

**A Citizen's Guide to Rural Zoning for**  
**Industrial Swine Facility**  
**Waste Lagoons in Oklahoma**

**Developed by**

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# OVERVIEW

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The use of open-air waste lagoons as a method of disposing of the tens of millions of gallons of animal waste generated by the hog industry presents a serious health and environmental threat, particularly when their use and locations go largely unregulated. These lagoons tend to spill or leak harmful substances under ground, contaminating nearby rivers, lakes, and groundwater sources.

The contamination of air, water, and landscapes can constitute an invasion on the rights of nearby residents to enjoy a safe and clean environment. Despite recently tightened restrictions on larger hog operations in Oklahoma, the problems associated with many of these agricultural factories have yet to be adequately resolved. Alternative solutions are needed to protect those communities that are being directly affected.

This guidebook illustrates how citizens and local communities can go about using county planning and zoning laws as a possible solution to minimize the threats industrial swine operations pose to local residents. It examines the legal and procedural requirements for enacting rural zoning in Oklahoma.

The guidebook explains that zoning is most effective when it built on a sound understanding of the community's needs and it reflects citizens' visions for their community. Rural zoning should be based on a comprehensive plan developed using competent technical and legal assistance. The plan should be understood by the public and subjected to periodic review.

In the process of developing a comprehensive plan, organizing and establishing a zoning commission, and drafting a zoning ordinance, there are bound to be challenges along the way. This guidebook also provides suggestions and possible strategies for dealing with potential problems, and explains why flexibility and good problem solving are critical for fostering an ability to move beyond challenges and turn them into opportunities.

Finally, the guidebook seeks to assist citizens and community leaders in understanding the legal and scientific issues involved in assessing and regulating the im-

pacts of concentrated animal feeding operations. It provides detailed information on the social, health, and environmental impacts associated with concentrated animal feeding operations, as well as the technical and scientific aspects that should be considered when developing a planning and zoning proposal.

The goal of any planning and zoning initiative in counties affected by industrial swine operations should be to secure safe and adequate locations for these activities in places where they will not pose an unreasonable threat to the safety and well being of citizens and the environment. By preventing incompatible land uses between adjacent property owners, zoning provides a mechanism for increasing local involvement in decision making and creating a forum where residents can participate in determining the outcomes of regional planning.

The overarching purpose of the guide is to provide communities with better management tools to deal with conflict at a local level. Communities bear the responsibility for ensuring the safety and well being of their citizens and for not allowing the interests of a few to threaten the rights of others.

# BACKGROUND AND PURPOSE OF STUDY

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## INDUSTRIAL SWINE OPERATIONS IN OKLAHOMA

Industrial swine operations are a fact of life in many regions of rural Oklahoma. While industrial swine operations have been touted as an important part of rural Oklahoma's economy and a large source of employment for the communities, these concentrated animal feeding operations (CAFOs) have also become one of the state's biggest problems. Large-scale swine operations consisting of hundreds and sometimes thousands of animals housed in factory-like settings are beginning to create a true health and environmental crisis for the region.

Oklahoma's swine operations produce billions of pounds of waste each year. This is creating one of the nation's most serious water pollution problems. In addition, the proliferation of these operations, often in close proximity to surrounding homes, has forced many local residents to tolerate living alongside roads and landscapes littered with feces and swine carcasses. This results in noxious odors and exacerbates the health risk from the possible spread of disease and infection (Stephens, Pers Com. 2000). (See Appendix A for a detailed account of the impacts of industrial swine waste lagoons).

The consequences of this new growth trend in hog operations have been further felt by traditional family farmers who have been edged out by large corporations that are attracted by the favorable regulatory climate and incentives. While the number of hogs in the state has increased sevenfold in this decade, the number of hog producers is down 55 percent, demonstrating the dramatic consolidation in the hog business toward CAFOs (North Central Regional Center for Rural Development 1998).

The worsening health and environmental situation in rural Oklahoma suggests that a viable working solution is needed. Communities need to find better strategies for controlling the negative impact these activities are having on their health, environment, and quality of life. Clearly, the best solution will be one that responds

to these concerns, while recognizing the important economic role agricultural production plays in their communities.

## PURPOSE OF GUIDEBOOK

The purpose of this study is to provide guidelines and practical information that will enable communities to go forward with a rural planning proposal that will offer a realistic solution to these problems. More specifically, it can serve as a reference guide for citizens seeking to use zoning of waste lagoons to prevent industrial hog farms from operating in areas that threaten the health and welfare of their communities.

It shows how rural planning and zoning, when done properly, can be an effective tool for balancing the interests of everyone involved and improving the well-being of the community at large. Planning and zoning seeks to accomplish these objectives by separating incompatible land uses and guiding the growth of communities along orderly lines, and in a manner that facilitates and promotes future economic development and prosperity (Ohio State 2000: Pub. CDFS-302).

Furthermore, this guidebook discusses zoning in the context of the recent Oklahoma Attorney General's opinion, as well as other challenges presented by the legal, social, economic, and administrative environment in rural regions and in Oklahoma. Moreover, it provides case studies of other states and counties that have sought zoning for this purpose. These case studies may serve as a framework for understanding the legal issues and challenges involved in passing a rural planning and zoning proposal and assessing different strategies.

Finally, this guidebook presents detailed technical and scientific information on the public health, environmental, and social impacts associated with large-scale industrial swine operations and waste lagoons. It seeks to help communities to understand the technical and scientific issues to consider when forming a planning commission and developing a comprehensive plan.

There are numerous options available for dealing with the problems associated with industrial swine operations and the dilemma they present to communities. This guide explores the possibility of using rural planning and zoning as a means of effectively controlling these activities and mitigating their impact on people and their natural resources. Rural planning and zoning, when done properly, can dramatically improve the situation by reducing environmental damage and risk, without placing an unreasonable burden on agricultural production.

The goal of any planning and zoning initiative should be to secure safe, adequate locations for these activities - places where they will not pose an unreasonable threat to the safety and well being of citizens and their resources.

## **OKLAHOMA ATTORNEY GENERAL'S OPINION ON ZONING OF WASTE LAGOONS**

In 1998, legislation was passed, HB 1175, amending the Oklahoma Concentrated Animal Feeding Operations Act and tightening regulations on large industrial hog operations. The measures adopted included:

- \* Required Oklahoma Department of Agriculture building permits prior to licensed managed feeding operation construction or expansion.
- \* Mandatory licensing for all operations greater than 1,000 animal units.
- \* A fee of \$.80 per animal unit as an application fee and an annual renewal fee.
- \* Increased setback distances from occupied residences.
- \* Odor abatement plans.
- \* Employee training in manure management.
- \* Separation distances between groundwater and the bottom of lagoons.
- \* The installation of back flow valves to protect groundwater during effluent irrigation.
- \* Leak detection systems or monitoring wells.

While the measures enable authorities to exercise

greater control over the larger operations, they do not adequately address the fact that large hog operations located near homes and water sources pose a significant health risk for communities.

The fact remains that large hog operators continue targeting rural Oklahoma in search of loose regulations and enforcement, and therefore low-cost sites in which to operate. Moreover, many large operators have responded to the new measures by breaking up their operations into smaller units so as to avoid complying with any aspects of the legislation.

Appropriate zoning of waste lagoons provides a potentially powerful mechanism to compel operators to set up shop away from nearby homes, schools, parks, and water sources. The Attorney General of Oklahoma acknowledges planning and zoning as a tool for controlling the impacts of swine waste. The November 18, 1998 advisory opinion indicated that county governments could zone concentrated animal feeding operations through their waste lagoons (Op. Okla. Att'y Gen. No. 98-31). The advisory opinion comments on the extent of a county's zoning power and the manner in which the power can be exercised.

The opinion states that while zoning could not be used to regulate the usual farm buildings for agricultural purposes or the planting of agricultural crops, zoning can be used to regulate structures, such as waste lagoons, which do not meet the definition of "farm buildings." The opinion also indicates that as part of counties' legal authority to plan and zone areas within their jurisdiction, local zoning can and should be pursued for promoting the public health, safety, peace, morals, and comfort of the community. The opinion presented by the Attorney General of Oklahoma makes it clear that zoning of waste lagoons can and should be pursued as a regulatory option for those communities most effected by the harmful effects of industrial swine operations. Only by securing appropriate sites for large CAFOs can the safety of the communities' water resources be adequately protected.

# PLANNING AND ZONING: PURPOSE AND DEFINITION

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## THE PLANNING PROCESS

Planning is a process of developing goals and objectives by which a city or county decides the kind of future it wants and establishes the necessary tools to research those goals. It involves formulating a comprehensive strategy for guiding the future development of a region by defining the areas where specific activities and land uses will take place (Huntington 2000: 2).

Planning attempts to relate land uses within an area to an overall development pattern that is most effective and efficient based on the needs and desires of its citizens (Ohio State 2000: Pub. CDFS-303). Establishing an orderly land use pattern for residential areas, business districts, agricultural uses, transportation facilities, utilities, and other public facilities and services can reduce social, economic, and environmental costs to the public.

The planning process of a community should result in the formulation of a detailed comprehensive plan that serves as a guide for implementing a zoning ordinance. The comprehensive plan is one part of the broader planning process that includes setting goals and objectives, decision making, inventory, and tools for implementation.

The plan should include population and economic information, transportation, current land uses, and infrastructure. It presents a long-range statement, generally for ten to twenty years into the future. Its function is to guide the decision making process with respect to specific community management tools, such as enacting a zoning ordinance, and allows planners to place day-to-day actions and decisions within a long-term strategy (Lapping 1989:19).

## THE PURPOSE OF ZONING

Zoning is defined as the division of a jurisdiction into districts according to the nature and use of the land so as to promote orderly and efficient development of the area (Ohio State 2000: Pub. CDFS-302). While planning in-

volves setting goals and objectives for the community, zoning becomes part of the concrete process of implementing the plan (Lapping 1989: 59). Zoning is more specific than planning because it indicates the use of each land parcel within a geographic area, rather than outlining the broader objectives relating to land use (Ohio State 2000: Pub. CDFS-303).

Local zoning regulations enacted under a state's specific enabling legislation permit townships or counties to adopt laws regulating the use of private property. All such regulations are required to be reasonable and related to a specific and justifiable end, having to do with the public health, safety and welfare (Lapping 1989: 60).

As part of an overall plan, zoning provides a means of avoiding land use conflicts between one neighbor and another, and preventing the infringement of each other's property rights. It seeks to group compatible uses of land within a district. Incompatible uses may arise when the use of one's land results in a negative consequence for an adjacent landowner (Huntington 2000: 2). For example, the construction of a bar or a landfill in a residential neighborhood district may significantly reduce nearby property values, and may be viewed as a violation of the owners' property rights.

A typical zoning ordinance consists of a district map and a written text setting out the purposes, uses, and regulations for each district, standards for special land uses, and rules administration of the ordinance. The map depicts the location of all zoning districts. A zoning ordinance should establish an orderly and efficient land use designation for residential areas, business districts, transportation facilities, utilities, public facilities and services. It functions by controlling land uses, population density, building height and bulk, lot sizes, open spaces, setbacks, and accessory uses (Huntington 2000: 2).

Within each zone, various districts indicate the particular types of activities permitted. For example, within a residential zone there may be defined single-family residential or multifamily residential districts. In manufac-

turing zones, there may be areas for industrial parks or for general industry or heavy industry. Within industrial districts, some of the restrictions that may be imposed include noise and odor limitations, storage of outside materials, or specification of different industrial uses (Lapping 1989:59).

Some of the objectives sought through zoning include:

- \* Conserving property values by preventing incompatible land uses.
- \* Encouraging efficient and orderly development patterns to facilitate adequate and economic provision of public improvements, transportation, and public utilities.
- \* Limiting overcrowding of land and congestion.
- \* Preserving the availability of agricultural land and open space.
- \* Protecting the community from safety and environmental hazards and preserving its natural resources. (Huntington 2000:1, and Lapping 1989: 80-82).

## LIMITATIONS TO ZONING

Zoning works best by allowing different interests within a community to coexist in a manner that fairly balances each other's needs and prevents one party from infringing on the rights of another. Zoning can prevent rural areas from becoming dumping grounds for businesses trying to avoid municipal regulations. Furthermore, zoning can protect present and future industry from harassment by residential neighbors by planning where industry will be permitted to develop in an orderly and systematic fashion.

As mentioned previously, the purpose of zoning is only to protect the public health, safety, and welfare of the community by preventing landowners from using their site to the detriment of the general welfare of the community at large. Actions that do not affect the public health, safety, and general welfare are outside the scope of zoning. This is one reason why it is important to develop a proposal that reflects the goals and wishes of the community, and which can be implemented in a fair, reasonable, and democratic manner.

Zoning will generally be less useful as a means of controlling existing land uses. Once a land use is properly permitted, it generally retains the right to exist in its original form and is subject to zoning restrictions only when

there is a change or expansion of an existing use that is not allowed by right (Schwab 1998:43). For example, zoning usually cannot be used to shut down legally permitted existing uses, including CAFOs that predate the zoning ordinance or any relevant amendments to the zoning ordinance

Zoning should not be viewed as a cure for all perceived ills in a community or a solution for resolving all neighborhood feuds. The best that can be achieved is an orderly development and land-use plan that reflects the interests of the community at large. It will always involve compromises aimed at minimizing conflict between landowners (Ohio State 2000: Pub. CDFS-301). Finally, it should be noted that zoning should not be used to support any economic, racial, or religious group, nor should it be used to enforce private deed restrictions or other matters that are best resolved between disputing parties (Ohio State 2000: Pub. CDFS-301).

Effective zoning requires active participation and consensus building so that its objectives can be realized and administration and enforcement of the ordinance can be properly carried out. It should be seen as a tool that allows for important community decisions to be made within the community, and should be flexible enough to allow for changing conditions and unanticipated opportunities (Ohio State 2000: Pub. CDFS-301).

# UNIQUE ASPECTS OF RURAL ZONING

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**H**istorically, rural zoning was limited to such purposes as preserving agricultural land and the rural nature of the landscape. Planning and zoning is now being used to assist communities in facilitating economic development by preserving adequate sites for agricultural, commercial and industrial development, as well as for preserving natural resources, separating incompatible land uses, and facilitating public sector investments in public utilities (Lapping 1989: 58).

Rural planning and zoning can also serve as a useful tool for preventing communities from becoming dump-grounds for businesses trying to avoid regulation. In those rural communities that find themselves affected by the negative impacts associated with CAFOs, rural planning and zoning is often the most viable method for ensuring that these operations are not located in areas where they pose a danger to the health and well-being of residents.

## THE CHALLENGES OF RURAL PLANNING AND ZONING

While planning and zoning has served as an effective tool for planners in urban communities, relatively little zoning has been done in rural areas. Many areas have little planning work and often lack a comprehensive plan or any zoning ordinance. In many areas planning commissions, administrative structures, and governing bodies are very small and only exist as administrative formalities (Lapping 1989).

The reasons for the lack of zoning regulation in rural areas are numerous and vary widely from region to region. On one level, traditional values in rural America may differ from those in urban areas. Rural landowners have traditionally placed more value on their independence and on the freedom to use their land as they see fit, viewing government regulation of their property with resentment (Lapping 1989).

Planning and zoning both require a good bit of research and study, typically involving the use of databases,

expert technical advice, planning consultants, and extensive public consultation in order to be effective. Often rural communities lack the resources to undertake these tasks, and federal governments no longer provide planning services.

Another challenge concerning rural zoning is that while zoning has been established as a legitimate exercise of local police power over the use of private property, governments cannot use zoning to restrict a landowner's rights arbitrarily. Zoning of agricultural land tends to produce little or no compensating benefits for farmers, and thus might be considered an unconstitutional "takings" by some (Lapping 1989: 170).

However, recent decisions suggest that the courts are changing their stance on rural property rights. In 1988 the Iowa Supreme Court ruled that Iowa's right-to-farm law was itself an unconstitutional taking because it took away the rights of neighbors to combat nuisances (*Bormann v. Board of Supervisors*, 584 N.W.2d 309 (Iowa 1998)).

Another important factor preventing more widespread use of rural planning and zoning is the difficulty planners face in generalizing and establishing uniform regulation based on different types of land uses. Rural regulatory codes and programs require considerably more flexibility to meet the specific needs and values of different landowners. Planners thus need to be creative in implementing regulations for the wide diversity in lot sizes, preparedness of industrial and commercial sites, and the diverse uses of land.

A zoning ordinance must be designed to cover a broad range of activities, such as farms and ranches, recreational areas, industry, rural housing, hobby farms, and strip commercial developments. These often cover thousands of square miles, resulting in extremely complicated tasks that place a burden on the resources of local planners (Lapping 1989: 63). Similarly, planners and officials usually must rely on a great deal of discretion in regulating and enforcing an ordinance. (Lapping, 1989:63).

## **NUISANCE LAWS AND RIGHT-TO-FARM**

State planning and zoning enabling legislation plays the predominant role in defining what police powers local governments may or may not use in regulating land use. In many states, including Oklahoma, the legislation exempts agriculture from county zoning ordinances.

Agricultural exceptions concerning zoning regulation were mostly enacted during a period when modern confinement operations (CAFOs) did not factor into legislators' perceptions. Laws lenient towards agricultural uses were adopted in the 1970s and 1980s to protect family farms, largely in response to the growing threat of nuisance complaints by urban people migrating into rural areas in search of a more secluded and quiet lifestyle, only to find that odors and noises were a natural part of rural America (Lapping 1989: 86). Legislators assumed that most family farmers could be expected to be responsible, conventional operators whose small-scale activities would not have a major impact on the environment or their rural neighbors (Schwab 1998: 43). In addition, legislators may have assumed that the agricultural operators would maintain ties to the community that would provide social networks and therefore informal incentives for them to be good neighbors.

CAFO owners have enjoyed a level of freedom in siting their facilities that stands well beyond the original intention of the law. The proliferation of large, vertically integrated hog operations and their resulting health and environmental impact clearly was unanticipated when most exemption to zoning were enacted. The use of planning and zoning ordinances for regulating CAFOs should be viewed as an appropriate response to the present circumstances.

In rural communities where people are already knowledgeable about the need to incorporate such considerations into their farming plans, the opportunity for residents to comment on aspects of a CAFO site plan is a desirable way to gather meaningful public input (Schwab 1998). Moreover, only at the local level can planners fine-tune regulations to address the needs of their communities by monitoring and mapping their particular regions. Operating at the local level allows citizens to voice concerns based on an intimate knowledge of the local environment.

# HOW TO ENACT RURAL ZONING IN OKLAHOMA

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Countywide planning and zoning looks beyond each individual town to provide a coordinated development for the entire population. A comprehensive county plan presents an organized view of the community's development objectives. Providing a clear statement of the residents' goals in one comprehensive document is efficient and leads to easier compliance with the resulting standards. Oklahoma law establishes authority for county planning and zoning, providing procedures for implementing this process.

## Oklahoma Enabling Legislation and Authority Granted

Generally, authority for county planning and zoning is conferred in Title 19A of the Oklahoma Statutes. While some procedures and regulations for county planning and zoning are arranged according to population classifications, any county may initiate planning and zoning by creating a planning commission and a board of adjustment:

For the purpose of cooperating with the State of Oklahoma in conserving the natural resources of the state, and in promoting the health, safety, peace and general welfare of the people of the state, there may be provided in any county of the State of Oklahoma county planning in the manner herein provided, and for that purpose there is hereby authorized to be created in each of such counties a county planning commission and a county board of adjustment with the respective powers and duties as set out in this act. (Okla. Stat.Tit. 19A, § 865.51(1991)).

This planning commission has jurisdiction to administer and enforce rules and regulations over all the unincorporated portions of the county, except any areas covered by a Lake Area Planning and Zoning Commission (LAPC). (See Okla. Stat.Tit. 19A, §§ 869.1 - 869.7 (1991) for regulations regarding the creation and authority of a LAPC.) In addition, a County Planning Commission may not coexist with any Metropolitan Area Planning Com-

missions (MAPC) already established in the same county. (See Okla. Stat.Tit. 19A, §§ 866.1 - 866.36 (1991) for the regulations regarding the creation and authority of a MAPC.) However, if both types of planning commissions — a County and a Metropolitan Area — could be created, the county commissioners may extend the MAPC's jurisdiction to cover the unincorporated portions of the county, taking the place of the County Planning Commission. (Okla. Stat.Tit. 19A, §§ 865.51 & 865.53 (1991)).

The County Planning Commission has the authority to "prepare, adopt, and from time to time revise, amend, extend or add to a plan . . . for the development of the area for the purpose of bringing about an orderly, coordinated physical development in accordance with the present and future needs" (Okla. Stat.Tit. 19A, § 865.57 (1991)). Furthermore, the commission is "empowered to promulgate and adopt rules and regulations for the implementation and enforcement of [the] plan" (Okla. Stat. Tit. 19A, § 865.60 (1991)). The Commission however, may not adopt rules or regulations pertaining to "the erection of farm houses" or "the usual farm buildings" used for "agricultural purposes or the planting of agricultural crops" (Okla. Stat.Tit. 19A, § 865.61(1991)).

A recent Attorney General's opinion states that the farm exemption from county planning and zoning does not apply to waste lagoons (98-31 Op.Att'y Gen. 1998). The November 18, 1998, advisory opinion defines the extent of a county's zoning power, relating to concentrated animal feeding operations. The opinion states that the farm planning and zoning exemption refers specifically to "farm homes" and "farm buildings." For purposes of county zoning, a "building" is defined as "a particular kind of structure that has a foundation, walls, and a roof," and therefore, a lagoon is not a "farm building." This interpretation is in harmony with the definitions found in the Oklahoma Concentrated Animal Feeding Operations Act, Okla. Stat.Tit., 2 §§ 9-201 through 9-215 (Supp. 1999). The opinion concludes that counties do not have authority to zone regular farm buildings but can zone structures such as waste lagoons. Hence, those counties and communities wishing to enact rural planning and zon-

ing pertaining to waste lagoons can proceed with a proposal by following the ordinary procedures established in Oklahoma State enabling legislation.

## **PROCEDURES FOR CREATING A PLANNING COMMISSION**

Title 19A provides specific procedures for creating a planning commission. Since legal challenges at the local level are often on procedural or technical grounds, persons involved in initiating the enactment of a planning commission should carefully review and follow this state statute.

The first step in the process is for the governing body — the county commissioners — to present a resolution establishing the county planning commission. This resolution must be approved by the board of county commissioners and by a majority of the people voting in an election called for the purpose of approving the resolution. The funds necessary for the commission should also be voted on in the same election. After establishment, the planning commission, with approval of the county commissioners, may receive grants or financial assistance in order to carry out its duties (Okla. Stat. Tit. 19A, § 865.52 (1991)).

## **COMMISSION MEMBERSHIP**

The planning commission consists of three members appointed by the board of county commissioners and either the chairperson of the board or a member of the county commission appointed by the chairperson. In addition, the mayor of each incorporated town with a population of at least 1,000 people appoints a member to the planning commission (Okla. Stat. Tit. 19A, § 865.55 (1991)).

Members of the county planning commission must have resided in the county for at least three years and will serve four-year terms without compensation. Furthermore, the members cannot hold another municipal or county office, while serving on the commission. Once approved, members can only be removed for cause, following a hearing before the governing body that appointed them (Okla. Stat. Tit. 19A, § 865.55 (1991)). See Appendix E for an example of county rules and regulations guiding a planning commission.

The county planning commission has exclusive control for planning purposes over the area, but the commission may contract with other agencies for planning services and assistance with regulation enforcement. (Okla. Stat. Tit. 19A, § 865.68 (1991)). The commission may also seek the advice of appropriate organizations

and shall cooperate with other governmental agencies or with “planning agencies of adjoining areas on matters of mutual interest” (Okla. Stat. Tit. 19A, § 865.56 (1991)).

## **ESTABLISHING A PLAN**

In order to adopt, amend, or extend a plan, the planning commission must hold at least one public hearing. The commission shall provide reasonable notice to the public so that interested parties may speak at the hearing. Reasonable notice requires the publication in all papers of general circulation in the county stating the time, place, and purpose of the hearing and the place where copies of the proposed plan may be obtained (Okla. Stat. Tit. 19A, § 865.58 (1991)).

The passage of the plan requires a vote of not less than four members of the commission and will not be official until approved by the board of county commissioners. If the board fails to act upon a proposed plan within forty-five days, the plan is assumed to be approved. A copy of the official plan is filed with the county clerk as a public record (Okla. Stat. Tit. 19A, § 865.58 (1991)).

## **CREATING A COUNTY BOARD OF ADJUSTMENT**

The board of county commissioners appoints a county board of adjustment with five members who have been residents in the area for at least three years. The members serve terms of three years, except for the first appointments where two members will only serve for two years. The members serve without compensation and cannot be removed except for cause, following a hearing before the board of county commissioners. The county board of adjustment elects its own chairman, and all meetings are open to the public. (Okla. Stat. Tit. 19A, § 865.62 (1991)).

The board of adjustment’s duty is to hear and decide appeals where it is alleged that there is error of law in any order, requirement, decision, or determination made by the county inspecting officer in the enforcement of the [planning] commission’s rules and regulations. (Okla. Stat. Tit. 19A, § 865.63 (1991)).

The board of adjustment may reverse, modify, or affirm the decision being appealed. Residents may appeal the decision made by the board of adjustment to the district court (Okla. Stat. Tit. 19A, § 865.64 (1991)).

# SUGGESTED STEPS FOR COUNTY ZONING

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The basic goal of establishing a zoning commission and working towards creating a viable zoning ordinance for waste lagoons is predicated on the idea that the best interests of the entire community are addressed in the regulatory program. Because rural zoning affects a broad set of individuals, ensuring a democratic planning process is the first step in developing and implementing zoning through what is known as a comprehensive plan. This requires involving all interested citizens - farmers, engineers, hydrologists, geologists, economists, lawyers, conservationists, and planners - and the use of open forums so that competing interests and points of view can be heard and accommodated (Linowes 1973: 148).

## FIRST THINGS FIRST: COMPREHENSIVE PLANNING

A comprehensive plan is generally, a “statement of policy, goals, standards, and maps for guiding the physical, social, and economic development, both private and public” of a county and its environs. As discussed earlier, a comprehensive plan “may include, but is not limited to, statements of policies, goals, standards, a land use plan, and recommendations for plan execution.” One planning and zoning consultant describes a comprehensive plan as being like the constitution; it establishes a foundation for zoning ordinances, which are like laws (Land Stewardship Project 1997: 9). The importance of this step should not be underestimated since the determination of the preliminary issues directs the scope and substance in the remainder of the process. However legitimate the concerns of CAFO opponents, simply opposing something is not a plan. A plan is by definition a positive vision of the future (Schwab 1998).

How can a community (1) develop and implement a comprehensive plan, and (2) utilize zoning ordinances to address specifically the complex interaction of social, economic, and environmental factors surrounding the existence of industrial swine operations? In truth, the resources and expertise - all the elements of successful

planning, organizing, and action - are within reach of Oklahoma residents. The process of developing a comprehensive plan helps focus the efforts of all participants on the task to be accomplished, gathers together the expertise required by the project, and galvanizes these components into an effective, professional work team (Scott 1975). The process for writing a comprehensive plan involves research, gathering pertinent information, consultations with attorneys, planning and zoning consultants, and most importantly, community members. (For an example of what the structure of a comprehensive plan might look like, see Appendix B, the Beckham County, Oklahoma Comprehensive Plan Table of Contents.)

## HUMAN RESOURCES: TECHNICAL CAPACITY, KNOWLEDGE AND EXPERTISE

### Technical Capacity

One of the most important things to remember about planning is that everyone has something valuable to contribute to the comprehensive planning process. While farmers know how to farm, and planners know how to plan, there is a lot to be gained from pooling the life and professional experiences of a variety of participants. In fact, a significant challenge facing rural communities in zoning for CAFOs is how to mobilize and optimize their technical capacity to review site plans and to enforce the provisions they enact. A reason many rural counties have not enacted zoning in the past is that not only are they sparsely populated, but they often cannot afford the planning staff and zoning administrators required to implement it (Schwab 1998: 44).

Many rural communities that adopt comprehensive plans and zoning ordinances use the help of outside consultants to draft them because they lack the revenue to hire staff for the purpose, and the level of knowledge required for sound policy orientation demands input from a number of specialized fields. It is essential to emphasize that the inclusion of outside consultants in community planning does not detract from goals or visions of

the community, but rather serves to sharpen focus on the comprehensive plan and subsequent zoning efforts by providing logistical, legal, scientific, and technical support. Additionally, it is important to note that if resources or information are unavailable, citizens can still move forward with developing planning and zoning commissions and drafting a zoning ordinance for waste lagoons. Whereas the participation of experts and specialists early on in the process can provide valuable knowledge and experience, it is ultimately the focus and determination of the community itself that creates a successful outcome.

## Knowledge and Expertise

Once the process is in motion for developing a comprehensive plan, and the community wants to take stock of its situation specifically with reference to the problems associated with CAFOs. Certain types of information become essential to completing the task. For example, detailed knowledge of existing and potential zoning controls, legal and procedural input, and scientific and social data connecting the impacts of the industrial swine operations to citizen concerns are all crucial for the developing and implementing of a zoning ordinance for waste lagoons. (See Appendix C for a list of maps representing types of recommended information.) One approach to organizing the effort to inform and instruct the zoning commission and compile, synthesize, and analyze information is to form a project team, community task force, or advisory committee. Members should be mature and dedicated to the task at hand. Also important is the ability to work without supervision and organize the complex range of materials and information that will contribute to developing and implementing a zoning ordinance based on sound social, economic, and environmental criteria.

The following is a list of potential participants for such an advisory committee, citing the relevant expertise and knowledge required for (1) designing a comprehensive plan, and (2) tailoring zoning ordinances to local conditions.

### Farmers

In addition to possessing intimate knowledge of natural processes through years, perhaps generations, of working the land, farmers often live in closest proximity to the swine operations, and can provide detailed information, access to resources such as wells, soils, and other data sets available only with their consent. Successful planning and zoning originate at the local level, operating on two basic premises:

1. The people closest to the problems contribute invaluably to resolution of the issues surrounding CAFOs and
2. Local education and input in determining community objectives is indispensable for assuring long-term, grass-roots support.

Many family farm organizations, public health advocates, sustainable agriculture interests, and conservation groups have joined forces in providing access to scientific data, legal information, critical information and updates. Some extremely useful websites include:

- \* Center for Rural Affairs: <<http://www.cfra.org>>
- \* Families Against Rural Messes: <<http://www.farmweb.org>>
- \* Raleigh News and Observer- Pulitzer Prize Winning "Boss Hog" series  
<<http://cqi2.nando.net/sproject/hogs/hoghome.html>>
- \* Leopold Center for Sustainable Agriculture: <<http://www.leopold.iastate.edu/>>
- \* Kerr Center for Sustainable Agriculture: <<http://www.kerrcenter.com>>
- \* Land Stewardship Project (Minnesota) <[http://www.misa.umn.edu/Isp\\_toolbox.html](http://www.misa.umn.edu/Isp_toolbox.html)>
- \* Missouri Rural Crisis Center: <<http://www.inmotionmagazine.com/rural.html>>
- \* National Farmers Union: <<http://www.nfu.org>>
- \* Families Against Rural Messes (Illinois): <<http://www.netins.net/showcase/megahoglaws/>>

### Planners

Detailed knowledge of existing and potential zoning controls and planning tools are a prerequisite for developing a zoning ordinance. This would also provide coordination with existing comprehensive plans, and perhaps serve as a means of coordinating plans over a larger geographic area. An excellent resource is *Planning and Zoning for Concentrated Animal Feeding Operations*, by American Planning Association researcher Jim Schwab, which can be found along with other pertinent documents at the American Planning Association Planners Book Service: <[www.planning.org](http://www.planning.org)>

## Lawyers

Many of the zoning techniques for control of the siting of waste lagoons will pose significant questions of legality. Quality, creative legal input into the process is vital, but it is important to remind the legal expert that s/he is there to facilitate the interests of the community, and not just tell the group “what it can and can’t do” (Scott 1975: 334).

## Hydrologists

### GROUNDWATER

Understanding the flow pathways of the county’s water resources is very important for thorough and responsible planning. Oklahoma is totally embraced within two major drainages, the Red and Arkansas River basins. These two rivers, and their tributaries, flow into Oklahoma from all six of the State’s neighbors. Major rivers and their tributaries flow mainly to the east and southeast across Oklahoma. The State also contains multiple aquifers, which provide a significant portion of the water used by Oklahomans. Information pertaining to aquifer characteristics and groundwater usage is needed to develop a complete plan. The USGS has compiled detailed data on all major aquifers in Oklahoma. This information may be accessed on the internet. The American Planning Association has produced a substantial guide to the information needs associated with planning for groundwater protection:

Witten, Jon, and Scott Horsley, with Sanjay Jeer and Erin K. Flanagan. 1995. *A Guide to Wellhead Protection*. PAS Report No. 457/458. Chicago:APA.

In addition, internet resources include:

\* <<http://ok.water.usgs.gov>>

\* <<http://www.state.ok.us/~okaq/wqhome.htm>>

### FLOODPLAINS

The Federal Emergency Management Agency’s (FEMA) National Flood Insurance Program (NFIP) has mapped virtually all floodplains of any significance. Integrating concerns about runoff, water quality, and recommended building codes for structures situated on or near floodplains should be part of any community’s long-term plan. This information can be obtained from:

\* <<http://www.fema.gov/nfip>>

\* <<http://www.epa.gov/surf>>

## WETLANDS AND WATERSHEDS

The U.S. Environmental Protection Agency’s National Wetlands Inventory is a prime source for information, but local Soil and Water Conservation Districts, state natural resource departments, and the U.S. Fish and Wildlife Service can also provide extensive information for planning purposes.

## Geologists and Engineers

An understanding of the character and age of outcropping rocks is necessary for assessing local mineral deposits, potential construction problems, engineering properties, potential for groundwater contamination, and determining how to remedy environmental problems.

County level planning requires a thorough knowledge of geologic processes and/or geologic constraints of that region. Many processes, such as water movement, erosion, and tectonic activity, can cause severe damage to quality of life. It is essential to conduct studies to enable industry, government, and landowners to identify specific areas in the region that require detailed site investigations and special engineering designs in order to assist in establishing zoning ordinances, insurance rates, and construction codes.

### NATURAL GEOLOGIC HAZARDS

Geologic hazards are those natural geologic processes that represent a present day or future hazard to man’s life, health, or property. Planning for development of a region requires a thorough study of all geologic hazards and assessment of their potential impact upon proposed land uses. Natural geologic hazards occurring in Oklahoma include earthquakes, expansive soils, floods, karst terrain, and salt dissolution.

### EARTHQUAKES

Before Oklahoma became a state, the earliest documented earthquake occurred October 22, 1882, probably near Fort Gibson. The Cherokee Advocate newspaper reported that at Fort Gibson, “the trembling and vibrating were so severe as to cause doors and window shutters to open and shut, hogs in pens to fall and squeal, poultry to run and hide, the tops of weeds to tip, and cattle to low”. From 1897 through 1997, 1,489 earthquakes have been located in Oklahoma. The largest known Oklahoma earthquake occurred near El Reno, Canadian County, on April 9, 1952.

A statewide network consisting of a world-class geophysical observatory and 10 satellite seismograph stations

is now recording seismological data in Oklahoma. Such information constitutes a database that can be used to develop numerical estimates of earthquake risk, giving the approximate frequency of earthquakes of any given size for different regions of Oklahoma. The numerical risk estimates can be used in the design of large scale structures such as dams, buildings, and waste lagoons as well as to provide a basis for evaluating insurance rates. Oklahoma earthquake catalogs, earthquake maps, and related information are available on the internet at the Oklahoma Geological Survey site:

\* <http://www.ou.edu/special/ogs-pttc/>

### Soil Scientists

Clay-rich shales, or soils derived from the decomposition of shales, may contain clay minerals, such as montmorillonite, that will swell when wet to as much as 1.5 or 2.0 times their original volume. The saturation of soil from rainfall or sewage leakage may cause major damage through the expansion of soils beneath foundations, etc. If construction takes place on wet materials that have high shrink-swell potential, and these materials subsequently are drained and dried, the resulting shrinkage may cause severe cracking in structures. Numerous foundation failures that resulted from soil shrinkage, occurred in Oklahoma during the unusually hot and dry summer of 1998. This has serious implications for the construction and siting of waste lagoons, especially in light of groundwater contamination.

The Oklahoma Department of Transportation and the U.S. Department of Agriculture, Soil Conservation Service, have an ongoing program to evaluate the expansive tendencies of soil and shale formations in Oklahoma. Charts and tables containing data on the shrink-swell potential for each major soil type are published by the Soil Conservation Service in its soil surveys of nearly all the 77 counties in Oklahoma.

Soil surveys and soil maps are crucial to proper planning and understanding of nutrient management for an area's cropland and other soil resources. U.S. and state geological surveys are the primary source for information, but Soil and Water Conservation Districts can also be very helpful, as well as the Oklahoma Conservation Commission, which can be found at:

\* <http://www.okcc.state.ok.us/>

### Conservationists

Working in concert with concerned citizen groups is an excellent way to broaden the support base, gain

access to and share information, and advantageously utilize existing resources and avenues of opportunity. There are often staff within larger environmental groups working specifically on hog-farm related issues.

For other state activist contacts for CAFO information see:

<<http://www.nrdc.org/nrdcpro/factor/contact.html>>

### Cartographers

The first step is to map and profile the community thoroughly and to inventory its vulnerable resources in order to understand more clearly how different aspects of the ecosystem are related to each other, as well as how they could be affected by the siting and management of industrial hog operations. For example, using detailed GIS maps of a farmed landscape and the surrounding area, it is possible to identify the wind flow patterns that can transport odor and volatile gases across a landscape (Hatfield 1997:312).

Another important facet of mapping is its role in environmental protection and emergency management. Rather than focusing on a specific dispute, base maps look broadly at the surrounding ecosystem and communicate actual and potential risk areas. In designing and presenting maps to local officials, the news media, and the public, be wary of either exaggerating or understating the risk of a natural or technological disaster (Monmonier 1995).

### Summary: Technical Assistance for Comprehensive Planning

In isolation, each field listed above is important for addressing a particular symptom of rural environmental distress often associated with CAFOs, particularly if they are not sited and managed properly. When properly addressed by the cooperation of trained experts and local residents, these categories of knowledge can be organized to increase the likelihood of long-term viability of resulting ordinances. To enhance the scope of the proposed resolution as well as better understanding and representation across all segments of the population, many people should be involved on various levels of formulating the zoning ordinances (Ohio State 2000: Pub. CDFS-305).

The advisory committee can also serve as an educational coordinating group and steering committee. Citizen representation on the committee should represent a broad cross section of residents and expertise. In the case of developing and implementing rural zoning ordi-

nances for waste lagoons, only patience coupled with persistence will result in tangible results. Planning and zoning can demand a great deal of research and study requiring the use of databases, expert technical and legal advice, and a substantial time commitment. Taken in sum, these efforts allow a community to take a comprehensive, sustainable approach to ensuring community health and environmental quality.

# LOCAL ACTION

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The essence of the development and enforcement of a successful zoning ordinance is community participation, support, and dedication. Citizens can still design and enact a zoning ordinance if some information, resources, or expertise are unavailable or unaffordable. Planning and zoning are an ongoing process - one that must begin with community interest and commitment.

When coordinating the interests and efforts of varied participants and processing a tremendous amount of information, data, and deadlines, it is helpful to keep a few key points in mind. Important phases and details of the planning and zoning process to consider include determining public opinion, establishing a timeline for action-orders, conducting organized public hearings, clarifying concepts and terms, and periodic review and assessment.

## COMMUNITY CONSENSUS: DETERMINING PUBLIC OPINION

In rural communities, determining public opinion and mobilizing people to back a proposal is extremely important. One should be familiar with the level of interest and support for the initiative among the affected communities. Community concern and interest can be determined through a number of activities and entities including: survey research, intelligent use of the media, neighborhood or community meetings, systematic private phone interviews, research among registered voters, and consulting elected officials and community leaders (Ohio State 2000: Pub. CDFS-305).

## DEVELOPING A TIMELINE

A timeline can provide a useful planning device with which to gauge progress towards tangible goals and benchmarks, and a way to keep track of minimum requirements and deadlines. Starting with the date the referendum is to be voted on, compute the time and steps backward that are required procedurally. The calendar

provides target dates and absolute minimum time required for each step. It usually requires at least a year to accomplish all of the steps adequately. Important dates and timelines can be found by consulting the local planning commission, the local law library, or other entities (Ohio State 2000: Pub. CDFS-305). Because the legal challenges at the local level are often based on procedural or technical grounds, it is critical to pay close attention to waiting periods, deadlines, procedural requirements, and legal specifications to ensure compliance and reduce the chance of obstructing passage and enactment of zoning controls as a result of negligence or oversight.

## CONDUCT PUBLIC INFORMATIONAL HEARINGS

Public hearings provide a forum for citizens and stakeholders to voice their concerns, questions, and comments on zoning matters that may affect their interests. It is vital that required notices of public hearings be published or distributed as specified in the enabling state legislation.

The primary purpose of the hearing is to gather input, facts, and information, and the meeting should be conducted in an orderly and consistent fashion. Therefore, it is a good idea to establish a hearing process to ensure that an open, objective atmosphere exists to provide structure for orderly presentations. While the structure need not be one of paralyzing formality, general suggested guidelines can discount the likelihood of unproductive community gatherings, and optimize citizen participation. A proposed structure for general hearing procedures follows, as found in *A Guide to Common Planning and Zoning Procedures*, published by Iowa State University Extension in January, 2000.

### General Hearing Procedures

1. The chair person shall announce the subject of the public hearing, as advertised.

2. The public hearing procedures are summarized for all present by the chairperson. A plausible opening statement might be:

“This public hearing to receive comment on the zoning of waste lagoons, in accordance with the official notice, is now open. The (Name of the Hearing Body) would like to make it clear that it is bound by rules and laws and that these are determinants when weighing the case. In order to conduct the hearing within a reasonable amount of time and to keep to the subject at hand, you are all asked to observe the following rules:

After the staff presentation and introduction, the applicant will state their case and furnish (name of the hearing body) with pertinent information concerning the issues at hand.

Those who favor the proposed change will be heard first, and those opposed will be heard last.

Each person making a statement will be asked to state their name and address.

Please refrain from repeating what has been said before you, and try not to involve personality conflicts.

Be as factual as possible. It is important that you state the reason that you have taken a position for or against this proposal.

The (name of the hearing body) reserves the right to question any speaker.

All statements or questions must be directed to the chairperson. The (name of the hearing body) will or will not make a decision on this matter at today’s meeting”.

3. The staff is then asked to present the substance of the application and any staff reports, and to answer any technical questions of the hearing body.

4. Individuals wishing to speak in support of the subject of the hearing shall be recognized by the chairperson beginning with the applicant(s) or their representative.

5. Individuals wishing to speak in opposition to the subject of the hearing are recognized by the chairperson. (If there are numerous people in the audience who would like to speak on the same issue, and all represent the same opinion, it is advised that a speaker be selected to speak for the entire group. A representative will thus have the opportunity of speaking for a reasonable length of time and of presenting a complete case. If this arrangement cannot be made, it may be necessary for the

chairperson to restrict each speaker to a limited time in order that all may be heard.) The hearing body must permit comments from all interested or affected individuals and organizations, and it should be stressed that consideration will be given to all comments or suggestions made. Irrelevant and off-the-subject comments should be ruled out of order.

6. The chairperson may, within reasonable limits, upon request, allow cross-examination or rebuttal. All comments should be addressed to the hearing through the chairperson and not directed to any other individuals. The hearing body should refrain from debating or arguing with persons commenting. The function of the hearing is to gather facts and opinions - not to carry on an adversarial relationship.

7. The chairperson should upon his/her motion or the motion of any member, announce the close of the public hearing or announce the continuation of the public hearing to another specified time and date if the hour is late or additional pertinent information must be obtained.

## **RECORD KEEPING**

Because recording the proceedings of public hearings is an absolute necessity, communities have adopted different techniques for documenting what has transpired during the meetings. The high cost of a court stenographer is often prohibitive, so many communities have adopted the practice of using a tape recorder to generate a hearing record, sometimes accompanied by a brief, written summary of the comments.

Throughout the process of implementing zoning, it is important to be diligent in keeping records, and strictly complying with all procedural requirements and standards in the state legislation (see Appendix E for an example of zoning commission rules and regulations). A documented record provides evidence to a court that the process was procedurally correct. The record should clearly show what decisions were made, how they were made, and on what information their decisions were based. Keeping a well documented record may be crucial for winning a legal challenge (Land Stewardship Project 1997:14-15). It is important here to note that the advice and input of an attorney should be sought before adopting any rules of procedure or public hearing guidelines (Huntington 2000).

## **CLARIFYING THE ZONING RESOLUTION**

The zoning commission and the advisory committee should take care to develop the zoning resolution as specifically, clearly, and unambiguously as possible. Any vague

or poorly defined terms, concepts, articles, or concerns will become problematic when the ordinance is tested in legal proceedings.

For example, while there is no single quantitative definition of “large-scale” swine production, Kendall Thu (1997), a cultural anthropologist who studies the impacts of industrial swine operations on local communities suggests that “large-scale” hog operations can be characterized by several features: (1) separation of ownership, management, and labor; (2) non-local capital; (3) owners, management, and labor do not all live on, or in many cases, in the vicinity of the operation; (4) a non-family corporate organizational structure; and (5) family plays a limited role, if any, in the operation (p. 16).

Because many words taken for granted in daily conversation are the object of legal disputes to avoid litigation that might impede a positive outcome, the more specific the definitions, the easier it will be to enforce the ordinance after it has been adopted. Please refer to the Glossary at the end of this guidebook for initial working definitions for a variety of swine-related planning and zoning terms, abbreviations, and concepts.

## COMMUNITY EDUCATION

A crucial part of the planning process should be an educational campaign for residents of affected communities. A well-planned educational campaign is critical for producing support, commitment, and interest in the community. The educational plan must be adopted months in advance and avidly carried out. Support groups, as well as opposition groups, may develop during this time. Working with both sides to increase mutual understanding and purpose is essential for cultivating a productive environment (Thu et al. 1997: 17). Residents should be reached in any way possible - phone trees, local radio stations, flyers posted in the general store. Each and every strategy is useful if the result creates an interested, informed, and engaged public constituency.

## PERIODIC REVIEW AND ASSESSMENT

In communities experiencing rapid change, care must be taken to prevent a comprehensive plan and zoning ordinance from growing old and outdated. The best way to keep a zoning ordinance from becoming obsolete is through periodic assessment, the frequency of which depends on the rate of change experienced in the community. When reviewing an ordinance, the following questions should be asked:

1. To what extent is the land use plan being actively implemented:

\* through zoning?

\* through public organization and improvement?

\* through other efforts?

2. Is implementation taking place as scheduled? If not, why?

3. Do the goals and policies in place still reflect major local concerns? If not, what should be changed, and how?

4. Is the zoning ordinance adequately protecting all identified concerns?

5. Are unexpected land use conflicts being created by the zoning ordinance that are not addressed in the comprehensive plan? Are there any unintended consequences of the zoning that need to be addressed?

A rational, timely review of the comprehensive plan and zoning ordinances will provide answers to the above questions, and can catch potential conflicts and problems before they become unmanageable (Huntington 2000).

## SUMMARY: LOCAL ACTION

Planning and zoning is most effective when it is based on a sound understanding of the community’s needs reflecting citizens’ vision of their community. It should be based on a comprehensive plan that is developed using competent technical and legal assistance. Zoning should be consistent, fair, and impartially administered throughout the county. In addition, it should be understood by the public and subjected to periodic review.

# RURAL ZONING STRATEGIES

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For the purpose of discussing the regulation of animal agriculture as a land use, it is important to review distinctions between those zoning techniques most relevant to the problem, and how they can be crafted specifically to address the issues associated with CAFOs. Establishing agricultural use districts, utilizing separation standards, and implementing conditional use and performance standards are techniques available to tailor zoning controls to particular, local circumstances. Although not presently applicable in Oklahoma, the following strategies are included to demonstrate a variety of ways to think about enacting controls. It is important to be creative in approaching the zoning of waste lagoons, and the strategies set forth as follows can be most useful in considering different ways to tailor regulations to a specific community's goals.

## DISTRICTS (AGRICULTURAL USE DISTRICTS)

Districts are a means of defining what belongs where. Most counties with zoning allocate large portions of their unincorporated area to agricultural uses, and in many states, farming virtually defines what constitutes a rural area.

One solution offered by James Duncan and Associates (1996) in the sample ordinance reproduced in Appendix F is to employ a multitiered approach to agricultural zoning. The Duncan approach, developed for Minnesota counties, was to divide agricultural uses into limited agricultural and general agricultural zones. The former was strictly for crop production and lighter agricultural purposes and allowed no livestock production; the latter included large-scale agricultural uses and feedlots (Schwab 1998:48).

## ADVANTAGES OF MULTITIERED ZONING

The advantage is that this gradation allows some stepping down of the intensity of agricultural uses, which also allows planners to achieve greater separation of resi-

dential from heavy agricultural uses. The concept is similar to that used in industrial zoning, where communities often create separate light and heavy industrial zones (Schwab 1998:48). Another advantage of this approach is that it allows planners, after studying the detailed, site-specific environmental information, to identify the areas most suitable for such heavy agricultural uses and least sensitive to the problems presented by CAFOs.

In *Planning and Zoning for Concentrated Animal Feeding Operations*, Jim Schwab (1998) stresses that in crafting such districts, communities ought to keep in mind, however, that it is probably not desirable to have districts exclusively devoted to confined feeding uses because such total concentration is probably unsound. In view of the need for scientifically sound distribution of the nutrient content of animal manure on cropland, it is certainly better to have some distribution of feedlot uses among large enough acreages of cropland to absorb the manure generated. Wise planning will consider such practical concerns when designing the overall pattern of agricultural use districts within the jurisdiction.

## SEPARATION STANDARDS

Separation standards are intended to maintain minimum distances between certain incompatible uses regardless of their right to operate as permitted uses in certain districts. In effect, separation standards may provide additional restrictions on a proposed use's right to locate in certain areas beyond the basic underlying zoning scheme, and can supplement state setback requirements.

Separation standards are regulations that are closely tied to existing or proposed conditions. Varying definitions of feedlot types could be used to establish different separation standards based on a number of considerations such as species, size of operation, management practices, location relative to prevailing winds, etc. This technique creates a sliding scale with which to further specify where it is permissible to site waste lagoons. For example, many communities are now treating the size of the operation

as a variable. Because it stands to reason that as herd size increases, so will the accompanying harms, increasing separation requirements as hog numbers increase is an appropriate regulatory response. For an example of how one local government has regulated CAFOs using separation standards, see Appendix G : Sample Ordinance: Randolph County, North Carolina: Zoning Ordinance Provisions for Swine Farms (Schwab 1998:50).

Among the reasons for imposing separation requirements on feedlots in a zoning ordinance, are malignant odors, air pollution, and water pollution. Separation standards can also be a means of providing incentives for operators who adopt best management practices. For example, a community interested in encouraging beneficial waste lagoon management techniques could decrease separation requirements for producers who adopt proven means of reducing odors such as covering lagoons with straw or synthetic covers, substituting concrete-lined pits for lagoons, using injection of manure into soil instead of open spraying, and employing recommended ventilation systems for animal confinement buildings. The National Pork Producers Council web site (<http://www.nppc.org>) contains technical papers examining ways of mitigating hog odors, which include alterations to swine diets to influence the composition of the manure output, and ways of masking or controlling odors through changes in storage techniques (Schwab 1998:50).

## CONDITIONAL USE

Conditional use standards allow a community to establish certain conditions that must be met by a prospective use before it can be permitted. There are two ways to establish such conditions:

1. Simply allow the use by right so long as it meets the stated conditions described in the ordinance, perhaps after the local zoning administrator examines the application for compliance.
2. To require review by a hearing board empowered not only to determine compliance but to establish specific conditions based on guidelines set forth in the ordinance.

Some communities have categorized CAFOs as conditional uses as a means of ensuring a close examination of the plans for the facility before it is allowed to be built. This is undoubtedly an attractive approach, but it has some pitfalls. Most notably, the temptation to delay establishing clear conditions in the ordinance, through clear and rational planning, in favor of working out the details after the proposal materializes. The danger in this civic procrastination is that, when the first CAFO proposal does

materialize, the lack of clear, effective standards leaves the whole matter just as subject to controversy as it was before the ordinance was written (Schwab 1998:47).

If conditions have an appropriate place, it is probably in dealing with less predictable aspects of the operation. For example, if incentives based on adoption of more advanced and effective designs or waste lagoon management systems are provided in the ordinance, a conditional use permit review could then be used to determine that the design or management system in question is the best available technology and will comply with expectations. In these cases, however, the guidelines controlling such decisions should still be clear enough to avoid the kinds of public controversy over individual lagoon proposals that arise when the rules are less clear (Schwab 1998).

## PERFORMANCE STANDARDS

Performance standards offer an alternative way of controlling the offsite impacts of various kinds of land uses. An example of a performance standard would be requiring only certain levels of waste effluent or gaseous emissions from a certain facility in a given length of time. Although performance standards have rarely been applied to agriculture uses in local zoning ordinances, the situation with regard to CAFOs is probably more advantageously compared to the historical experience with industrial uses. Standards with regard to noise, odors, water pollution, and other potential offsite nuisances have existed in local industrial zoning codes for nearly 50 years (Schwab 1993). Therefore it is conceivable that similar performance standards could be applied to waste lagoons. If communities can find ways to leave the door open for innovation by the industry and encourage the incorporation of best management practices over time, they may be able to use performance standards effectively (Schwab 1998:47).

## ALTERNATIVE CONTROLS

Whereas zoning generally applies to future uses or the expansion of existing facilities, there are mechanisms that can be applied to CAFOs and waste lagoons to address present conditions. In contrast to zoning regulations, environmental and public health regulations can be, and routinely are, applied to existing uses. They constitute a distinctly different part of the community's police power, one intended primarily to regulate impacts on the environment or human health, or both. Their authority is drawn from the "state's ability to protect health and welfare by promoting sanitation, preventing disease, and maintaining healthy surroundings" (Schwab 1998:44). Their connection to the conditions in which livestock

are bred, fed, and slaughtered is inherent in the facilities' potential for spreading disease, creating public nuisances.

### **Health and Environmental Standards**

For the most part, public health and environmental regulations are not the domain of planning and zoning. However, there are issues where planners inevitably have some influence over or input into such regulations as a way of helping to develop a well-rounded approach to the overall regulation of certain land use, especially with regard to waste lagoons. In fact, some ordinances combine elements of zoning with public health and environmental controls in order to achieve the desired public policy goals. Often these are drafted not only by planners, but by staff from several departments working together to construct a comprehensive strategy for dealing with the impacts of CAFOs (Schwab 1998:54).

### **Lagoon Closure Requirements**

Appropriate lagoon closure requirements and remediation of manure storage facilities requirements are issues that should attract the attention of planners because of the potential negative impact on future land uses. The biggest potential problem in this regard involves lagoons, but other storage facilities should not escape notice (Schwab 1998:55). Allowing this to happen is a high price to pay for whatever economic development CAFOs may bring, yet it is already a prevalent problem in states like North Carolina, with the costs of publicly funded cleanup mounting year by year.

For example, at the end of a moratorium on the construction of new or expansion of existing industrial swine factories on September 1, 1999, North Carolina still was troubled by :

- \* Inadequate environmental and public health performance standards for existing or new hog operations
- \* No requirement for the timely cleanup of abandoned waste lagoons that pose threats to public health
- \* No requirement to monitor lagoons for the leakage of pollutants and the contamination of groundwater (Environmental Defense Fund 1999).

The purpose of establishing rigorous lagoon closure requirements is to hold integrators accountable for their actions, and ensure that the burden of site remediation does not fall squarely on the shoulders of the affected communities.

The main point in describing the gaps in North Carolina's swine legislation is to illustrate what can happen if a comprehensive, long-term approach to planning and the design of zoning ordinances does not consider such issues as lagoon closure requirements, air and water monitoring, and take measures to factor environmental risks into the control itself.

# PITFALLS OF ZONING: FOUR POTENTIAL PROBLEMS

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**I**nitiating zoning activities in rural areas that traditionally have had little or no exposure to such regulations can be challenging. This section addresses some of the commonly experienced obstacles in setting up administrative support for zoning as well as flagging frequently encountered potential problems.

## NONCONFORMITIES

A controversial section of any zoning code is dealing with so called non-conformities. For example, if an existing structure that does not meet zoning standards becomes partially destroyed by fire, storm, or earthquake, can it be restored? What percentage must be destroyed before restoration is prohibited? These situations must be explicitly factored into the wording of the zoning resolution.

## TECHNICAL CAPACITY

As mentioned above, adequate staffing for zoning administration is necessary for successful implementation and enforcement. Lack of local technical capacity is the classic problem of small communities gearing up their regulatory capabilities to handle a land use much larger in scope and impact than those they have previously governed. In *Searching for Sound Science: A Critique of Three University Studies on the Economic Impacts of Large Scale Hog Operations*, Thompson and Haskins (1998) identify that legislation seldom provides the revenue necessary to support any large expansion in planning and zoning staff - or the creation of one that did not previously exist.

Although community funding may be scarce for this type of endeavor, it is worthwhile to consider the necessary capital as an investment in the future of the community. Additionally: 1) it will pay for itself with innumerable benefits including a healthier environment and improved quality of life, and 2) it may be possible to secure outside financial assistance for sustainable development projects.

## BORROWING AND TAILORING

One problem that newly established zoning commissions face is the challenge of drafting effective ordinances without necessarily having prior experience doing so. Looking to other rural zoning ordinances is an excellent technique for identifying usable language — borrowing the best and ignoring the worst — of other attempts, and providing a structure for the design, content, and scope of the control (See Appendices for example ordinances).

Whereas it is not necessary to reinvent the wheel, care should be taken to tailor the rules and procedures to local needs and conditions. Other reasons to tailor an ordinance to local specifications are the unique matrix of ecological conditions including hydrological and soil characteristics, and the community's interest in and ability to closely oversee the implementation, periodic assessment and modification of the zoning ordinance.

## “TAKINGS”

A common challenge to land use controls such as zoning is the question of regulatory “takings.” While governments can regulate property use to protect the public, if a regulation goes “too far” in limiting private property uses, then a “taking” has occurred. (*Lucas v. South Carolina Coastal Council*, 505 U.S. 1003, 1014 (1992), citing *Pennsylvania Coal Co. v. Mahon*, 260 U.S. 393, 415 (1922)). Property owners can raise a constitutional challenge against such a regulation, claiming that the government owes them “just compensation” for this limitation on their property rights. Zoning ordinances sometimes raise takings questions, in that they can restrict potential for development, thus potentially “taking” private property rights. (Percival et al. 1996:995). Communities can, however, take steps to reduce the chances of takings challenges against their zoning ordinances.

Recent Supreme Court decisions show concern for protecting property owners' investment backed expect

tations (*Lucas*, at 1019 n.8), meaning that a court is more likely to find that a taking has occurred if the regulation curbs a landowner's ability to engage in property uses that he had reasonably expected to pursue and had made investments in the property to that end. To communities enacting zoning ordinances, this means that the sooner the ordinance can be established, the better, as it gives landowners (such as industrial swine operations) less time to make investments toward uses that would be prevented by the ordinance.

Therefore, a community enacting a zoning ordinance must be sure that all of the conditions in the ordinance connect with the overall purpose of protecting the public health. The degree of property use restrictions must be "roughly proportional" to the problem the restriction seeks to stop. (*Dolan v. City of Tigard*, 512 U.S. 374, 391 (1994)). In other words, if a community is trying to limit the negative impacts of swine lagoons, to avoid a takings challenge, the regulations should be tailored to address that specific issue.

## **SUMMARY: POTENTIAL PROBLEMS**

In the process of developing a comprehensive plan, organizing and establishing a zoning commission, and drafting a zoning ordinance there are bound to be challenges along the way. Keeping an eye out for the issues raised above is just the beginning. More importantly, recognize that flexibility and good problem solving are critical for fostering an ability to move beyond challenges and turn them into opportunities.

# COMMON LEGAL QUESTIONS ABOUT ZONING

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**T**his section provides brief responses to some of the more frequently encountered questions with respect to regulatory programs such as zoning ordinances. For questions regarding legality, local conditions, and specific case-law interpretations, it is very important to consult with the proper legal experts, officials, and communities involved.

## ARE PRESENT STATE ENABLING STATUTES SUFFICIENT?

On the state level, authorization for county planning and zoning reads clearly in Ok. Stat. 19a, § 865.51 :

For the purpose of cooperating with the State of Oklahoma in conserving the natural resources of the state, and in promoting the health, safety, peace and general welfare of the people of the state, there may be provided in any county of the State of Oklahoma county planning in the manner herein provided, and for that purpose there is hereby authorized to be created in each of such counties a county planning commission and a county board of adjustment with the respective powers and duties as set out in this act.

Furthermore, on November 18, 1998 Oklahoma State Attorney General W.A. Edmondson issued an official opinion which states “county governments may zone those components of concentrated animal feeding operations, such as waste lagoons, which are not farm buildings” (Op. Okla. Att’y Gen. No. 98-31).

Following from the Attorney General’s opinion, it is clear that the state of Oklahoma has begun to address the complex issues surrounding the presence of CAFOs in rural communities by providing a mechanism for some degree of community control. However, the question of whether or not this decision is sufficient or satisfactory depends largely on the counties’ response in commencing with strategic planning and zoning for waste lagoons.

## WHAT ARE VALID OBJECTIVES?

In order to meet constitutional due-process requirements, land-use regulations like zoning can be adopted to serve as valid police-power objectives. Based on an examination of cases which have considered the validity of regulatory objectives, it may be observed that judicial support can be found in land-use control cases for regulations which serve broad objectives in promoting the social, economic, and environmental well-being of a community (Kusler and Lee 1972: 12).

However, a sound regulatory program for industrial swine operations must take into account both the most desirable uses of land from the viewpoint of the community as a whole and the needs and rights of the private landowners. To withstand constitutional challenges, regulations must generally allow private economic uses for lands while simultaneously guiding uses to serve community interest and welfare.

## MUST ALL DATA BE GATHERED PRIOR TO ADOPTION OF A ZONING ORDINANCE?

In most instances, a regulatory program may need to combine pre-stated written regulations with a case-by-case evaluation of individual waste lagoons. The degree to which a lagoon must be treated on a case-by-case basis may depend upon several factors including variability of weather patterns, site-specific geomorphic conditions, the specificity of information available at the time zoning is initiated, the development of new data, the available technical and administrative assistance, and community objectives. While compiling all relevant data before taking action is rationally the best way to proceed, the realities of a situation are not always time-permitting. Designing ordinances to contain firm guidelines but also to incorporate flexibility and opportunities for improvement during periodic review can address the availability of information and personnel, while ensuring that the problems associated with industrial swine operations do not continue unabated.

## IS THE PREPARATION OF A COMPREHENSIVE PLAN NECESSARY PRIOR TO ZONING?

However desirable, a comprehensive plan may be a far distant goal in some communities due to lack of financial resources or community involvement. While adopting zoning ordinances prior to implementation of a more comprehensive land-use management strategy may not be ideal, zoning efforts can still be quite sound and practical. It should be remembered that zoning is one part of a larger planning process; the articulation of a community's vision for itself in the near and far future. Comprehensive planning will increase the likelihood that local control will proceed in an orderly, systematic fashion, but it is not absolutely required to predate adoption of zoning.

## CONCLUSIONS

As an increasing number of states and rural populations examine the long-term effects of hog factories in their communities, it is clear that zoning is integral for working towards healthy, empowered communities that are culturally sound, economically viable, and reasonably protected from the injurious activities of large-scale factory hog farming. Zoning is a method of preventing problems from worsening by (1) addressing threats on a local governmental level (2) improving industry compliance with existing laws; and (3) holding industrial swine operators responsible for present and future environmental denigration. However, zoning is one step in a continuing process to restore personal freedom, corporate fiscal responsibility, and environmental balance.

The adverse impacts of industrial swine operations on the social, economic, and environmental integrity of rural populations are well known. This guidebook has focused on the use of zoning waste lagoons as a regulatory tool to mitigate the harms large-scale hog factories impose on rural communities. Providing practical guidelines, procedural information, and resources for further research and action, the placement of zoning within a broader context of comprehensive planning has been encouraged.

## RECOMMENDATIONS

In the interim between the creation of a county zoning commission and the adoption and implementation of zoning ordinances, communities can organize and take action to heighten awareness and improve information exchange, minimize existing harms, and reduce poten-

tial future damages from industrial swine operations. The creation of information-sharing networks between Oklahoma counties and experts would greatly help in facilitating public education and regional solidarity as well as generating consensus, cooperation, and a framework for technical support.

This type of consortium would allow for a continual updating of procedural or structural changes in the law and expose neighbors to the lessons, workable strategies, and scarce resources needed to successfully enact county zoning. Moreover, an organized "Rural Legal Defense Group" or the like could generate significant attention and power towards the effort to modify state laws regarding factory farming and enabling legislation to expand the regulatory capacity of local governments. Interested citizens and regulatory bodies could utilize such a resource to examine the successes and shortcomings of other programs, and generate a flexible template for accommodating the specific needs and values of different landowners and the dynamic legal environment of changing laws and statutes.

Continued efforts to promote best management practices and incorporate odor abatement technologies are key to an effective, multifaceted approach to addressing the presence and activities of industrial swine operations. While zoning efforts focus on future or expanding uses, exploring and applying alternative hog facility arrangements and waste disposal technologies could advance a community and land-based business ethic more in line with neighborliness, and directly address existing use problems.

One of the major lessons of local programs is that communities must use all of the tools at their disposal to preserve their health and quality of life. There is also a variety of state and federal programs that could be tied closely to local preservation efforts. Zoning can be joined by capital improvements programs, tax incentives, direct marketing schemes, and any other programs that support the continued sustainable development of the rural cultural and economic base. For example, in Napa County, California, the exclusive agricultural zone is closely tied to use-value assessment programs under the Williamson Act - a state use-value program featuring tax breaks in return for a contractual obligation to keep the land in farming, backed by a penalty clause for breaking the contract (Toner 1978). A similar legal arrangement could be devised for waste lagoon management practices.

While a variety of initiatives and programs should be developed, zoning is a community-based, direct action that can result in tangible improvements for residents living near industrial swine operations. As part of the larger

comprehensive planning process, zoning establishes structure and guidelines for local decision making, and applies community input, cooperation, and vision towards improving the integrity and sustainability of rural life.

# GLOSSARY

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This selection of relevant swine industry, planning, and zoning terms was compiled from many of the sources listed in the bibliography (Huntington 2000 used as a starting point). For Oklahoma specific legal definitions, see Okla. Stat.Tit. 2, § 9-202 (Supp. 1999).

## A

**Abut:** To physically touch or border upon, or to share a common property line.

**Accessory Structure:** A structure detached from a principal building on the same lot and customarily incidental and subordinate to the principal building or use.

**Accessory Use:** A use of land or of a building or portion thereof customarily incidental and subordinate to the principal use of the land or building and located on the same lot with such principal use.

**Adverse Possession:** The right of an occupant to acquire title to a property after having continuously and openly used and maintained a property over a statutory period of time without a protest from the owner of record.

**Algal bloom:** Rapid growth by algae producing large quantities of plant material, which can result in low dissolved oxygen, conditions as the algae dies and decays. Low dissolved oxygen can result in the death of fish and other aquatic organisms.

**Amenity:** A natural or human-made feature that enhances or makes a particular property more attractive or satisfying.

**Amortization:** A method of eliminating undesirable or nonconforming use/s by requiring the termination of the nonconforming use/s after a specific period of time.

**Animal Feeding Operation:** A lot or facility where the following conditions are met:

- a. animals have been, are, or will be stabled or confined and fed or maintained for a total of ninety consecutive days or more in any twelve-month period, and
- b. crops, vegetation, forage growth or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility.

**Animal Unit:** A unit of measurement for any animal feeding operation calculated by adding the following numbers: The number of slaughter and feeder cattle multiplied by one (1), plus the number of mature dairy cattle multiplied by one and four-tenths (1.4), plus the number of swine weighing over twenty-five kilograms, approximately fifty-five pounds, multiplied by four-tenths (0.4), plus the number of weaned swine weighing under twenty-five kilograms multiplied by one-tenth (0.1), plus the number of sheep multiplied by one-tenth (0.1), plus the number of horses multiplied by two (2).

**Animal Waste:** Animal excrement, animal carcasses, feed wastes, process wastewaters or any other waste associated with the confinement of animals from an animal feeding operation.

**Animal Waste Management Plan:** A written plan that includes a combination of conservation and management practices designed to protect the natural resources of the state prepared by an owner or operator of an animal feeding operation. In Oklahoma, the plan must conform to the requirements of Okla. Stat. Tit. 2, § 9-205.3 (Supp. 1999).

**Animal Waste Management System:** A combination of structures and nonstructural practices serving an animal feeding operation that provides for the collection, treatment, disposal, distribution, storage, and land application of animal waste.

**Antibiotic Resistance:** Frequent exposure to an antibiotic provides conditions favorable to the evolution of germs, which are resistant to (i.e. not harmed by) that antibiotic.

## B

**Base Flood Elevation:** The highest elevation, expressed in feet above sea level, of the level of flood waters occurring in the regulatory base flood.

**Base Map:** A map having sufficient points of reference, such as state, county, or municipal boundary lines; streets, easements; and other selected physical features to allow the plotting of other data.

**Basin:** An area within a watershed drained by the main watercourse and tributaries of rivers and streams.

**Berm:** A mound of earth or the act of pushing earth into a mound.

**Best Management Practices:** Schedules of activities, a prohibition of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the state. In Oklahoma, these practices are established in Okla. Stat. Tit. 2, § 9-205.3 (Supp. 1999).

**Biological Oxygen Demand (BOD):** An indirect measure of the concentration of biologically degradable material present in organic wastes. It usually reflects the amount of oxygen consumed in five days by biological processes breaking down organic waste.

**Buffer Strip:** Land area used to visibly separate one type of land use from another or to shield or block noise, unsightly features, or other nuisances.

**Building Coverage:** The horizontal area measured within the outside of the exterior walls of the ground floor of all principal and accessory buildings on a lot.

## C

**Capital Improvement Program (CIP):** A community's present and near-future financial plan which matches future capital improvement costs — such as sewers, roads, etc. — to anticipated revenues. The planning and zoning commission should be given authority to develop and review the CIP proposal, thereby linking planning to the annual budgetary process. CIP's are usually prepared for five or six years and updated annually.

**CAFO:** In Oklahoma, a Concentrated Animal Feeding Operations means:

- a. a licensed managed feeding operation, or
  - b. an animal feeding operation which meets the following criteria: (1) more than the number of animals specified in any of the following categories are confined: (a) 1,000 slaughter and feeder cattle, (b) 700 mature dairy cattle, whether milk or dry cows, (c) 500 horses, (d) 10,000 sheep or lambs, (e) 55,000 turkeys, (f) 5,000 ducks, or (g) 1,000 animal units, and
- (2) pollutants are discharged into waters of the state. Provided no animal feeding operation pursuant to this subparagraph shall be construed to be a CAFO if such animal feeding operation discharges only in the event of a twenty-five-year, twenty-four-hour storm event, or

c. an animal feeding operation which meets the following criteria: (1) more than the number of animals specified in any one of the following categories are confined: (a) 300 slaughter or feeder cattle, (b) 200 mature dairy cattle, whether milk or dry cows, (c) 750 swine each weighing over 25 kilograms or approximately 55 pounds, (d) 3,000 weaned swine each weighing under 25 kilograms, (e) 150 horses, (f) 3,000 sheep or lambs, (g) 16,500 turkeys, (h) 30,000 laying hens or broilers, if the facility has continuous overflow watering, (i) 9,000 laying hens or broilers, if the facility has a liquid manure system, (j) 1,500 ducks, or (k) 300 animal units, and (2) either one of the following conditions are met: (a) pollutants are discharged into waters of the state through an artificially constructed ditch, flushing system or other similar artificially constructed device, or (b) pollutants are discharged directly into navigable waters that originate outside of and pass over, across, or through the facility or otherwise come into direct contact with the animals confined in the operation. Provided, however, that no animal feeding operation pursuant to this subparagraph is a CAFO if such animal feeding operation discharges only in the event of a twenty-five-year, twenty-four-hour storm event or (d) the State Board of Agriculture determines that the operation is a significant contributor of pollution to waters of the state pursuant to Okla. Stat. Tit. 2, § 9-204.1 (Supp. 1999).

**Conditional Use:** A use permitted in a particular zoning district only upon showing that such use in a specified location will comply with all the conditions and standards for the location or operation of such use as specified in a zoning ordinance and authorized by the zoning board.

**Confinement Building:** Any structure used to confine, maintain, feed, or grow swine in which animal waste collects naturally or must be collected for storage.

**Cost-Benefit Analysis:** An analytic method whereby the actual (apparent) and hidden costs of a proposed project are measured against the benefits to be received from the project.

**Critical Area:** An area with one or more of the following characteristics:

- (1) slopes in excess of 20 percent;
- (2) flood plain;
- (3) soils classified as having a high water table;
- (4) soils classified as highly erodible, subject to erosion, or highly acidic;
- (5) land incapable of meeting percolation requirements;
- (6) land formerly used for landfill operations or hazardous industrial use;
- (7) fault areas;
- (8) stream corridors;
- (9) estuaries;
- (10) mature stands of native vegetation;
- (11) aquifer recharges and discharge areas

**Current Planning Capacity:** A measure of the ability of a region to accommodate the growth and development within the limits defined by existing infrastructure and natural resource capabilities.

## D

**Development Regulation:** Zoning, subdivision, site plan, official map, flood plain regulation, or other governmental regulation (local or national) of the use and development of land.

**Drainage Ditch:** Any waterway or culvert whose purpose is to convey water.

## E

**Easement:** A grant of one or more of the property rights by the property owner to and/or for the use by the public, a corporation, or another person or entity.

**Easement Affirmative:** An easement that gives the holder a right to make some limited use of land owned by another.

**Easement Appurtenant:** An easement that benefits a particular tract of land, usually said to “run with the land” or attach to the land and pass with it.

**Easement Negative:** An easement that precludes the owner of the land from doing that which the owner would be entitled to do if the easement did not exist.

**Elevation:** (1)The vertical distance above or below a fixed reference level;(2) a flat scale drawing of the front, rear, or side of a structure.

**Eminent Domain:** The authority of a government to take, or to authorize the taking of, private property for public use.

**Enabling Act:** The legislative act authorizing the government to do something that previously could not be done.

**Existing Swine Farm:** A swine farm in actual operation that was stocked with swine on the effective date of an ordinance.

**Expanding Operation: Means:**

- a. a facility that either increases its animal unity capacity to a number that causes the facility to initially meet the definition of a licensed managed feeding operation, or
- b. a licensed managed feeding operation that seeks to increase its licensed capacity in excess of five percent of the original facility’s licensed capacity.

**Extra territorial Land Controls (Zoning and Subdivision Regulations):** Authority granted to certain cities to exercise zoning and subdivision powers for three miles outside their boundaries. It is intended to protect the use of land on the edge of communities from being encroached on by incompatible activities that might degrade adjoining property or cause a nuisance. Oklahoma grants this authority to a Metropolitan Area Planning Commission. See Okla. Stat. Tit. 19A, § 866.2 (1991).

## F

**Facade:** The exterior wall of a building exposed to public view or that wall viewed by persons not within the building.

**Facility:** Any place, site or location or part thereof where animals are kept, handled, housed, or otherwise maintained and processed and includes but is not limited to buildings, lots, pens, and animal waste management systems.

**Fair Market Value:** The price of property that would be agreed upon voluntarily in fair negotiations between a knowledgeable owner willing, but not forced, to sell, and a knowledgeable buyer willing, but not forced to buy.

**Feasibility Study:** An analysis of a specific project or program to determine if it can be successfully carried out.

**Fence:** An artificially constructed barrier of any material or combination of materials erected to enclose or screen areas of land.

**Floating Zone:** An unmapped zoning district where all the zone requirements are contained in the ordinance and the zone is fixed on the map only when an application for development is approved.

**Flood Insurance Rate Map:** The official map on which the Federal Insurance Administration has delineated both the areas of special flood hazards and the risk premium zones applicable to the community.

**Floodplains:** Frequently inundated (flooded) lands bordering rivers and streams.

**Flood of Record:** A flood that has occurred for which there are accurate records and documentation available.

**Flood, Regulatory Base:** Flood having a 1 percent chance of being equaled or exceeded in any given year (a 100 year flood).

**Flood Plain:** The channel and the relatively flat area adjoining the channel of a natural stream or river that has been or may be covered by floodwater.

**Floodway:** The channel of a natural stream or river and portions of the flood plain adjoining the channel that are reasonably required to carry and discharge the floodwater or flood flow of any natural stream or river.

**Floor Area Ratio (FAR):** A standard used to control the amount of floor area that can be built on a given lot. For example, a FAR of 3.0 on a 10,000 square foot building would allow a building whose total floor area is 30,000 square feet. This permits a combination of stories and floor area that do not exceed 30,000 square feet.

## G

**Green Area:** Land shown on a development plan, master plan, or official map for preservation, recreation, landscaping, or park.

**Green Belt:** An open area that may be cultivated or maintained in a natural state surrounding development or used as a buffer between land uses or to mark the edge of property boundaries.

**Groundwater:** Those waters in the saturated zone of the earth as defined in [state regulations].

## H

**Heavy Metals:** A classification of elements, many of which are necessary for animal nutrition in trace quantities but which are also toxic to plants and animals in low concentrations.

**Historic Area:** A district or zone designated by a local authority, state, or federal government within which the buildings, structures, appurtenances, and places are of basic and vital importance because of their association with history.

## I

**ILO:** Intensive livestock operations

**Impact Zoning:** The technique of protecting the community's fiscal capacity and natural environment from being negatively impacted by a proposed development. The process involves a detailed analysis of existing conditions of the area to be developed and estimates what impacts the proposed development will have on community social, economic, aesthetic, public health, and ecological issues.

**Infrastructure:** Facilities and services needed to sustain industry, residential, and commercial activities.

**Interim Zoning:** This is a stopgap technique used to temporarily freeze or severely restrict development in an area until a permanent classification for the land can be decided upon. It permits the planning and zoning commission and governing bodies to develop a comprehensive plan and management tools free from the urgency resulting from heavy development pressures. Courts in other states have widely accepted the reasonableness of interim controls, as long as reasonable progress is being made toward permanent controls.

**Inverse Condemnation:** An action brought by a property owner seeking just compensation for land taken for a public use, against a government or private entity having the power of eminent domain.

## J

**Just Compensation:** Payment made to a private property owner by an agency with power of eminent domain when the private property is taken for public use.

## L

**Lagoon:** As used in the context of livestock waste, a vessel, usually open air and in the ground, that provides storage and limited treatment of animal by-products and associated water that has been flushed out of the hog houses.

**Land Application:** The spreading on, or incorporation of animal waste into the soil mantle primarily for beneficial purposes.

**Land Surveyor:** One who is licensed by the state as a land surveyor and is qualified to make accurate field measurements and mark, describe, and define land boundaries.

**Land Use:** A description of how land is occupied or utilized.

**Land Use Plan:** A plan showing how the existing and proposed location, extent, and intensity of development of land to be used in the future for varying types of residential, commercial, industrial, agricultural, recreational, educational, and other public and private purposes or combination of purposes.

**Licensed Managed Feeding Operation (LMFO):** An animal feeding operation primarily using a liquid animal waste management system, where animals are primarily housed in roof-covered structure and which has more than the number of animals specified in any of the following categories confined:

- a. 2,500 swine each weighing over 25 kilograms, approximately 55 pounds,
- b. 10,000 weaned swine each weighing less than 25 kilograms,
- c. 100,000 laying hens or broilers, if the facility has continuous overflow watering,
- d. 30,000 laying hens or broilers, if the facility has a liquid manure system, or
- e. any combination of swine weighing over 25 kilograms or under 25 kilograms which would equal 1,000 animal units.

**Liquid Animal Waste System:** Any animal waste management system which uses water as the primary carrier of such waste into a primary retention structure.

## M

**Managing Operator:** The owner or one who is responsible for the management of each facility of a confined animal feeding operation or animal feeding operation.

**Map, Contour:** A map that displays land elevations in graphic form.

**Master Plan:** A comprehensive long-range plan intended to guide the growth and development of a community or region and one that includes analysis, recommendations, and proposals for the community's population, economy, health, environment, and land use.

**Metes and Bounds:** A system of describing and identifying a tract of land by distances (metes) and direction (bounds) from an identifiable point of reference such as the monument of a quarter section of land.

**Mixed Use Development:** The development of a tract of land or building or structure with two or more different uses.

## N

**Neighborhood:** An area of a community with characteristics that distinguish it from other community areas and which may include distinct ethnic or economic characteristics, or boundaries defined by physical barriers such as major highways and railroads or natural features such as rivers.

**New Swine Farm:** A swine farm which is stocked with swine for the first time after the effective date of an ordinance.

**Nitrates:** N-containing compounds that are water soluble and mobile in the environment. Nitrates are toxic at elevated concentrations. Public health standard set at ten (10) parts per million. Groundwater nitrate contamination can present a threat to public health.

**Nonconforming Lot:** A lot, the area, the dimensions, or location of which was lawful prior to the adoption, revision, or amendment of the zoning ordinance, but which fails by reason of such adoption, revision, or amendment to conform to the present requirements of the zoning district.

**Nonconforming Structure or Building:** A structure or building, the size, dimensions, or location of which was lawful prior to the adoption, revision, or amendment to a zoning ordinance, but which fails to conform to the present requirements of the zoning district.

**Nuisance:** An interference with the use and enjoyment of property.

**Nutrient Pollution:** Pollution containing nitrogen and/or phosphorous which stimulates aquatic algal growth, thus robbing waters of oxygen and killing fish and other aquatic organisms. Nutrient pollution comes from runoff of excess fertilizers, animal waste, and other diffuse sources, as well as from wastewater treatment plants and some industries.

## O

**Odor Abatement Plan:** Schedules of activities, a prohibition of practices, maintenance procedures, and other management practices to prevent or reduce odor. In Oklahoma, the plan must conform to the requirements of Okla. Stat. Tit. 2, § 9-205.3a (Supp. 1999).

**Open Space:** Any parcel or area of land or water essentially unimproved and set aside, dedicated, or reserved for public or private use and enjoyment of owners and occupants of land adjoining or neighboring such open space.

## P

**Pathogens:** Disease-causing organisms.

**Performance Guarantee:** Any security that may be accepted by a municipality as a guarantee that improvements required as part of an application for development or in response to regulations are satisfactorily completed.

**Performance Standards:** Any set of criteria or limits relating to nuisance elements that a particular use or process may not exceed.

**Permitted Use:** Any use allowed in a zoning district and subject to the restrictions applicable to that zoning district.

**Pfiesteria:** A toxic microorganism capable of killing fish and subsequently feeding off their flesh. Usually found in

brackish waters. *Pfiesteria* has been associated with waters polluted with excessive nitrogen and phosphorous.

**Planning:** The systematic development of an area to promote general welfare and prosperity of the people with greatest efficiency and economy.

**Plat:** (1) a map representing a tract of land, showing the boundaries and location of individual properties and streets; (2) a map of a site plan.

**Plot:** (1) a single unit parcel of land; (2) a parcel of land that can be identified and referenced to a recorded plat or map.

**Properly Constructed Well:** A well that is constructed and meets the requirements of the state and the county.

**Public Development Proposal:** A master plan, capital improvement program, or other proposal for land development, and any amendment thereto, adopted by the appropriate public body.

## R

**Reasonable Use Doctrine:** A common principle of law that no one has the right to use his or her property in a way that deprives others of the lawful enjoyment of their property.

**Retention Structure:** Includes but is not limited to all collection ditches, conduits and swales for the collection of runoff water and process wastewater, and basins, ponds and lagoons or other structures used to store animal waste.

**Restrictive Covenant:** A provision in a deed limiting the use of the property and prohibiting certain uses.

**Reversion Clause:** A requirement that may accompany a “special exception” permit approval or a “rezoning” that returns the property to its prior zoning classification if a specified action, such as structural improvements, does not begin in a specified time period — say six months. This is one way to protect a community from using permits or rezoning for speculative purposes.

**Rezoning:** To change the zoning classification of particular lots or parcels of land.

**Right-of-Way:** (1) A strip of land acquired by reservation, dedication, forced dedication, prescription, or condemnation and intended to be occupied by a road, crosswalk, railroad, electric transmission lines, oil or gas pipeline, water line, sanitary storm sewer, and other similar uses; (2) generally, the right of one to pass over the property of another.

**Run with the Land:** A covenant or restriction to the use of land contained in a deed and binding on the present and all future owners of the property.

## S

**Separation or Setback Distances:** The distances specified by statute between a feeding operation structure or land application of waste and other uses of land. In Oklahoma, the following setback requirements are applicable for swine feeding operations:

A. The state shall be divided east and west based on the Indian Meridian for the purposes of determining setback requirements from occupied residences for animal feeding operations using a liquid animal waste management system where swine are primarily housed in a roof-covered structure and which were established between September 1, 1997, and June 1, 1998:

1. No new or expanding licensed managed feeding operation with a capacity of 2000 or more animal units:  
a. located in the eastern half of the state shall be constructed where its closest waste facility is within a distance of one-half (1/2) mile of any occupied residence not owned or leased by the owner or operator of the licensed managed feeding operation, or

b. located in the western half of the state shall be constructed where its closest waste facility is within a distance of three-fourths (3/4) mile of any occupied residence not owned or leased by the owner or operator of the licensed managed feeding operation.

2. No new or expanding animal feeding operation with a capacity of less than two thousand animal units but more than one thousand animal units:

a. located in the eastern half of the state shall be constructed where its closest waste facility is located within a distance of one-fourth (1/4) mile of any occupied residence not owned or leased by the owner of the animal feeding operation, or

b. located in the western half of the state shall be constructed where its closest waste facility is located within a distance on one-half (1/2) mile of any occupied residence not owned or leased by the owner of the animal feeding operation.

3. No new or expanding animal feeding operation with a capacity of more than three hundred animal units but having one thousand animal units or less shall be constructed where its closest waste facility is located within a distance of one-fourth (1/4) mile of any occupied residence not owned or leased by the owner of the animal feeding operation.

B. Except as other wise authorized by this subsection, no liquid animal waste shall be land applied within five hundred (500) feet of the nearest corner of an occupied residence not owned or leased by the owner of the animal feeding operation.

C. Except as otherwise provide by Section 9-210.2 [period of compliance] of this title, no concentrated animal feeding operation shall be established after September 1, 1997, which is within one (1) mile of ten or more residences which are occupied residences at the time of the establishment of the CAFO.

D. The proscription contained in subsections A, B and C of this section shall not apply if the applicable property owner executes a written waiver with the owner or operator of the animal feeding operation, under such terms and conditions that the parties negotiate. . . .

E. No liquid animal waste shall be land applied within three hundred (300) feet of an existing public or private drinking water well.

F. Except as otherwise provided by Section 9-210.2 [period for compliance] of this title, no CAFO shall be established after September 1, 1997, which is located:

1. Within three (3) miles of a state park or resort;

2. On land within three (3) miles of the incorporated limits of any municipality;

3. Within three (3) miles of the high water mark of a surface public water supply if the CAFO is located within the drainage basin for the public water supply.

G. All distances between occupied residences and animal-feeding operations shall be measured from the closest corner of the walls of the occupied residence to the closest point of the nearest waste facility, as determined by the State Department of Agriculture. The property boundary line of the real property is not used unless it coincides with the closest point of the waste facility or occupied residence. See Okla. Stat. Tit. 2, § 9-210.1 (Supp. 1999).

**Site Plan:** A plan (to scale) showing uses and structures proposed for a parcel of land as required by the regulations involved. Its purpose is to show how the intended use relates to the major landscape features, the weather, and the surrounding area.

**Slope:** The degree of deviation of a surface from the horizontal, usually expressed in percent or degrees.

**Special Use Permit:** A permit issued by the proper government authority that must be acquired before a special exception use can be constructed.

**Sprayfield:** An area of land that has been approved in a certified animal waste management plan for the purpose of spraying animal waste, which has been stored in a liquid waste management system that is part of a swine farm.

**Spot Zoning:** Rezoning of a lot or parcel of land to benefit an owner for a use incompatible with surrounding uses and not for the purpose or effect of furthering the comprehensive zoning plan.

**Stead State Live Weight (SSLW):** The average day-to-day total live weight of any animal on the farm during their growth cycle.

**Surface Water:** Water flowing on surfaces such as rivers, streams, lakes, estuaries, and oceans.

## T

**Taking:** When government action directly interferes with or substantially disturbs the owner's use and enjoyment of the property.

**Technical Specialist:** A person designated under rules of the State Soil and Water Conservation Commission to develop and/or certify animal waste management plans under [state regulations].

**Temporary Structure:** A structure without any foundation or footings that is removed when the designated time period, activity, or use for which the temporary structure was erected ceases.

**Temporary Use:** A use for a fixed period of time with the intent to discontinue such use upon the expiration of the time period.

**Topography:** The configuration of a surface area showing relative elevations.

## V

**Vacancy Rate:** The number of uninhabited dwelling units that are available expressed as a ratio to the total number of housing units.

**Variance:** Permission to depart from the literal requirements of a zoning ordinance.

**Vertical Integration:** The coordination of various levels of producing, processing, and distributing under one decision making unit, generally through direct ownership of the different stages.

**Volatile Organic Compounds:** Natural or manmade gaseous hydrocarbons which can be active components in atmospheric chemistry.

## W

**Waste Facility:** Any structure or combination of structures utilized to control animal waste until it can be disposed of in an authorized manner. Such structures shall include but not be limited to pits, burial sites, barns or roof-covered structures housing animals, compostors, waste storage sites, or retention structures or appurtenances or additions thereto.

**Waters of the State:** All streams, lakes, ponds, marshes, watercourses, waterways, wells, springs, irrigation systems, drainage systems, storm sewers and all other bodies of accumulations of water, surface and underground, natural or artificial, public or private, which are contained within, flow through or border upon this state [Oklahoma] or any portion thereof, and shall include under all circumstances the waters of the United States which are contained within the boundaries of, flow through or border upon this state or any portion thereof. Process wastewaters shall not be considered as waters of the state if contaminated at the site.

## Y

**Yard:** An open space that lies between the principal or accessory building or buildings and the nearest lot line. Such yard is unoccupied and unobstructed from the ground upward except as may be specifically provided in the zoning ordinance.

**Yard, Required:** The open space between a lot line and the buildable area within which no structure shall be located except as provided in the zoning ordinance.

## Z

**Zero Lot Line:** The location of a building on a lot line in such a manner that one or more of the building's sides rest directly on a lot line.

**Zone:** A specifically delineated area or district in an area within which regulations and requirements uniformly govern the use, placement, spacing, and size of land and structures.

**Zoning:** The dividing of an area into districts and the establishment of regulations governing the use, placement, spacing, and size of land and buildings.

**Zoning Envelope:** The three-dimensional space within which a structure is permitted to be built on a lot, defined by the maximum height regulations, yard setbacks, and sky exposure plane regulations.

**Zoning Map:** The map or maps that is a part of the zoning ordinance and delineates the boundaries of zone districts.

**Zoning Officer:** The administrative officer designated to administer the zoning ordinance and issue zoning permits.

**Zoning Permit:** A document signed by the zoning officer, as required in the zoning ordinance, as a condition precedent to the commencement of a use or the erection, construction, reconstruction, restoration, alteration, conversion, or installation of a structure or building that acknowledges that such use, structure, or building complies with the provisions of the municipal zoning or authorized variance there from.

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# Appendix A: Impacts of Industrial Swine Operation Waste Lagoons

## Introduction

The proliferation of large-scale swine production in rural counties has resulted in considerable concerns among neighboring farmers and other rural residents over the public health, social, economic, and environmental consequences of these operations. Jim Schwab (1998) notes that:

Rural conflict over the future of agriculture and agricultural policy is not new. It has been happening virtually since the onset of the Industrial Revolution, which affected rural communities no less profoundly than it did cities. It can be found in the history of such agrarian protest movements as the Grange (1870s), Populism (1890s), the Farm Holiday Movement (1930s), the National Farmers Organization (1950s), and the grassroots family farm and rural environmental groups of the last two decades. These movements generally have been defensive, seeking to ward off undesired impacts on the social fabric of rural communities.

There is an abundance of existing literature covering the negative impacts of industrial swine operations; the following is a broad overview of some of the issues facing rural communities living with CAFOs. For a comprehensive review of the literature, see *Studying the Impacts of Industrial Confined Animal Feeding Operations*, prepared by Mark Lawrence for the North Central Regional Center for Rural Development and the Kerr Center for Sustainable Agriculture. The following section deal specifically with the public health, social, economic, and environmental impacts of swine waste.

## Impacts of Swine Waste on Public Health

Most people living near large-scale waste lagoons can identify the unpleasant existence of certain problems like pervasive, noxious odor and excessive flies in the summertime. While proponents of swine operations claim few health hazards, research continues to indicate the severity of the public health impacts of pork operations. For example, studies conducted at the University of North Carolina and Iowa State University link hog factories to increased rates of asthma and other respiratory ailments in communities adjacent to the factory hog farms (Thu et al., 1997; Wing and Wolf, 1999) and to psychological problems, such as depression (Schiffman, 1998). Duke University medical psychologist Susan Schiffman unveiled research that also strongly suggested a link between hog odors and a wide variety of ailments (e.g. multiple chemical sensitivity syndrome, (MCSS)) among people down wind from waste lagoons (Horwitz 1998:51).

The prevailing method of waste “treatment” – collection and storage of tens of millions of gallons of animal waste in anaerobic lagoons and the subsequent spraying of that waste on agricultural land that has been ditched to promote crop production – optimizes volatilization of ammonia and facilitates runoff, imperiling the environment and public health (Nowlin 1997). Using the current lagoon-sprayfield technique, hog waste being applied to land contains 100 to 100,000 times the number of pathogens in human waste that is treated and applied to the land through municipal treatment systems. Although fecal coliforms and *E. coli* (common indicators of pathogenic or disease-causing bacteria) can be reduced by about 99% in lagoons operated and maintained by current best management practices, research shows that these pathogen indicators in hog lagoon effluent were still at levels exceeding state standards and federal guidelines for maximum allowable fecal coliform concentrations in municipal wastewater applied to land (Hill and Sobsey 1998: 120).

A study completed at the University of Iowa's Institute for Rural and Environmental Health assessed the physical and mental health of residents living in the vicinity of a large-scale swine confinement operation. Neighbors of the industrial swine operation reported experiencing significantly higher rates of four clusters of symptoms known to represent toxic or inflammatory effects on the respiratory tract including; headaches, plugged ears, nausea, dizziness, runny nose, scratchy throat, shortness of breath, wheezing, burning eyes, and tightness in the chest (Thu et al. 1997). New research is constantly being initiated to document and quantify the public health harms imposed upon communities living near large-scale swine operations as well as the harder to quantify social impacts of hog operations.

## **Environmental Impacts of Industrial Swine Lagoons**

Waste lagoons have the potential to impact soil health, water contamination and depletion, and air pollution. Hog manure contains components that can compromise soil, water quality, and threaten humans and wildlife, not only near the farm but downwind and downstream. Suitably, a microbiologist stated flatly that the pig is an "indefatigable and unsavory engine of pollution" (Horwitz 1998:61).

### **Soil Health**

The Laboratory Director of the National Soil Tilth Laboratory in Ames, Iowa states that the increase in pork production in the Midwest has prompted legitimate public concern about the potential impact on natural resources, particularly water, air, and soil resources. Using animal production numbers and estimates of manure/waste production per county as well as the available land resource base, quantitative linkages can be established describing, for example, how much manure can be applied to the land without overloading the nitrogen or phosphorous capacity of the soil. Additionally, the laboratory has begun the process of studying the climate, cropping patterns, soil, and animal production together to better understand potential areas for innovative management interventions (Hatfield 1997).

Pollutants particular to hog waste - selenium and "trace minerals" like zinc, iron, and copper - are standard swine feed additives. The mineral supplements that pass through the hogs can build up to dangerous concentrations in fields where manure is sprayed. Hence, the U.S. Food and Drug Administration have worked to limit the concentration of selenium allowed in livestock feed (National Hog Farmer 1994). Integrators freely admit that places like Oklahoma (where the number of swine doubled 1992-1993) were largely attractive because it is sparsely populated. Effluent would evaporate more rapidly; there was less surface water to carry it afar and fewer people to complain, if it did (Horwitz 1998:103).

In addition, phosphorous from the CAFO represents a long-term problem since it does not leave the soil but accumulates. Phosphorous from CAFOs accumulates faster than nitrogen and can spread through soil erosion. Accumulation of phosphorous in surface waters creates eutrophication, in which the oxygen supply is cut off in water and as a result, aquatic life is destroyed. A significant vector for soil contaminants is the lagoon seepage: lagoon seepage into groundwater occurs largely because of a lack of adequate containment, usually consisting of a clay wall lining the bottom and sides (Warrick and Stith 1995).

## **Water Pollution**

### **Groundwater: Contamination and Depletion**

#### **Contamination**

Nutrients from hog waste management systems enter the soil and groundwater through two primary pathways: (1) seepage from animal waste lagoons and (2) leaching of contaminants through the soil after effluent has been applied to the land. A study by scientists at North Carolina State University found severe seepage losses of nitrogen from more than 50 percent of the lagoons tested, posing a substantial threat to groundwater (Nowlin 1997).

Both scientific and anecdotal evidence exists that the use of waste lagoons is fraught with risk and the possibility of error. Heavy metals such as copper and zinc are present in the waste and are capable of leaching into the groundwater. For example, the 182 lagoons in Texas County, Oklahoma are clay lined to allow one-quarter inch of the slurry per acre per day to seep into the ground, which calculates into over 500 gallons per acre per day seeping into the groundwater (North Central Center for Rural Development 1998:5).

## Depletion

CAFOs consume enormous volumes of water to cool and water the pigs and flush waste from the hog houses into the lagoons. The U.S. Geological Survey has reported a 90-foot cone of depression in the contained aquifer beneath one slaughterhouse in Bladen County, North Carolina, where over 3 million gallons of water are consumed each day (Nowlin 1997). Neighbors of industrial hog operations claim that their wells have dried up and they have had to drill deeper and deeper to tap drinking water (Nowlin 1997).

The introduction of corporate hog farms into Texas County placed an additional strain on an already near-capacity system. The growth of these operations led to a 66 percent increase in livestock water use between 1990 and 1998. For example, the Upper Beaver River watersheds in Oklahoma have serious water quality problems with a ranking of five out of a possible six, with one being the best [most benign]. The EPA has determined that a decline in water quality is likely because of the nitrogen runoff from the CAFOs.

## Air Pollution

The principal gases of concern from industrial swine waste lagoons include ammonia, carbon dioxide, hydrogen sulfide, and methane. Ammonia clearly produces unpleasant odors, but its staying power as an atmospheric odor source is limited. The greater concern is that ammonia, which is a reactive gas that combines readily with various acidic compounds to form ammonium aerosols, figures in the production of acid rain. This in turn produces concerns about the health of surrounding soil and vegetation where deposition occurs, including excess nitrogen fertilization and the leaching of nitrates through soil. Scientists have clearly demonstrated that ammonia emissions from poultry, swine, and dairy operations have contributed significantly to the deposition of ammonia and ammonium in local soils and surface waters (Paerl et al. 1995). For a detailed account of hog related air pollution, see Chapin, A., C. Boulind, and A. Moore's *Controlling Odor and Gaseous Emission Problems from Industrial Swine Facilities: a Handbook for all Interested Parties*.

## Summary: Impacts of Industrial Swine Operation Waste Lagoons

The presence of industrial swine operations in rural communities in Oklahoma has -both directly and indirectly- negatively affected the health, economic welfare, and environmental quality of the residents and thus, the economic and social welfare of the communities.

# Appendix B: Beckham County, Oklahoma Example Comprehensive Plan Table of Contents

*The example table of contents provides a structure for thinking about and organizing community planning information.*

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# Appendix C: Example List of Comprehensive Plan Maps; Beckham County, OK

*This list provides an idea of the kinds of information likely to be useful in comprehensive planning for your community.*

- Beckham County
- Physical Provinces and Historic Trails
- Geologic Map
- Geomorphic Provinces
- Topographic Map
- Major Drainage Basins
- Normal Annual Temperature (°F)
- Normal Annual Total Precipitation (Inches)
- Mean Annual Days with One or More Inches of Snow on Ground
- Average Lake Evaporation
- Population Distribution
- Natural Areas Map
- General Soil Map, Beckham County
- Land Resource Areas
- Storage and Conveyance Facilities
- Capabilities and Length Conveyance Facilities
- Master Conservancy Districts
- Sources of Groundwater
- Conservation Districts
- Mineral Resources Map
- Oil and Gas Map
- General Crop Areas
- Sub-State Planning Districts

# Appendix D: Randolph County, North Carolina: Example Zoning Ordinance Provisions for Swine Farms

*This sample ordinance uses specific language in its regulation of industrial swine operations.*

## **Randolph County, North Carolina, Zoning Ordinance Provisions for Swine Farms**

### **Section 5. Special Uses**

*[Editor's note: Section 5.1 of the ordinance describes the objectives and purposes of providing for special uses. Section 5.2 describes the procedures for securing a special use permit and Section 5.3 describes the regulations for special use permits. The excerpt that follows provides the specific regulations for swine farms from Section 5.3.]*

#### USE: SWINE FARM

Any tract or contiguous tract of land in Randolph County devoted to raising animals of the porcine species served by animal waste management systems having a design capacity of 600,000 steady state live weight (SSLW) or greater regardless of the actual number of swine on the farm.

SPECIAL USE DISTRICT:  
Residential Agriculture (RA)

#### EXEMPTIONS:

Existing Swine Farms:

Nothing in zoning regulations governing swine farms served by animal waste management systems having a design capacity of 600,000 pounds SSLW or greater, and in existence at the time this zoning amendment is adopted shall:

1. Prohibit the continued existence of the farm.
2. Require the amortization of the swine farm, or
3. Prohibit the repair or replacement on the same site of the swine farm so long as the repair or replacement does not increase the swine population beyond the population that the waste system is designed to accommodate as set forth in its permit issued prior to adoption of the zoning regulations.

#### SETBACKS:

A swine house or a lagoon that is a component of a swine farm of a minimum 600,000 SSLW shall be located:

1. At least 2,500 feet from any occupied residence. This setback shall be increased in direct proportion to increases above 600,000 SSLW not to exceed 7,500 feet.
2. At least 2,500 feet from any school; hospital; church; outdoor recreational facility; national park; state park ...; historical property acquired by the state ... or listed in the North Carolina Register of Historic Places ...; or child care center ... This setback shall be increased in direct proportion to increases above 600,000 SSLW not to exceed 7,500 feet.

# Appendix E: Beckham County, Oklahoma Planning Commission: Example Rules and Regulations

*Setting up a zoning commission is a challenging task, and this example set of rules and regulations can be used as a template for creating original county-specific commission guidelines.*

## ARTICLE I – OFFICERS

Section 1. A chairman, vice-chairman, and secretary/treasurer shall be elected annually by a majority vote of the Planning Commission. They shall serve for the calendar year.

## ARTICLE II – DUTIES

Section 1. The chairman, or in his absence, the vice-chairman, shall preside at all meetings and hearings of the Planning Commission, decide all points of order or procedure and perform any duties required by law, ordinance, these rules, or the Planning Commission.

Section 2. In the absence or disqualification of the chairman, the vice-chairman shall assume the duties of the chairman.

Section 3. The secretary shall conduct, at the direction of the Planning Commission, all official correspondence of the Planning Commission, send out all notices required by law and these rules of procedure, keep a record of each hearing or other official action of the Planning Commission, perform all other duties requested by law, ordinance, these rules, or the Planning Commission.

## ARTICLE III – MEETINGS

Section 1. Regular meetings of the Planning Commission shall be held on the 2<sup>nd</sup> Thursday of each month at 7:30 p.m. at the Beckham County Commissioners Office. The first regular meeting of the year shall constitute an annual meeting of the Planning Commission. Whenever there are no business matters to be considered at any regular meeting, other than the organizational meeting, the chairman may dispense with such meetings by notifying each member of the Planning Commission and each other person who may have to be given notice of the meeting at least twenty-four hours prior to the time set for the meeting; provided that when at least two other members of the Planning Commission request that such regular meeting be held, the chairman shall not dispense with it. Unless otherwise stated, meetings shall be held in the Commissioners Office at the Beckham County Courthouse.

Section 2. Special meetings and executive sessions may be held upon call of the chairman and at such other times as the Planning Commission may determine, provided that at least twenty-four hours notice of the meeting be given to each member.

Section 3. A quorum shall consist of four (4) members of the Planning Commission. Ex-officio members may vote only when expressly authorized by these rules.

Section 4. The order of business at all regular meetings of the Planning Commission shall be as follows:

- a. Roll Call
- b. Reading of minutes of previous meeting
- c. Unfinished business
- d. Consideration of proposed improvements
- e. New business
- f. Communications and miscellaneous business

Section 5. The secretary shall keep minutes of the proceedings of each meeting of the Planning Commission, showing the vote of each member upon each question, or if absent or failing to vote, indicating such fact.

Section 6. All meetings and hearings of the Planning Commission shall be open to the public. Any action calling for a formal vote shall take place only at a public meeting.

## **ARTICLE IV – DUTIES OF THE COMMISSION**

Section 1. The Planning Commission shall prepare, adopt, and from time to time revise, amend, extend or add to the Beckham County Comprehensive Plan. Procedures for adoption are provided hereinafter at Article V.

Section 2. The Planning Commission may adopt rules and regulations governing plats and subdivisions. Such rules and regulations shall be adopted or amended only after the Planning Commission has held public hearings and received approval from the Board of County Commissioners and, if required, the City Commission and/or Town Board of Trustees. Adoption of such rules and regulations shall be by resolution carried by not less than a majority of the voting members (i.e. nine (9) members). Ex-officio members are construed to be part of the full membership. Upon adoption by the Planning Commission, such rules and regulations shall be certified to the Beckham County Clerk and, as appropriate, to the City Clerk(s) for safekeeping and as a public record.

Section 3. The Planning Commission shall recommend to the Board of County Commissioners and, if appropriate, to the City Commission and/or Town Board of Trustees, rules and regulations governing building lines and setbacks. The Planning Commission shall hold public hearings before such rules and regulations may be adopted or amended by the Board of County Commissioners and, if appropriate, the City Commission and/or Town Board(s).

Section 4. The Planning Commission shall make a preliminary report on its recommendation to the Board of County Commissioners concerning proposed boundaries of the various districts throughout the unincorporated areas of the county. In addition, the preliminary report also shall include recommended rules and regulations for the implementation and enforcement of the Beckham County Comprehensive Plan. The Planning Commission shall hold at least one (1) public hearing on the proposed rules and regulations and, within ninety (90) days after adjournment of such hearings, shall make its final report to the Board of County Commissioners together with a summary of the results of the public hearing and a proposed resolution of adoption for consideration and approval by the Board of County Commissioners. After adoption by the Board of County Commissioners, rules and regulations may only be amended or repealed upon the recommendation of the Planning Commission pursuant to public notice and hearing and the filing of a report by the Planning Commission.

Section 5. The Planning Commission shall investigate and report to the Board of County Commissioners within 30 days on any matter or subject relating to projects that fall within the preview of the duties of the Planning Commission.

Section 6. The Planning Commission, following adequate public notice, shall conduct public hearings prior to any compulsory termination of non-conforming use within the unincorporated areas of the county. The Planning Commission shall provide to the Board of County Commissioners a summary of the results of the hearing together with recommendations concerning such termination, the period within which the non-conforming use must cease, and the formula upon which a reasonable period is determined so as to allow for the recovery of authorization of the investment in the non-conforming use.

Section 7. The Planning Commission shall conduct public hearings pursuant to adequate notice on building, housing, and construction (e.g. plumbing, electrical, air conditioning and refrigeration) codes and shall provide to the Board of County Commissioners and, as required the City Commission and/or Town Board(s) a summary of the results of the hearings together with the Planning Commission's recommendations.

Section 8. The Planning Commission shall prepare and submit to the Board of County Commissioners, the City Commission, and the Town Boards a proposed schedule of fees for building permits, inspections, investigations, hearings, and appeals. Requests for public hearings before the Planning Commission shall require a \$75.00 fee, except for requests by municipalities and public schools, which shall be assessed no fees.

Section 9. The Planning Commission, upon request by any incorporated city or town within the county, insofar as possible shall act as the Planning Commission or lend planning assistance to such city or town. Fees for services shall be specified by agreement between the Planning Commission and the incorporated city or town.

## **ARTICLE V – PROCEDURE FOR ADOPTION, AMENDMENT OR EXTENSION OF COMPREHENSIVE PLAN**

Section 1. The Chairman at the direction of the Planning Commission shall prepare or, with the assistance of the sub-state planning district authority or other planning experts, shall have prepared a comprehensive plan, amendment, or extension for consideration by the sole Planning Commission.

Section 2. The Planning Commission, upon receipt of the comprehensive plan, amendment, or extension, shall hold at least one (1) public hearing (pursuant to adequate public notice) within sixty (60) days of receipt. A copy of the notice shall be published in a newspaper of general circulation in Beckham County at least fifteen (15) days prior to the hearing.

Section 3. The Planning Commission shall consider for adoption the plan, amendment, or extension at the next regularly scheduled meeting following the public hearing.

Section 4. The plan, amendment, or extension shall be adopted in whole or in part by a resolution of the Planning Commission. Such resolution shall require a majority vote of the members present, including ex-officio members, if four (4) or more members vote in favor of adoption.

Section 5. The comprehensive plan, amendment, or extension shall be submitted within fifteen (15) days of adoption by the chairman at the direction of the Planning Commission to the Board of Beckham County Commissioners for approval. Any plan, amendment, or extension that affects the area within the city limits of any municipality within the county shall require also the approval of the legislative body of the municipality (i.e., the City Commission and Town Board).

Section 6. Upon approval by the Board of Beckham County Commissioners and, if necessary, the City Commission, and/or the Town Boards, the Comprehensive Plan, amendment, or extension shall have full force and effect. Should the Board of County Commissioners or the City Commission or Town Board fail to act within forty-five (45) days from the date of its submission by the Planning Commission, such plan, amendment, or extension shall be deemed to have been approved.

Section 7. The Planning Commission, the Board of County Commissioners and, if necessary, the City Commission shall certify an attested copy of the plan, amendment, or extension to the Beckham County Clerk and to the City/Town Clerks of such incorporated areas as may be covered or affected, for safekeeping and as a public record.

**ARTICLE VI – RECORDS**

Section 1. A file of all correspondence, reports, records, and decisions by the Planning Commission shall be kept by the Secretary/Treasurer of the Planning Commission.

Section 2. All records of the Planning Commission shall be public records.

**ARTICLE VIII – AMENDMENTS**

Section 1. These rules may be amended by a majority vote of members present, including ex-officio members, if at least four (4) members vote in favor of such amendment.

Section 2. For consideration and approval by the Planning Commission, amendments to these rules must be proposed by a member of the Planning Commission.

**ADOPTION**

In accordance with the authority granted under 19 O.S. 1981 § 865.51 et seq. by the Board of County Commissioners of Beckham County Commissioners and by the City Commission of Elk City, City Council of Sayre and Town Board Erick and Town Board of Texola, Oklahoma the foregoing rules and regulations were adopted by the Beckham County Planning Commission on \_\_\_\_\_.

\_\_\_\_\_ CHAIRMAN

\_\_\_\_\_ VICE-CHAIRMAN

\_\_\_\_\_ SECRETARY

\_\_\_\_\_ MEMBER

\_\_\_\_\_ MEMBER

# Appendix F: Sample Ordinance from *Planning and Zoning for Animal Agriculture* by James Duncan and Associates

*The examples set forth in this sample ordinance should be viewed only as a resource for ideas about how to tailor zoning of waste lagoons to maximum benefit and efficiency.*

This sample ordinance is reproduced with permission from both the Minnesota Department of Agriculture and James Duncan and Associates. It has been edited only to make it consistent with PAS Report style and with the focus of this report. These provisions are not intended as a model that will fill every jurisdiction's needs. Those interested in drafting local land-use regulations should consult legal counsel.

## **Chapter 101: Zoning Districts** **Section 101-1: L-AG, Limited Agriculture District**

### **A. Purpose**

The L-AG, Limited Agriculture district is intended to help preserve existing agricultural land resources and prevent the premature conversion of rural lands to urban use. The district's use and development regulations are designed to implement [comprehensive plan] goals by discouraging urban and suburban development in areas that have prime agricultural soils and that are not well served by public facilities and services. The L-AG district is generally compatible with the "Agriculture" and "Open Space" land-use designations of the [comprehensive plan]. The district can also be used as a transitional zoning designation to buffer residential uses from general agriculture districts.

*Commentary: Purpose statements should tie zoning district provisions back to the comprehensive plan and explain the intent of the district. By doing so, property owners and public officials will be given an indication of what a district is intended to do and where it is intended to be applied (mapped).*

### **B. Permitted Uses**

The following uses are permitted by right in the L-AG district:

- Agriculture, Crop
- Agricultural Sales and Service
- Agricultural Storage
- Agricultural Research and Development
- Utility, Minor

### **C. Conditional Uses**

The following uses may be allowed in the L-AG district if reviewed and approved in accordance with the procedures and standards of Section 102-1.

- Communication Tower, Commercial
- Mining and Extraction
- Single-Family Residence
- Utility, Major

*Commentary: The sample Limited Agriculture zoning district presented here does not allow "Animal Agriculture." What this means depends on the definition of animal agriculture. Two possible definitions of the term are*

presented in the definition section of this sample ordinance (below), one that parrots the Minnesota Pollution Control Authority (MPCA) definition of “animal feedlot” and one that modifies the MPCA definition slightly. There are, of course, other options that have been or could be used, a few of which follow:

1. Non-feedlot based animal agriculture could be listed as an allowed “accessory use” in the L-AG district. An accessory use is often defined as a use or structure that is subordinate to and serves a principal use; is subordinate in area, extent, and purpose to the principal use or structure served; serves occupants of the principal use or structure; and is located on the same lot and in the same zoning district as the principal use.
2. Animal agriculture involving fewer than [x] animal units could be listed as a permitted use in the district.
3. Animal agriculture could be classified as a conditional use in the district.
4. Animal agriculture involving fewer than [x] animal units could be listed as a conditional use in the district.

Reviewers will also notice that single-family dwelling units are listed as an allowed conditional use. Again, not all jurisdictions will want to follow this approach. Some will want to prohibit single-family residential development within agricultural zoning districts, while others may decide to permit such uses by right. It is important to note that the term “single-family residential” refers only to dwelling units that are a principal use, as distinguished from a residence for farm operators (which would be an accessory use).

**D. Property Development Standards**

The following property development standards apply to all land within the L-AG district.

(1) MINIMUM LOT SIZE

The minimum lot size shall be [x] acres.

*Commentary: This minimum lot-size provision is suggested as a way of establishing some minimum requirement for allowed nonresidential uses within the district. It is recognized that minimum lot size requirements are an ineffective and sometimes counterproductive technique for preserving prime farmland. In fact, large-lot zoning can do more harm than good when it comes to farmland protection. By spreading development throughout the countryside, large-lot zoning can result in a waste of land and an increase in environmental problems.*

(2) MAXIMUM RESIDENTIAL DENSITY

The maximum residential density shall not exceed one dwelling unit per [x] acres.

*Commentary: In contrast to minimum lot-size standards, residential density requirements are generally viewed as a fairly good technique for advancing agricultural land preservation objectives. Density requirements vary from place to place. Minnesota’s Metro Agricultural Preserves Act (Minn. Stat. Sec.473H) allows a maximum density of one unit per 40 acres, while some Minnesota counties outside the Metro Area require at least 160 acres per unit.*

(3) MINIMUM SETBACKS

Principal and accessory structures shall comply with the following minimum setback standards:

<u>Setback From</u>	<u>Minimum Distance (ft)</u>
State Road ROW Line	---
County Road ROW Line	---
Township ROW Line	---
Interior (Nonroad) Lot Line	---

*Commentary: Zoning district setback requirements should not be confused with use-specific separation standards. Setbacks are primarily useful as a means of protecting adjacent rights-of-way and lots from encroachment by buildings and structures. Although many agricultural zoning districts require that buildings be set back 50 to 100 feet from lot lines, there is no magic setback distance. Sample use-specific separation standards are presented in Section 103-1-C (below).*

- (4) **HEIGHT**  
 Building heights shall not exceed [x] feet, provided that this standard shall not apply to grain elevators, silos, and barns.

## **Section 102-1: Conditional Uses**

### **A. Application Submittal**

A complete application for conditional use approval shall be submitted to the [official] in a form established by the [official], along with a nonrefundable fee that has been established by the governing body to defray the cost of processing the application. No application shall be processed until the application is complete and the required fee has been paid.

### **B. Review and Recommendation-Planning Commission**

The planning commission shall hold a public hearing on the application as soon as possible after administrative reviews are complete and required notices have been given. After the public hearing, the planning commission shall act to recommend approval, approval with conditions, or denial of the application for conditional use approval, based on the review criteria of Section 102-1.D. In acting upon the application, the planning commission shall make written findings of fact regarding the proposed use's compliance with the review criteria of Section 102-1.D.

*Commentary: The sample provisions presented here set out a two-step review process: review and recommendation by the planning commission, with final approval by the governing body. Either body can be authorized to approve conditional uses, but such authorization should be stated in the ordinance.*

### **C. Review and Action-Governing Body**

The governing body shall hold a public hearing on the application as soon as possible after the planning commission makes its recommendation and all required notices have been given. After the public hearing, the governing body shall act to approve, approve with conditions, or deny the application based on the criteria of Section 102-1.D. In acting upon the application, the governing body shall make written findings of fact regarding the proposed use's compliance with the review criteria of Section 102-1.D.

*Commentary: Counties must give notice of public hearings on conditional uses at least ten days in advance of the hearing by publication in an area newspaper of general circulation and written notice to all property owners within one-quarter mile of the affected property or to the ten properties nearest the subject property, whichever would result in notification of the greatest number of owners.*

### **D. Review Criteria**

The planning commission shall recommend approval and the governing body shall approve an application for a conditional use permit unless it finds that the proposed use:

*Commentary: The preceding provision attempts to make it clear that conditional uses must be approved if they comply with all applicable ordinance standards and satisfy all applicable review criteria. Such an approach will help avoid arbitrary decisions and add some predictability to the conditional use process.*

- (1) when completed in accordance with proposed plans will not comply with all applicable requirements of this ordinance, including the land-use standards of Chapter 103;
- (2) creates more adverse impacts on existing uses in surrounding areas than those which reasonably might result from development of the site with a use that is permitted by right in the underlying zoning district;
- (3) is not compatible with existing or permitted uses on abutting sites, in terms of building height, setbacks, open spaces, bulk and scale, landscaping, drainage, traffic generation, or hours of operations;
- (4) will be injurious to the use and enjoyment of other property in the immediate vicinity, or substantially diminish or impair property values within the area;

- (5) will impede the normal and orderly development and improvement of surrounding property for uses permitted in the underlying district;
- (6) will not be served by adequate utilities, access roads, drainage, and other necessary facilities;
- (7) will not be served by ingress and egress routes that will minimize traffic congestion on public streets or roads;

**Section 101-2: G-AG, General Agriculture District**

**A. Purpose**

The G-AG, General Agriculture District, is intended to help preserve existing agricultural land resources, promote the area’s agricultural economy, prevent the premature conversion of rural lands to urban use and accommodate animal agriculture uses and other uses that may be more intensive than crop production. The district’s use and development regulations are designed to implement [comprehensive plan] goals by discouraging urban and suburban development in areas that have prime agricultural soils and that are not well served by public facilities and services. The G-AG district is generally compatible with the “Agriculture” and “Open Space” land-use designations of the [comprehensive plan]. Due to the more intensive nature of uses allowed, the G-AG district is not intended to be applied near urbanized areas, and it is not intended to accommodate residential uses as a principal use.

**B. Permitted Uses**

The following uses are permitted by right in the G-AG district:

- Agriculture, Animal, subject to the land use standards of Section 103-1.
- Agriculture, Crop
- Agricultural Sales and Service
- Agricultural Storage
- Agricultural Research and Development
- Stable, Commercial
- Utility, Minor

**C. Conditional Uses**

The following uses may be allowed in the G-AG district if reviewed and approved in accordance with the procedures and standards of Section 102-1.

- Communication Tower, Commercial
- Mining and Extraction
- Utility, Major

**D. Property Development Standards**

The following property development standards apply to all land within the G-AG district.

1. Minimum Lot Size  
The minimum lot size shall be [x] acres.
2. Maximum Residential Density  
The maximum residential density shall not exceed one dwelling unit per [x] acres.

*Commentary: It may be appropriate to adopt a stricter residential density standard in the General Agriculture district, given the intent of the district to strongly discourage urban and suburban uses.*

3. Minimum Setbacks  
Principal and accessory structures shall comply with the following minimum setback standards:

<u>Setback From</u>	<u>Minimum Distance (ft)</u>
State Road ROW Line	---
County Road ROW Line	---
Township ROW Line	---
Interior (Nonroad) Lot Line	---

4. Maximum Height

Building heights shall not exceed [x] feet, provided that this standard shall not apply to grain elevators, silos, and barns.

**Chapter 102: Development Review Procedures**

*Commentary: Conditional use review procedures would normally be placed with all other development review procedures, such as those governing the processing of rezoning requests and variances.*

(8) will be detrimental to the public health, safety, or welfare, or materially injurious to properties or improvements to the vicinity for reasons specifically articulated by the planning commission or governing body.

The applicant shall have the burden of demonstrating that the proposal satisfies applicable conditional use review criteria.

*Commentary: Some believe that the economic viability of a proposed use should be included as a review criterion, with the rationale that economic viability may mean less likelihood of problems developing over time.*

*The key to rational, fair, and efficient conditional use procedures lies in the review criteria by which proposed uses will be evaluated. Minnesota county planning and zoning statutes have this to say about conditional use review criteria:*

Conditional use may be approved upon a showing by an applicant that standards and criteria *stated in the ordinance* will be satisfied. Such standards and criteria shall include both general requirements for all conditional uses and, insofar as practicable, requirements specific to each designated conditional use. (Minn. Stat. Section 394.301) *[emphasis added]*

*The types of review criteria presented in the sample conditional use review procedures are examples of the "general requirements" referred to in the statutes. Examples of the types of "requirements specific to each designated conditional use" are presented in Chapter 103 (below).*

**Chapter 103: Land-Use Standards**

No permit shall be issued for any development or use of land unless the activity complies with the applicable land-use standards of this section. In the case of conflict with zoning district property development standards or other regulations of this ordinance, the more restrictive requirement shall apply, unless otherwise specifically stated.

**Section 103-1: Agriculture, Animal**

Animal Agriculture uses shall be subject to the following land-use standards:

**A. Other Regulations**

Compliance with all applicable local, state, and federal standards shall be required, including [list the most relevant, such as local feedlot ordinance, state feedlot regulations, etc.]

*Commentary: The sample zoning provisions presented here would supplement not replace, other regulations and standards that apply to animal agriculture. This provision attempts to make that clear.*

**B. Setbacks**

Animal feedlots and animal waste areas shall comply with the following minimum setback standards:

<u>Setback From</u>	<u>Minimum Distance (ft)</u>
State Road ROW Line	— —
County Road ROW Line	— —

Township ROW Line	---
Interior (Nonroad) Lot Line	---

### **C. Separation Standards**

#### (1) Distance

##### (a) FROM MUNICIPALITIES AND URBAN EXPANSION ZONES

No animal feedlot or animal waste area shall be located within [x] feet of the corporate limits of a municipality or the outer boundary of an adopted Urban Expansion Zone.

##### (b) FROM L-AG ZONING DISTRICT

No animal feedlot or animal waste area shall be located within [x] feet of the boundary of the L-AG zoning district.

*Commentary: Note that the first two sample separation standards are based on distance from urban area limits and zoning district boundaries, rather than individual uses. The idea behind such an approach is that Urban Expansion Zone and zoning district boundaries will have been carefully considered during the planning process leading to their adoption. As such, the boundaries will be reliable indicators of the presence of land uses in need of "protection." Such an approach also helps to deflect criticism about individual land uses controlling development of nearby property.*

##### (c) FROM EXISTING USES IN G-AG ZONING DISTRICT

No animal feedlot or animal waste area shall be located within [x] feet of a single-family residence, school, park, or church for which a development permit had been issued prior to [insert effective date of G-AG district mapping].

*Commentary: Inclusion of this type of standard could be used to help ensure separation from uses that pre-date establishment of the new Animal Agriculture zoning district. The wording of this ample provision is intended to make it clear that separation is only required from uses that were established (or approved) prior to mapping of the new district. If such a provision is used, the term "development permit" (sometimes called a "development order") should be defined.*

#### (2) Measurements

The separation distances established in this section shall be measured from the perimeter of the animal feedlot or animal waste area lagoon to the nearest referenced boundary or the exterior wall of the principal structure containing the referenced use, whichever applies. In case a use is not contained within a structure, an imaginary perimeter boundary shall be drawn around the referenced use, and measurements shall be taken from the perimeter boundary.

*Commentary: There are a number of possible variations on the separation standard approach. Some jurisdictions may want to employ a strictly use-based separation requirement. Others may elect to base separation requirements on whether the "protected" use is located in an urban area or a rural area. Optional language for such an approach follows:*

##### (a) USES OUTSIDE MUNICIPALITIES AND URBAN EXPANSION ZONES

No animal feedlot or animal waste area shall be located within [x] feet of a single-family residence, school, park, or church that is outside the boundary of a municipality and outside the boundary of an Urban Expansion Zone.

##### (b) USES INSIDE MUNICIPALITIES AND URBAN EXPANSION ZONES

No animal feedlot or animal waste area shall be located within [x] feet of a single-family residence, school, park, or church that is inside the boundary of a municipality or Urban Expansion Zone.

*Commentary: Separation standards could also be varied by animal species, by size of operation (animal units), or by the types of management practices employed by the operator of the facility.*

Another approach that has been suggested would be to establish different separation distances to be employed based on whether the animal agriculture use was to be located upwind or downwind of the “protected” district. Jurisdictions choosing to vary separation distances according to prevailing winds should define carefully the terms “upwind” and “downwind,” so that separation distance determinations may be made objectively and definitively by the zoning official. The definitions should probably specify the compass directions constituting “upwind” or “downwind” from the feedlot to the “protected” use or district. The compass directions, in turn, should be based upon accurate meteorological information on prevailing winds.

*The following table presents an illustration of how such “differential” standards might work:*

Separation Standards Table (Alternative Approach)

Feedlot Type	Separation Distance (feet)							
	Upwind Land Use Type				Downwind Land Use Type			
	I	II	III	IV	I	II	III	IV
1	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø
2	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø
3	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø

As discussed above, this type of table, combined with a definition of feedlot types and land uses, could be used to set different separations standards based on any number of considerations, such as size of operation, management practices, species, location relative to prevailing winds, etc. The land-use types (I-IV) are intended to represent groupings of similar uses. An alternative to that approach would be to refer to zoning districts, instead of use types.

Some observers have suggested that regulations should include exemption (waiver) provisions to address situations in which the owner of a “protected” use consents to a waiver of the separation distance requirement. This approach is not recommended because such provisions may constitute an unreasonable delegation of the police power. While the approach is not recommended, jurisdictions that wish to pursue the idea should consider use of a recorded odor easement as a condition of exemption. A recorded odor easement represents a good method of ensuring that future owners receive adequate notice of the fact that a previous owner has waived the right to separation. The following sample provision illustrates use of an odor easement in an exemption provision.

**Exemption from Separation Standards**

The separation standards of this section shall not be triggered by a lot on which there is a recorded odor easement.

**D. Minimum Site Area**

[See following comment.]

*Commentary: Minimum lot size/site area (based on size of operation) is another form of use-specific standard that some believe should be applied to Animal Agriculture uses. Proponents of this type of standard argue that minimum site area requirements, in conjunction with setback requirements, could take the place of use-specific separation standards.*

**Section 103-2: Residential Uses**

No residence shall be permitted within [x] feet of an animal feedlot or animal waste area. This provision shall not apply to dwelling units that are accessory to the Animal Agriculture use from which the separation is required.

*Commentary: If separation requirements are to be imposed on new Animal Agriculture uses, jurisdictions may also want to require that new residential (and other) uses adhere to the same requirements. Such an approach seems not only fair, it can also prevent situations in which new uses “create” nonconforming separations for the animal agriculture use.*

## Chapter 104: Nonconformities

### Section 104-1: General

#### A. Authority to Continue

A nonconformity may be continued so long as it remains otherwise lawful, subject to the standards and limitations of this chapter.

#### B. Ordinary Repair and Maintenance

Normal maintenance and incidental repair may be performed on a complying structure that contains a nonconforming use or on a noncomplying structure. Nothing in this chapter shall be construed to prevent the strengthening or restoration to a safe condition of a structure in accordance with an order of the chief building official who declares a structure to be unsafe and orders its restoration to a safe condition.

### Section 104-2: Nonconforming Uses

#### A. Abandonment

##### (1) When Abandoned

A nonconforming use of land or of a structure in a district that is discontinued or remains vacant for a continuous period of one year shall be presumed to be abandoned and shall not thereafter be reestablished or resumed. Any subsequent use or occupancy of the structure or land site must conform to the regulations for the district in which it is located.

##### (2) Overcoming Presumption of Abandonment

The presumption of abandonment may be rebutted upon a showing to the satisfaction of the [official] that during such period the owner of the land or structure (i) has been maintaining the land and structure in accordance with the building code and did not intend to discontinue the use, or (ii) has been actively and continuously marketing the land or structure for sale or lease, or (iii) has been engaged in other activities that would affirmatively prove there was not intent to abandon.

##### (3) Calculation of Period of Abandonment

Any period of discontinuance caused by government action, fire, or natural calamities, and without any contributing fault by the nonconforming user, shall not be considered in calculating the length of discontinuance pursuant to this section.

#### B. Movement, Alteration, and Enlargement

No nonconforming use may be moved, enlarged, or altered, and no nonconforming use of land may occupy additional land, except in the manner provided in this chapter.

##### (1) Enlargement

A nonconforming use may not be enlarged, expanded, or extended to occupy all or a part of another structure or site that it did not occupy on [date of adoption of regulation] of this zoning ordinance. However, a nonconforming use may be extended within the same structure, provided no structural alteration of the structure is proposed or made for the purpose of the extension.

##### (2) Exterior or Interior Remodeling or Improvements to Structure

Exterior or interior remodeling or improvements to a structure containing a nonconforming use shall be allowed, provided there is no expansion of the nonconforming use.

##### (3) Relocation of Structure

A structure containing a nonconforming use may not be moved unless the use shall conform to the regulations of the zoning district into which the structure is moved.

**(4) Change of Nonconforming Nonresidential Use to Another Nonconforming Use**

Upon review and approval of the [official], a nonconforming use may be changed to another nonconforming use of the same or similar type or intensity or to another nonconforming use of the same or similar type but of less intensity. Whenever any nonconforming nonresidential use is changed to a less intensive nonconforming use, such use shall not later be changed back to a more intensive nonconforming use. Whenever any nonconforming nonresidential use is changed to a conforming use, such use shall not later be changed to a nonconforming use.

**(5) Destruction of Structure with Nonconforming Use**

If a structure that contains a nonconforming use is destroyed to the extent of 50 percent or more by fire or natural calamity, or is voluntarily razed, or is required by law to be razed, the nonconforming use shall not be resumed, and the structure shall not be restored except in compliance with all applicable requirements. The determination of the extent of damage or destruction under this section shall be based on the ratio of the estimated cost of restoring the structure to its condition before the damage or destruction to the estimated market value of the entire structure as it existed prior to the damage or destruction.

**Section 104-3: Noncomplying Structures****A. Movement, Alteration, and Enlargement**

No noncomplying structure may be moved, enlarged, or altered, except in the manner provided in this section or unless required by law.

**(1) Repair, Maintenance, Alterations, and Enlargement**

Any noncomplying structure may be repaired, maintained, altered, or enlarged, provided, however, that no such repair, maintenance, alteration, or enlargement shall either create any new noncompliance or increase the degree of the existing noncompliance of all or any part of such structure.

**(2) Moving**

A noncomplying structure shall not be moved in whole or in part, for any distance whatsoever, to any other location on the same or any other lot unless the entire structure shall thereafter conform to the regulations of the zoning district in which it is located after being moved.

**(3) Damage or Partial Destruction of Noncomplying Structure**

If a noncomplying structure is damaged or destroyed by fire or natural calamity to the extent of 50 percent or more, the noncomplying structure shall not be restored except in compliance with all applicable requirements. The determination of the extent of damage or destruction under this section shall be based on the ratio of the estimated cost of restoring the structure to its condition before the damage or destruction to the estimated market value of the entire structure as it existed prior to the damage or destruction.

**Section 104-4: Determination of Nonconforming Use and Noncomplying Structure Status**

The burden of establishing that a nonconforming use or noncomplying structure lawfully exists under this zoning ordinance shall, in all cases, be the owner's burden and not the county's.

