bureau of Water since 1985. My experience with the livestock waste management programs of the Agency began with my employment with the Agency. I am a graduate of the University of Illinois with a Bachelor of Science degree in Agricultural Engineering. I am a graduate of the Southern Illinois University – Carbondale with a Masters degree in Civil Engineering-Environmental Specialty. I am a registered professional engineer in Illinois.

**Introduction**

The Agency participated in the development of this proposal through a workgroup consisting of interested industry, environmental organizations, citizen groups, the Illinois Department of Agriculture, the University of Illinois, and the United States Department of Agriculture (USDA-NRCS). My testimony will cover areas of the proposed Subtitle E regulations including (1) permit applications and issuance, (2) general requirements of state

technical standards, nutrient management plans and technical feasibility, (3) technical standards and effluent limitations applicable to permitted and unpermitted CAFOs, and (4) nitrogen vs. phosphorus application rate.

### **Permit Applications and Issuance**

Section 502.201 of the Board's regulations contains the requirements for permit applications. The proposed Section 502.201(a) has been modified to require the submission of a map of the CAFO showing surface and subsurface water features for its land application areas for livestock waste. The requirement for submission of information on surface and subsurface drainage is currently in existing Board regulations (p. 45, Statement of Reasons (SOR)). In addition we are proposing that a storm water pollution prevention plan be included in the permit application for the CAFO permit for all CAFOs. This requirement of the submission of this plan in the CAFO permit application will satisfy federal storm water permitting requirements for CAFOs subject to new source performance standards. As stated in the Technical Support Document (TSD), control and management of CAFO generated livestock wastes in areas outside the production area, in accordance with a storm water pollution prevention plan, will provide water quality protection of surface waters and aquatic life. Further discussion of the requirements for drainage features and storm water pollution prevention plans is provided in the TSD (pp. 6-7).

The proposed Section 502.310 includes provisions for processing CAFO applications for coverage under a general NPDES permit. These provisions include 1) information required to be provided in the NPDES permit application, 2) opportunity for Illinois EPA to ask for additional information, 3) process and time frame for public notice, 4) public hearing processes and 5)

when the terms of the Nutrient Management Plan (NMP) become a part of the permit (p. 7, TSD).

The Agency is proposing that the nutrient management plan and permit application be provided for public review on the Agency's website. The Agency believes that by providing the complete NMP for public review and comment, more complete understanding and meaningful review of the NMP can be conducted. This also provides a more efficient use of Agency resources to issue public notices containing the terms of the NMP and provide public opportunity for review. In accordance with the federal CAFO regulations, the Agency must provide a period of opportunity to the public to review the permit application and the NMP, and submit comments and request a hearing. The Agency proposes to provide 30 days to review these complex NMPs. This is consistent with existing Subtitle C Part 309 regulations which require 30 days for public review and comment regarding complex individual NPDES permits. This proposed procedure for public notice of the NMPs and permit applications will satisfy the requirements of the federal rules regarding public notification of proposed NMPs and coverage under the general NPDES permit. After completion of the comment period and public notification of the NMP, once the Agency makes its decision to issue coverage under the general permit, the owner or operator will be informed of the decision, and the public will be informed by publishing the final NMP on its website (pp. 7-8, TSD).

Other proposed changes to the permit application requirements in Section 502.201 are discussed in the SOR (pp. 44-46, SOR). The basis for these changes, discussed in the SOR, include requirements of the federal regulations, no longer needed in the existing Board regulations, and information needed to review the NMP.

**General Requirements of State Technical Standards, Nutrient Management Plans and  
Technical Feasibility**

All permitted CAFOs must implement NMPs that address the management of livestock waste and other materials at the production areas and land application areas to prevent discharges of these materials to surface waters, protecting water quality and aquatic life. The proper management of livestock waste at the production areas is dependent on the ability of the CAFO owner or operator to remove accumulated waste from the production areas. A Nutrient Management Plan, as previously discussed, must address the CAFO production areas and land application areas that receive the accumulated livestock waste from the production area. It must incorporate the requirements of the federal CAFO NMP and effluent limitation regulations. The federal NPDES and effluent limitation regulations require the development of state technical standards and implementation of those standards for CAFOs subject to the effluent limitations of the federal regulations. Therefore, Illinois EPA proposes State Technical Standards to address production areas and land application areas (pp. 6, 46 and 47, TSD and p.33, SOR).

The livestock wastes, raw materials, byproducts, products and other materials at different size operations have the same characteristics whether from a small, medium or large CAFO and present the same risks to surface water quality and aquatic life when discharged to these waters. (p. 21, TSD). The owners and operators of CAFOs commonly use the same type of land application practices, equipment and technology for large dairy cows, cattle, swine, poultry and veal CAFOs as for the medium and small CAFOs of these animal types. The NPDES permits and approved NMPs must contain the necessary terms and conditions to protect water quality.

The federal effluent limitation regulations require the development of best management practices to minimize the transport of nitrogen and phosphorus from livestock waste land

application areas to surface waters. Further, the federal CAFO NPDES and effluent limitation regulations require the development of technical standards by the permitting authority that determine the application rates for livestock waste to achieve realistic production goals taking into account the form, source, timing, amount and method of application of livestock waste, while minimizing transport of nitrogen and phosphorus to surface waters. In addition, the federal CAFO regulations require the NMP for all permitted CAFOs to specify the factors and methodology to be used to determine site specific application rates for each of the CAFO's land application areas. (pp. 15-16, TSD). As part of these application rate determinations of the NMP, a field specific assessment for the transport of nitrogen and phosphorus must be conducted (pp. 19, 22-26, TSD). The federal CAFO regulations require that all permitted and approved CAFO NMPs contain an outcome of a site specific field assessment for nitrogen and phosphorus transport to surface waters that addresses the form, source, amount, timing and method of application of nutrients on each field to achieve realistic production goals (p. 19, TSD). The federal CAFO rules contain overlapping and similar requirements for large CAFOs subject to the federal effluent limitation regulations of the CAFO rules and the requirements of NMPs for small, medium and large CAFOs with regard to land application rates and field assessments of nitrogen and phosphorus transport to surface waters. Based on the similar characteristics of discharges, the same practices and technology, and similar requirements of the federal regulations for small, medium and large CAFOs, the Illinois EPA proposes the same technical standards and effluent limitations for small, medium and large dairy cows, cattle, swine, poultry, and veal CAFOs to protect water quality and aquatic life from the permitted CAFOs. (p. 21, TSD; p. 53, SOR).

The proposed new source standards for dairy cows, cattle, swine, poultry and veal CAFOs (Subpart G and H of the proposed rules) require the same production area and land application provisions be applied to these facilities as the CAFOs subject to Subpart F with the exception (Section 502.605) of one portion of the production area requirements for new large swine, poultry and veal CAFOs. This exception is for new source swine, poultry and veal CAFOs that must model the facility based on climate data and other factors to determine the design, construction, operation and maintenance of the facility that will prevent discharges and are subject to Subpart H of the proposed rules. The federal effluent limitation regulations and federal CAFO NPDES regulations regarding land application areas have the same requirements for land application areas for the new source and existing dairy cows, cattle, swine, poultry and veal CAFOs. For these facilities with the same proposed requirements for the production areas and land application areas, the Illinois EPA expects that these CAFOs have production areas, livestock management systems and livestock waste handling systems that are similar in design, construction, operation and maintenance. The operation and management of livestock waste land application is expected to be the same for new and existing sources in these categories. The effect of runoff from livestock waste application areas from these categories of livestock facilities on water quality and aquatic life is expected to be the same. Therefore, for new source dairy cows, cattle, swine, poultry and veal CAFOs, the Illinois EPA proposes that they be subject to the same production area requirements in Sections 502.605 ( except for new source swine, poultry and veal) and 502.610 and the land application area requirements of 502.615 through 502.645. (pp. 56-57, TSD) that apply to other existing CAFOs with these species.

## **Nutrient Management Plan**

The Agency proposes Subpart E: Requirements for Developing and Implementing Nutrient Management Plans to address the requirements of the federal CAFO regulations for NMPs. The federal CAFO regulations require each NPDES permit to contain a requirement that the CAFO owner or operator implement a nutrient management plan. The federal CAFO regulations require the NMP to specify practices to meet applicable effluent limitations and standards in 40 CFR 412 for the production areas and land application areas. The federal regulations require that all permitted CAFO NMPs must specify best management practices that will be used by the CAFO owner and operator to manage livestock waste, to appropriately land apply the livestock waste, to properly handle mortalities, chemicals and other contaminants and to prevent unauthorized discharges of livestock waste, chemicals, raw materials and other potential contaminants from the CAFO production area and land application area.

In addition, the federal CAFO regulations require submission of the NMP for Agency review. Under the federal regulations, after review of the CAFO NMP by the permitting authority, the public is provided an opportunity for review of and comment on the NMP (SOR, pp.22-23). The proposed Sections 502.505, 502.510 and 502.515 specify the information to be included in the nutrient management plan and the requirements for the NMP that must be included in the NPDES permit for each CAFO. Further discussion of the NMP requirement is in the SOR (pp. 21-24, 76-81) and TSD (pp. 9-14).

Proposed Section 502.505 identifies facility specific information to be included in the nutrient management plan. Proposed Section 502.510(a) requires each permit to contain a requirement to implement a nutrient management plan. Proposed Section 502.510(b) specifies the elements that must be in the permitted CAFO's nutrient management plan. Proposed Section

502.515 specifies the terms of the nutrient management plan that must be included in the CAFO's NPDES permit.

Proposed Section 502.505(g) requires that NMPs contain maps that show features of the fields including surface water and subsurface drainage features, setbacks, buffer zones, site specific conservation practices and other features that have specific criteria applicable to them or are required to be identified by the federal regulations. These required maps are similar to requirements for Waste Management Plans under the Livestock Management Facilities Act (LMFA) regulations and under standards for nutrient management and waste management issued by the USDA-National Resource Conservation Service for its programs (p 9, TSD).

The Agency proposes in Section 502.505(h) that the nutrient management plan include, for land application areas not owned or rented by the CAFO, a copy of the statement of consent from the owner of the land. The Agency is requiring this information as proof of availability of this land and to demonstrate that the CAFO has access to adequate land application area to land apply its livestock waste.

Proposed Section 502.505(i)-(o) require specific information to be included in the NMP for determination of land application rates of livestock waste and the amount of land required for the CAFO to properly manage the production area and land application areas (pp. 77-79, SOR). Proposed Section 502.510(b)(4)-(7) require the NMP to specify and demonstrate proper management of mortalities, appropriate clean water diversions, prevention of livestock contact with waters of the United States and proper handling of chemicals and other contaminants on-site. Improper management of mortalities, inappropriate or absent clean water diversions and contact of livestock with waters of the United States may result in the CAFO not being able to claim the agricultural storm water exemption under the federal CAFO regulations for land



application of its livestock waste as explained in the TSD (pp. 9-10, TSD). Mishandling or improper disposal of chemicals and other contaminants by the CAFO may result in unauthorized discharges, interference of biological activity in waste treatment lagoons, or contamination of livestock waste resulting in contaminated discharges from production areas and contaminated runoff from land application areas harming water quality and aquatic life (p. 11, TSD).

Proposed Section 502.510(b)(8)-(10) require the NMP to contain site specific conservation practices, protocols for testing the nutrient content of livestock waste and soil, and protocols to land apply livestock waste to ensure appropriate agricultural utilization of these nutrients. These provisions are requirements of the federal CAFO regulations for NMPs. Proposed Section 502.510(b)(9) specifies that the soil must be analyzed twice every five years for phosphorus. Analysis of soil samples twice every five years allows for comparison of soil phosphorus levels taken during the same phase of the crop rotation cycle. This sampling frequency also provides more data on which to base the determination of application rates that will assure agricultural utilization of nutrients (pp. 11, 19, 51 and 52, TSD). Proposed Section 502.510(b)(11)-(13) require the NMP to specify and demonstrate the land application setbacks, the winter time application plan and a plan for the inspection, monitoring, management and repair of subsurface drainage systems at the land application sites. Proposed Section 502.510(b)(13) requires visual inspection of subsurface drains prior to and after land application of the livestock waste. The explanation for the basis for these requirements is provided in the TSD (pp. 11-13), which includes specifying the site specific conservation practices to be used and the nutrient management practices to ensure appropriate agricultural utilization of nutrients in the livestock waste as required by the federal CAFO regulations.

Proposed Section 502.510(b)(14) requires that the NMP include a spill prevention and control plan. Having a spill prevention and control plan for the production area and land application areas will prevent discharges from these areas that may harm water quality and aquatic life. Further explanation for the basis for this requirement is provided in the TSD (pp. 13, 20 and 21).

Proposed Section 502.510(b)(15) requires the NMP to specify the records to be kept to document the implementation and management of the minimum elements of the nutrient management plan (Section 502.510(b)(2)-(14)). As explained in the TSD (pp. 13 and 14) documenting these practices is important to show compliance with the permit for permitted CAFOs and in the case of unpermitted large CAFOs, to adequately and justifiably claim the agricultural storm water exemption for land application of the livestock waste.

Proposed Section 502.510(b)(16) requires the NMP to contain provisions and schedules for storage of livestock waste when cropping practices, soil conditions, weather conditions and other difficulties prevent the land application of livestock waste or the use of other methods of livestock waste disposal.

**Technical Standards and Effluent Limitations Applicable to Permitted and Unpermitted CAFOs**

The Agency proposes Subpart F: Livestock Waste Discharge Limitations and Technical Standards, Subpart G: Additional Livestock Discharge Limitations and Subpart H: New Source Performance Standards for New Large Swine, Poultry and Veal CAFOs. These proposed technical standards and effluent limitations apply to permitted CAFO production areas and land application areas.

In addition, a portion of the technical standards and effluent limitations apply to large unpermitted CAFOs that claim the agricultural storm water exemption under the Clean Water Act and federal CAFO regulations. Section 502.102 of the proposed rule specifies that unpermitted large CAFOs must meet proposed Section 502.510(b). Section 502.510(b)(11) specifies that livestock waste cannot be applied within the specified distances from residences provided in 502.645(a) and within areas prohibited from land application by Part 502. In addition, Section 502.510(b)(12) specifies that winter time application of livestock waste must be in accordance with Section 502.630. The Agency believes that applying wastes to areas prohibited by the proposed technical standards and effluent limitation regulations, which generally include prohibited areas near surface waters or conduits to surface waters, or land application under winter conditions where little attenuation and retention of nutrients is provided, will result in runoff of livestock waste to surface waters. Such runoff may cause harm to water quality and aquatic life. In addition, the Agency believes that prohibiting surface application of livestock wastes that originates from large unpermitted CAFOs and permitted CAFOs and that will take place within ¼ mile from a residence will provide protection of those residences from runoff of livestock waste and reduce the potential for odor to those residences.

As noted previously, the federal regulations specify the NMP for permitted CAFOs to have best management practices to address pollutants such as livestock waste, mortalities, chemicals and other contaminants at the production areas and land application areas and incorporate the federal effluent limitation regulations.

For production areas, the Illinois EPA proposes in Section 502.605(a)(2) and 502.610(a) that the permitted CAFO owner properly operate and maintain the production area systems for livestock waste treatment, storage, management and testing. The federal regulations require that

permitted CAFOs properly operate and maintain their facilities to meet NPDES permit and federal effluent limitation guidelines. Failure to properly operate and maintain livestock facilities may cause an unauthorized discharge, violation of water quality standards and harm to aquatic life (p. 47, TSD).

The Illinois EPA proposes in Section 502.610 that the permitted CAFO conduct production area inspections and correct deficiencies in accordance with federal effluent limitation guidelines. The Illinois EPA believes to conform to the federal effluent limitation guidelines, for deficiencies not corrected within 30 days, the deficiency must be accompanied by an explanation of the factors preventing immediate correction within the 30 day period. (p. 47, TSD.)

The Illinois EPA proposes in Section 502.610(g) a prohibition for the discharge of pollutants from dead livestock and dead animal disposal facilities to waters of the United States from the permitted CAFO. Proposed Section 502.610(g) also prohibits the disposal of dead livestock in liquid manure storage structures, egg wash wastewater or egg processing wastewater facilities, or areas used to hold products, by-products or raw materials set aside for disposal, other than facilities used solely for disposal of dead livestock. This proposed section addresses the federal effluent limitation guidelines requirements for mortality disposal and prevention of the discharge of pollutants from mortalities, as explained in the TSD. Preventing the disposal of mortalities in these facilities keeps the dead livestock and associated pollutants separate from other materials that may be land applied or under an NPDES permit may be discharged (p. 48, TSD).

The Illinois EPA proposes in Sections 502.510(b)(7) and 502.610(h) for permitted CAFOs that chemicals and other contaminants must be properly handled. The proper

management of these chemicals and other contaminants is important to prevent the inappropriate addition of chemicals or other contaminants to livestock waste. For example, pesticides or hazardous or toxic materials that are introduced into livestock waste could be discharged to surface waters during land application or from accidental releases of livestock waste.

The federal regulations allow the disposal of chemicals and other contaminants in livestock waste treatment and storage systems only if they are specifically designed to handle or treat the chemicals or other contaminants. However, not all livestock waste storage and treatment systems are designed to handle these chemicals. The introduction of chemicals and other contaminants could interfere with biological processes in lagoons or digesters resulting in their failure. The NMP could include information on storage and handling of these materials, how the material containers are disposed and how these materials are prevented from entering manure and wastewater storage structures.

The Agency believes that the CAFO owner or operator should follow instructions supplied from the chemical manufacturer and not dispose these materials into livestock waste storage and treatment systems (pp. 48-49, TSD).

The Illinois EPA proposes in Section 502.610(i) and (j) to require the inspection of berms at permitted earthen manure storage structures and waste containment areas and the periodic removal of sludge from liquid manure storage and waste containment areas. Weekly inspections of berm structural conditions and periodic removal of accumulated sludge are important to the proper operation and maintenance of the manure storage structures and waste containment areas. In addition, structural failure of manure storage and waste containment structures or inadequate volumes due to sludge accumulation may result in discharges to waters of the state, causing water quality violations and harming aquatic life.

Illinois EPA proposes 180 day minimum livestock waste storage volume requirements for permitted CAFOs, except for new large swine, poultry and veal CAFOs. The proposed storage volume must account for the generation of livestock waste, precipitation, runoff and wash waters during the 180 days, the 25 year, 24 hour storm event precipitation and runoff, 2 feet of freeboard and other applicable factors in the proposed rule. Proposed Section 502.610(l) requires the permitted CAFO to have 180 days storage for periods when livestock waste cannot be land applied due to crop, field, or weather conditions, such as snow covered or frozen land. This requirement provides the capacity needed so that the CAFO can design, construct, operate and maintain the storage structure to meet federal regulations, these proposed Subtitle E regulations and prevent discharges. USEPA used 180 days of storage in the development of the federal CAFO NPDES regulations and effluent limitations. The Livestock Management Facilities Act and regulations uses a similar storage period ranging from 150 to 270 days based on type of livestock waste storage structure.

The Illinois EPA is proposing the same capacity for each type of storage structure and for dairy cows, cattle and existing swine, poultry, veal CAFOs to simplify the storage requirement. In addition the land application limitations are the same for these permitted CAFOs. Therefore the same storage capacity requirement is needed for these systems. New large swine, poultry and veal CAFOs are required to model climate and other factors to determine the necessary volume to prevent discharges from all precipitation events. Therefore, 180 day capacity may not provide adequate storage capacity for a new large swine, poultry and veal CAFO, and consequently are not included in this proposed section. Further discussion of the 180 day storage requirement is provided in the TSD (pp. 50-51).

Manure and soil sampling and testing is proposed in the technical criteria in proposed Section 502.635 for permitted CAFOs. The federal regulations require the NMPs to have protocols for sampling and analysis of soils at land application areas and for the manure that will be land applied. The sampling and analysis of soils and manure are important in the determination of land application rates of livestock waste in accordance with the federal regulations and these proposed Subtitle E regulations. These proposed protocols include federal effluent limitation guidelines that specify certain specific requirements for sampling and analysis of soils and manure with regard to land application of livestock waste. The proposed Section 502.635(a) requires soil to be sampled and tested for phosphorus content in accordance with established procedures in Illinois and the Midwest. The proposed Sections 502.635(b)(1) requires annual sampling and analysis of the livestock waste that will be land applied. The proposed Section 502.635(b)(2) requires samples to be analyzed for Total Kjeldahl Nitrogen, ammonia or ammonium nitrogen, phosphorus (as  $P_2O_5$ ), and potassium (as  $K_2O$ ). Further discussion of the reasons for the proposed soil and manure sampling and analysis requirements is provided in the TSD (pp. 51-54).

The Illinois EPA is proposing land application equipment inspection and calibration requirements, in Section 502.640 for permitted CAFOs. The inspection of land application equipment is a requirement of the federal effluent limitation regulations. Inspecting and calibrating land application equipment can prevent unintentional discharges and over-application of livestock waste. Further discussion of this proposed section is in the TSD (pp. 54-55).

The Illinois EPA is proposing land application setbacks to sensitive sites and to waters, in Section 502.645(b), for permitted and unpermitted CAFOs. These provisions include setbacks and prohibitions from surface waters, 10-year floodplains and grassed waterways. These

provisions are derived from the LMFA and from federal effluent limitation guidelines. The Agency reviewed the literature regarding setbacks from waters and conduits to surface waters and, based on that literature, determined that appropriate setbacks could be established that will prevent contaminated runoff to surface waters. Further discussion of the setback provisions and prohibitions is provided in the TSD (pp. 54-55).

#### **Land Application Rates of Livestock Waste, Nitrogen and Phosphorus for CAFOs**

The federal CAFO regulations for NMPs and the agricultural stormwater exemption establish that for each permitted and approved CAFO NMP, the determination of livestock waste land application rates must be based on data, calculations and information regarding the agricultural utilization of the nitrogen and phosphorus in the livestock waste (pp. 15-18, 22-26, 35-38, 51-55, TSD).

The proposed Section 502.505(m) addresses facility specific data, calculations and information needed to determine application rates and the land area needed to apply phosphorus at rates to be determined based on the agronomic phosphorus demand of the crops to be grown (p. 15, TSD). In determining the application rate of phosphorus to be used the CAFO must determine if the land application of phosphorus in the livestock waste will be on a single year or multi-year basis. In a single year basis application, phosphorus is applied at rates not to exceed the phosphorus demand of the next crop grown. Since phosphorus loss is minimal under some soil conditions, phosphorus can be applied in a single application at amounts that will supply enough phosphorus to crops for more than one cropping year. In multi-year applications of phosphorus, livestock waste would be applied at rates not to exceed the agronomic nitrogen demand of the next crop grown and harvested on the site. When livestock waste is applied at rates to supply the agronomic nitrogen demand of the crop to be grown, usually the waste will be



applied at the multi-year phosphorus application rate. Further discussion of this application rate determination is in the TSD (pp. 16–18, 35).

The appropriate application rates of livestock waste, the amount of plant available nitrogen agronomically needed by the crop and supplied by the application of the livestock waste must be determined. The factors for determining the amount of plant available nitrogen supplied by the land application of the livestock waste are required in the NMP by the federal CAFO regulations. The Illinois EPA proposes in Section 502.505(n) that the NMP contain data and information that is needed to determine agronomic application rates of livestock waste that will not exceed the agronomic nitrogen demand of the next crop grown and harvested on the site.

In Sections 502.505(j), (k), (l), (m) and (n), 502.510(b)(1) and 502.625, we propose to use recommendations from several sources specific to Illinois, including the University of Illinois, from the 2009 edition of the Illinois Agronomy Handbook and the Soil Productivity Bulletins 810 and 811; the Livestock Management Facilities Act, Part 900 regulations; and Midwest Plan Service – Livestock Waste Facilities Handbook (Midwest Plan Service, 1998), to determine the agronomic application rates for nitrogen and phosphorus in livestock waste (pp.16-18, 35-38, 51-55, TSD). By using these established standards and regulations in the Agency's proposed technical standards and effluent limitations, we believe that the determination of application rates of nitrogen and phosphorus, and consequently livestock waste application rates, will meet the federal regulations for agricultural utilization of nutrients, allowing the unpermitted large CAFO and permitted CAFO to meet the federal CAFO regulation and Clean Water Act regarding the agricultural storm water exemption.

### **Determination of Livestock Waste Application Rates**

The determination of livestock waste application rates are proposed to be based on the agronomic nitrogen rate or agronomic phosphorus rate for the crop to be grown. In determining the agronomic rates for nitrogen and phosphorus, several factors affect the determination of the application rate, including nitrogen availability, realistic crop yield, and nitrogen and phosphorus uptake or agronomic demand of the crops grown (pp. 34-38, TSD).

Illinois EPA proposes in Section 502.625(a) to establish the requirement that the livestock waste application rate shall not exceed the agronomic nitrogen rates and the phosphorus application rates must be based on Sections 502.615 and 502.625.

Proposed Section 502.625(d) and (f) establish adjustments to nitrogen availability due to carry over from previous crops or manure application in prior years and due to losses associated with manure application.

We propose in Section 502.625(e) that the realistic yield goal be determined using the average crop yield over a five year period for the land application area. This five year average is the proven yield. Three alternative methods may be used if the methods have an agronomic basis. These alternatives are the established crop insurance yields, the Farm Service Agency-United States Department of Agriculture yields and the soil-based yield data from the University of Illinois. In most cases the yield goal obtained under the proposed Section 502.625(e) will be the same as the targeted yield goal under the LMFA. The exception to this is the soil-based yield goals from the University of Illinois. In determining the soil-based yield goal, a weighted average of soil productivity indexes for each field would be used to provide the realistic yield goal. Further explanation of the determination of the realistic yield goal is provided in the TSD and SOR (p. 37, TSD, pp. 67-68, SOR).

The determination of the maximum livestock waste application rates based on phosphorus must be based on several factors, including the realistic yield goal and the fertilization rates in the Illinois Agronomy Handbook as proposed in Section 502.625(g) and (h). The determination of maximum livestock waste application rates based on nitrogen must use the realistic yield goal and may be based on the Illinois Agronomy Handbook as proposed in Section 502.625(h). As noted in the TSD, the University of Illinois – Illinois Agronomy Handbook is used as a source of fertilization rates by the 2002 Illinois-specific nutrient management and waste management standards of the Natural Resource Conservation Service of the United States Department of Agriculture. The existing Illinois LMFA regulations for waste management plans also reference the Illinois Agronomy Handbook. Using these existing sources of information to determine maximum nitrogen and phosphorus application rates for land application, addresses federal requirements regarding agricultural utilization of nutrients (p. 38, TSD).

#### **Nitrogen Versus Phosphorus Application Rates**

The federal CAFO regulations require the outcome of an assessment of the potential for nitrogen and phosphorus transport from the livestock waste application fields to surface waters to be part of the NMP. The proposed Sections 502.510, 502.515 and 502.615 establish the specific requirements for permitted CAFOs to conduct the assessments (p. 19, TSD).

The concept in the proposed rule embodied in Section 502.615 is for the field assessment to be used to determine if nitrogen or phosphorus based application rates should be used to land apply the livestock waste. By determining the factors present for each field, the CAFO owner and operator can determine, using the criteria in Section 502.615(b), (c) and (d), whether nitrogen or phosphorus based application rates are appropriate (p. 22, TSD).

This approach to determining phosphorus application rates is based on the Soil Test Phosphorus Level approach, one of three methods cited in the preamble to the 2003 federal CAFO regulation and in the 2004 USEPA guidance “Managing Manure Nutrients at Concentrated Animal Feeding Operations”. These same three methods are outlined in the United States Department of Agriculture – National Resource Conservation Service (USDA-NRCS) 590 standard for nutrient management (pp. 22-23, TSD).

The criteria in Section 502.615(b), (c) and (d) use four soil phosphorus test level categories; 0-50, 50-300, 300-400 and greater than 400 pounds of soil test plant available phosphorus per acre in determining application rates of livestock waste on a field. Factors besides Soil Test Phosphorus Level influence runoff of phosphorus from livestock waste application fields and are taken into account in the criteria in Section 502.615(c) and (d). These factors include application rates of livestock waste and phosphorus, setbacks, method of application, soil erosion, and conservation practices. These factors are also used in the 2002 Illinois' USDA-NRCS standards and in phosphorus indexes in other states. (p. 23, TSD). Further explanation of these criteria is provided in the TSD (pp. 22-24) and SOR (pp. 65-67).

The Illinois EPA is proposing that land application rates of livestock waste be phosphorus neutral during the nutrient management period when the soil test phosphorus level is greater than 50 pounds of available phosphorus per acre. The nutrient management period is the time frame, usually 4 years or longer, that is covered by the NMP. To be phosphorus neutral during the nutrient management period means that the amount of phosphorus applied to the site during that period does not exceed the phosphorus uptake of the crops grown. Based on the University of Illinois Agronomy Handbook, soils with soil test levels of plant available phosphorus greater than 50 pounds per acre do not require phosphorus buildup for the next crop

grown. Restricting application rates of phosphorus on these soils will minimize phosphorus transport to surface waters while allowing for agricultural utilization of the nutrients during the nutrient management period (pp. 23-24, TSD).

The proposed Section 502.615(c) and (d) limit phosphorus application rates to the amount of phosphorus removed by the following year's crop when soil test levels of phosphorus exceed 300 pounds per acre. Based on review of the literature regarding phosphorus runoff from agricultural fields, correlations between soil test phosphorus levels and dissolved phosphorus, dissolved reactive phosphorus, total phosphorus and algal-available phosphorus in runoff were found. Using the data and equations from several of the studies cited in the TSD, total phosphorus in runoff from land application sites with soil test phosphorus levels of 300 pounds of plant available phosphorus per acre was estimated to be approximately 0.9 mg/L total phosphorus when total sediment loads are minimized. As noted by one of the authors of the cited studies, 1 mg/L of total phosphorus has been a suggested goal for total phosphorus discharge in effluents from sewage treatment plants (pp. 24-25, TSD).

In Section 502.615(d)(5) the Agency proposes that application of livestock waste be prohibited when soil test available phosphorus levels exceed 400 pounds per acre. A review of the literature regarding soil test available phosphorus levels and phosphorus runoff showed that when soil test available phosphorus levels exceeded 400 pounds per acre, runoff from livestock waste application sites exceed 1 mg/ L total phosphorus (pp. 25-26, TSD). Therefore, as further explained in the TSD, the Agency proposes to prohibit application of livestock waste to sites when soil test available phosphorus levels are greater than 400 pounds per acre.

Proposed Section 502.615(c) allows nitrogen based application when the available phosphorus soil test level is equal to or less than 300 pounds per acre. In addition, to conduct

nitrogen based application of livestock waste, soil loss must be less than Erosion Factor T, greater setback distances or conservation practices are required when certain drainage features are present on the field, and injection, incorporation, or equivalent conservation practices are required when surface waters are present within 200 feet of the field. If the criteria for nitrogen based application cannot be met, then phosphorus based application must be conducted. We expect that phosphorus based application rates will result in lower application rates of livestock waste, due to the ratio of phosphorus to nitrogen in livestock waste and the ratio of plant uptake of these nutrients, as explained in the TSD (p. 16). Lower livestock waste application rates based on phosphorus are expected to reduce the amount of nitrogen and phosphorus in runoff to surface waters as compared to applying the same waste at nitrogen application rates. (pp. 23-24, TSD)

#### **Determining Livestock Waste Volume and Nutrient Value**

The area needed for land application of livestock waste by the permitted CAFO depends on the amount of livestock waste generated by the CAFO as well as the nitrogen and phosphorus concentrations in the livestock waste. The federal regulations require documentation in the NMP of the amount of livestock waste to be land applied (p. 36, TSD). Proposed Sections 502.625(b) and 502.625(c) use established methods from existing publications, regulations and the LMFA to estimate livestock waste volumes and to estimate nutrient content of wastes for facilities that have not yet generated livestock waste (p. 36, TSD). Other methods of estimating nutrient content of livestock waste can be used if approved by Illinois EPA. Existing livestock facilities must prepare the NMP based on representative sampling and analysis of the livestock waste (p. 36, TSD).

### **Protocols to Land Apply Livestock Waste**

Proposed Section 502.620 establishes practices and protocols for land applying livestock waste to prevent discharges of livestock waste from land application sites. Poorly managed or operated livestock waste handling systems and improper land application practices have resulted in discharges that could have been prevented with better planning, management and operation at CAFOs. (p. 26, TSD). Some of these proposed best management practices are well established and were taken from the 2002 Illinois NRCS Standards 590 and 633 (pp. 26-27, TSD). Soil water conditions at the time of livestock waste application are important with regard to the ability of the soil to attenuate and hydraulically adsorb the applied livestock waste and are therefore proposed in Section 502.620(a)-(c).

The federal CAFO regulations require the CAFO to develop protocols for land application that provide for appropriate agricultural utilization of the livestock waste. The federal CAFO regulations require the timing of livestock waste application to be accounted for as a factor in determining application rates (p. 28, TSD). In Section 502.620(d) we propose that CAFO owners and operators use National Weather Service forecasts available on the Internet to determine when to plan and carry out surface application of livestock waste so that precipitation is unlikely. We also propose to prohibit surface land application when precipitation is forecast. Agency review of the literature, particularly the paper by Daverede et al, 2004, showed that phosphorus runoff from surface applied manure one month after application contained total phosphorus of 8-12 mg/L. In developing these criteria in the proposed rule, the Illinois EPA considered several factors and chose to develop a single forecasted amount for the prohibition of surface application of livestock waste (p. 28, TSD). Methods proposed by USEPA use soil type and site specific factors to determine the forecasted amount of precipitation upon which to base

the risk of runoff from surface application (p. 29, TSD). As explained in the TSD, the precision of the methods used to determine runoff volumes and precipitation amounts that do not result in runoff using the Curve Number method has been the subject of review and study by the academic community as well as developers and practitioners of this method in recent years (pp. 29-31, TSD). The review of the literature showed that the Curve Number Method was not developed to determine the amount of precipitation that will cause runoff to begin. In addition, the data and methods used to develop the original curve numbers and initial abstractions are not available for review. Recent studies have shown that the hydrologic soil group classifications have not been consistent, with errors of plus or minus one soil group in the classification determined. Based on these inherent errors and other limitations, the Agency determined that introducing additional complexity to the rule by using site and soil-specific precipitation amounts in the precipitation forecast criteria was not necessary as it did not add additional protection of surface waters.

With the above limitations in mind, we have used the Curve Number Method to develop criteria of when land application should be prohibited due to a forecasted precipitation event. As explained in the TSD, most soils in Illinois are considered to be in hydrologic soil groups A and B based on listings of soil types published by USDA-NRCS. Based on limitations in proposed Section 502.620 that prohibit land application on saturated soils, on land ponded with water, during precipitation, and livestock waste must not be applied at rates that do not exceed the infiltration rates of the soil, an antecedent soil moisture “condition II” was assumed. The Agency determined that Curve Number 80, shown in USDA-NRCS National Engineering Handbook was appropriate to use, which resulted in an estimated 0.5 inches of rainfall on most Illinois soils before runoff could occur. Therefore, the Illinois EPA has proposed that forecasts of 0.5 inches



or greater of precipitation in a 24 hour period after land application be used as the criteria when surface land application of livestock waste is prohibited. In addition, use of 0.5 inches as the criteria corresponds to forecasted amounts provided by the National Weather Service at two of its websites. The CAFO owner or operator can access these forecasts and keep records for the time and location of the land application of livestock waste, documenting that this best management practice of the nutrient management plan and these proposed regulations were followed. Further discussion of the use and development of the weather forecast criteria is provided in the TSD (pp. 27-31).

The Illinois EPA proposes that land application of livestock waste be prohibited on sites with greater than 15 percent slope. The Illinois NRCS Code 633 specifies that livestock waste shall not be applied to slopes over 15 percent. The Illinois EPA believes that this practice is essential to minimize nutrient runoff potential (p. 31, TSD).

Soil depth and soil properties are factors that must be considered to determine the potential for groundwater contamination. Deep, medium and fine grained soils slow movement of contaminants, provide more filtering and removal of contaminants in the livestock waste, than shallow or coarse grained soils. (pp. 31-32, TSD). Application of livestock waste directly to bedrock, sand or gravel soils may introduce livestock waste quickly to groundwater providing little or no protection of the groundwater. The Agency has proposed Section 502.620(h) and (i) to minimize impact to groundwater. This proposal is consistent with Illinois NRCS Code 633 (pp. 31-32, TSD).

In Section 502.620(e) we propose that the NMP include a soil loss determination using the Revised Universal Soil Loss Equation Version 2 (RUSLE2). The RUSLE2 equation depends on the following factors: soil erosivity, soil erodibility, slope length, slope steepness, cover

management, and supporting practices. We proposed that surface application of livestock waste be prohibited when soil loss exceeds Erosion Factor T or 5 tons per acre, whichever is less. Soil loss is part of the field specific assessment required in proposed Section 502.615. Also, the CAFO owner's NMP must identify site specific conservation practices to control runoff of pollutants from land application sites to surface waters and establish protocols for site specific nutrient management practices that provide for agricultural utilization of nutrients. Using RUSLE2 provides a method for the CAFO owner and operator to evaluate changes in site specific conservation and nutrient management practices that may affect soil erosion and nutrient transport from land application sites. The CAFO owner and operator can then make more informed decisions regarding adjustments to the practices at the livestock waste land application sites (pp. 32-33, TSD).

The Illinois EPA has reviewed the technical literature regarding the reduction in total nitrogen and phosphorus loads to surface waters with regard to incorporation or injection of livestock waste and found that these practices have been shown to provide reduction of these loadings to surface waters (p. 34, TSD). The Illinois EPA proposes in Section 502.620(f) that when land slope is greater than 5%, and soil loss is greater than 5 tons per acre or Erosion Factor T, then the livestock waste must be incorporated within 24 hours of application or injected into the soil (pp. 33-34. TSD).

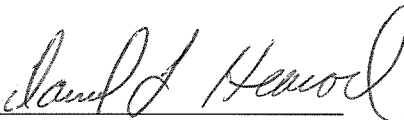
Application rate, depth to bedrock and depth to the water table are factors that can affect the rate that contaminants from livestock waste may reach groundwater. To reduce the risk to ground water, the Agency is proposing in Sections 502.620(j) and (k) that application rates be one half or less than the agronomic nitrogen rate determined according to 502.625 when a field

has less than 20 inches of unconsolidated material over bedrock or when the water table is less than 2 feet from the surface of the field (pp. 34-35, TSD).

Soils that have low infiltration rates or soils with limited water holding capacity are more likely to have runoff following livestock waste application than soils that can retain and hold large quantities of water. The Agency is proposing in Section 502.620(1) that livestock waste not be applied at rates that exceed the infiltration rates of the soil. This proposal is consistent with existing Illinois NRCS Code 633 standards. Further explanation of the conditions where infiltration rates are limited is provided in the TSD (p. 35).

### **Conclusion**

This concludes my pre-filed testimony. I will supplement the testimony as needed during the hearing and am happy to address any questions.

By: 

Daniel L. Heacock

June 13, 2012

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CERTIFICATE OF SERVICE

Joanne M. Olson, Assistant Counsel for the Illinois EPA, herein certifies that she has served a copy of the foregoing NOTICE OF FILING and TESTIMONY OF DAN HEACOCK upon persons listed on the Service List by mailing, unless otherwise noted on the Service List, a true copy thereof in an envelope duly addressed bearing proper first class postage and deposited in the United States mail at Springfield, Illinois on June 14, 2012.

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