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PERFORMANCE ZONING AND ENVIRONMENTAL PROTECTION

By

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A PLAN B PAPER

Submitted to

Michigan State University

in partial fulfillment of the requirements

for the degree of

MASTER OF URBAN PLANNING

School of Urban Planning and Landscape Architecture

1984

Acknowledgements

This report was made possible by the cooperation of many people. I would like to express my grateful appreciation to these people who willingly help me to complete this report.

I would like to express my gratitude to Professor Keith Honey who devoted his time to assist me with the concept of performance zoning. Without his assistance and kindness, this study would not have been completed.

I wish to thank Ms. Jane Rice-Blaine of the Planning and Design Library for giving service kindly and in times of need. I am also indebted to Mr. Richard Crawford- Bath Township Zoning Administrator who gave me a lot of recommendations and information about Bath Township Ordinance.

Finally, I am deeply indebted and grateful to my parents for their encouragement and support in my advanced study. They have shared both pleasant and painful experiences with me and have been any constant source of inspiration throughout the writing of this report.

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Introduction

In the first part of this report, the major failures of conventional zoning in protecting natural resources will be examined and the important issues and constraints of any regulation system identified. This part will focus on the major problem of conventional zoning that has failed to meet the expectations of land use planners. Then, performance zoning will be pointed out as an alternative to traditional zoning.

In the second part, Bath township ordinance will be given as an example of performance zoning. This part explains why this ordinance uses the performance approach rather than the conventional approach. In addition, performance criteria will be noted in order to compare the differences of developmental process between conventional and performance zoning. Section 14.03 of the zoning ordinance, which comprises of the basic criteria apply to various land uses in the zoning districts, will be explored.

The final part explains about environmental protection with respect to land use control and management. The necessity to preserve environmentally sensitive areas is needed in order to maintain the value of land resources. The failure of detailed specifications in protecting these land areas and natural features will be mentioned. Finally, this study seeks to compare the differences between common performance standards

and environmental performance standards. Both techniques provide important methods of controls for resource management and protection.

Part I

Conventional VS. Performance Zoning

Performance Zoning and Environmental Protection

Zoning was introduced in the United States as a reform of the nuisance law that had been made necessary by the rapidly increasing complexity of modern life. In 1926, The Supreme Court approved the constitutionality of zoning for protecting neighborhood quality, while "nuisances" in the old legal definition did not have similar effects on neighborhood quality.

Although zoning may be used for a variety of purposes, its major purpose is to insure land uses of the community are properly situated in relation to one another, that adequate space is available for each type of development, and that development is sufficiently open to permit light, air, and privacy for persons living and working within their property.

Although traditional zoning has been in effect for more than six decades, its purpose as an effective land use measure for the implementation of plans has not been fulfilled. Zoning has failed to protect the environment : floodplains and marshes have been filled, and agricultural land has been converted to other uses.

The Failures of Conventional Zoning.

Theoretically, traditional zoning is based on a hierarchy of land uses, ranging from the highest hierarchy

(eg. single family dwelling) to lowest hierarchy (eg. heavy industry). Zoning districts are intended to separate the highest from the lowest. In other words they prevent any lower use from harming a higher one. Traditional zoning, then, attempts to distinguish areas in which residential uses (higher) are permitted and areas in which industrial uses (lower) are permitted.

There are four major reasons that traditional zoning had failed to protect the environment and society. The first is the inflexibility of zoning. A rigid system of zoning cannot account for the variety of tastes and demands that exist in urban communities.¹ While adjustment of the defined areas is possible within the standard ordinance, the process is complex and difficult, and unlikely to ensure that unjustified cases do not slip through. Zoning ordinance could take more than six months to be amended to permit special uses.¹ This rigid quality does not apply only to the division of uses and the appeal procedure. The accompanying regulations covering lot dimensions and bulk, etc., have also continued to grow in detail, there is one critic who referred to these requirements as a "Mathematical gridle" into which an architect has to slip his building.²

¹D. Woolfe, "Zoning is Doing Planning In, "p. 13.

²J. Baker, "Runaway Zoning," p. 6.

A second problem is that zoning is based on a faulty premises. This criticism takes issue with the basic of zoning itself the process of taking a map of the urban area and establishing one use for area A and another for area B. Zoning is intended to implement a general plan reflecting the community's values for land management. Many critics have made very interesting comments about the failure of zoning :

"The theory behind the current system is that the members of a community can sit down one fine day and determine not only the general nature of its future development but also every detail to such a precise extent that very little need to be left to the discretion of an on-going administrative process. The idea that a community can do this rests on the assumption that it has a clear vision of an end state for itself and that little, if anything, can happen to mar that vision. The only way to describe the system, therefore, is to say that it subscribes to a static end state concept of land use₃ control. Plainly that concept is in conflict with reality."³

Evidence of zoning's failure in this respect is offered by several examples of variances and exemptions which can be seen in any city. Urban growth and its demands are far more dynamic that comprehensive plans and zoning ordinances are.

³Weaver, Clifford and Babcock, Richard. "City Zoning: The Once and Future Frontier." 1970, p. 23.

A third problem is that zoning now totally dominates the planning function as a whole. The increasing complexity of our urban environment has been reflected in the zoning ordinance. Such complexity leads to the need for increasing the number of staff personal to enforce the regulations. Further, it has imposed an increase in the amount of time involved in both private and public sectors. This has led to the commonly accepted concept that zoning is planning. Generally speaking, planning departments spend so much time on zoning regulation and enforcement, that this definition is rapidly approaching reality.

Finally, zoning lacks a negative feedback mechanism. It is clear that mistakes will be made from time to time as zoning regulations are changed to respond to anticipated future developments. However, the parties that have to suffer these mistakes happen to be developers and/or residents. Accordingly, the planning process is not self-corrective since failures appear as external effects or diseconomies. In effect, planners do not have the incentives to make it right nor do they suffer the consequences of their errors.

Theoretically, zoning is supposed to protect land-owners from the negative impacts of adjoining land uses. But practically, it has not fulfilled this aim, because conventional ordinances do not contain standards to protect adjoining land uses. Therefore, the success or failure of

traditional zoning depends upon the process of designating the boundaries of a zoning district.

Conventional zoning cannot effectively protect all interests both developers and landowners, because zoning is based upon specific decisions. Either the developers or the landowners must win, the other must lose. Both parties normally never agree with one another, the landowners want their adjoining property to remain vacant or to be developed at a lower density; the developers attempt to make profit by developing a higher density at a lower expense. The rules of zoning do not allow the decision makers to compromise between the property owner and the developer.

Recently, performance zoning has been introduced in the United States; its major function is to solve the above shortcomings of conventional zoning that have failed to protect the environment.

Many constraints such as size, shape, and natural features of a site may limit its development potential both for conventional and performance zoning. Therefore, these variables should be investigated for their subsequent effects on zoning.⁴

⁴Kendig, Lane, "Performance Zoning." 1980, p. 14-18.

Size:

Obviously, the size of the site affects its development. Particularly, a smaller site is more difficult to develop because the smaller the site, the lower the density that can be utilized. Furthermore, the minimum ordinance requirements for street frontage and lot area may not be provided effectively and efficiently.

Shape:

An irregularly shaped site has a significant impact on how efficiently it may be utilized. For example, the circulation system around an irregularly shaped site is very difficult to design and as a result, this may lead to a wasteful lotting arrangement. Inevitably, odd, irregular, or oversized lot sites may happen.

Natural Resources:

Natural resources or limitations such as floodplains and wetlands may dramatically alter the development potential of a site. Floodplains and wetlands, if existing in any site, have the potential of reducing the developable area of a site. Furthermore, the location of these resources on a site may create an irregular shape with unusable corners and sites with difficult access. As a result, a reduction of density and an increase in street length per dwelling unit cannot be avoided.

It should be noted that conventional zoning is based on a rigid system. It rigidly requires a minimum lot size for each zoning district. In order to maximize density or profit, the developer often designs the site by laying out a row of minimum sized lots along one property line. Then this process is repeated and streets are inserted between lots until the site is filled. This technique is sometimes, called a "cookie-cutter design" which results in uneconomical layout and waste when a portion of a site does not fit into these inflexible standards. Finally, the conventional technique always ignores natural features or limitations of the land, because it is the nature of developers to maximize the number of lots in the development site. For example, natural resources such as floodplains or wetlands are often filled so that they may be converted into buildable lots.

But the performance zoning approach, is based on flexibility, creativity, and rationality. This approach rather than using a fixed minimum lot size for the site, it sets the parameters of how and where development can be permitted. Site analysis of natural features such as topography, drainage, view, amenity, access, climate, and vegetation will be explored in the performance approach in order to determine areas that are best suited for certain uses and to develop major circulation systems around the site. In addition, performance zoning enables the landowners to work within the

constraints of the site and to buffer adjoining roads and uses; it provides the necessary environmental protection for the community without destroying the developer's profit.⁵

When utilizing a conventional zoning ordinance, a landowner or a developer usually refers to the zoning map to determine what district his property is situated in and secondly refers to the "uses permitted" section of the ordinance to find whether or not what he is considering is permissible. Next, the landowner or developer would refer to the "yard" and "lot" requirements for development in the specific district. Unfortunately, this system imposes such requirements without being concerned with characteristics of the particular site or land. Natural features, such as environmental limitations and adjoining land uses and their interaction with the proposed use, are disregarded.

Utilizing the performance zoning approach will not change the activities of the above sequence, both landowner and developer still need to refer to the zoning map and list of uses. However, the range of development options within the planned zone is much greater. The performance zoning approach then applies site specific orientation which is lacking in traditional zoning practices. The natural

⁵Lynch, Kevin and Hack, Gary. "Site Planning." 1984 p. 15-21.

constraints of the site are considered; an assessment of land use "intensity" is determined; and provisions to reduce or compensate for this "intensity" are then applied.

There are four basic standards : open space ratio, impervious surface ratio, density ratio and floor area ratio are normally found in most performance zoning ordinances, including Bath Township zoning ordinance which will be discussed later on. The first two standards can apply to every land use, while density is applicable only to residential uses. For nonresidential uses such as commercial and industrial, the floor area factor is applied, in terms of density. The following sections will discuss these standards or variables in detail.

Open Space Ratio

The Open space ratio is the proportion of a site consisting of required open space which can be calculated by dividing the area of open space by the gross site area. Roads and drives may be included in the required open space; however, open space cannot include parking areas. The purpose of the open space ratio is twofold: it protects natural resources, and provides recreational areas.⁶

⁶Op cit, Kendig, Lane. p. 26.

The major purpose of land use planning is to protect the environment. The open space ratio enables performance zoning to preserve natural features. Conventional zoning has failed to preserve open space effectively because its standards of minimum lot size are rigid. Its standard minimum requirement finally creates intensively used areas which are unable to protect natural resources.

As the number of population increases, residents of a community need more areas for recreation. A minimum open space ratio ensures that the required open space areas are sufficient for all residents of the community.

Impervious Surface Ratio

The impervious surface ratio is the proportion of a site occupied by impervious surfaces, which can be calculated by dividing areas of impervious surface by the gross site area. Impervious surface areas which do not absorb rain or water, include all buildings, roads, sidewalks, tennis courts, parking areas and any area paved in concrete or asphalt. For conventional zoning, the building coverage is often used to limit the intensity of use, but this is a poor technique for controlling impervious surface areas because it often underestimates such coverage.

Impervious surfaces have a significant impact on the natural environment, for instance impervious surface cause

an increase in storm water runoff and many other related adverse environmental effects. The increase in runoff leads to flooding, and increased water pollution. Furthermore, a large impervious surface can disturb the underground water table by drastically reducing the amount of rainfall available to recharge the aquifers which create water supplies. Finally, impervious surfaces create more heat during the summer, which may endanger health conditions.

Density

Density is a measure of the number of dwelling units per acre of a residential district. It can be calculated by dividing the number of dwelling units by the gross site area. In conventional zoning, after a decision has been made, then a certain used is assigned numerical measurements for the size of the lot where any structure can be located, and how tall it can be. This technique does not provide variety of design, usable open space, or flexibility of arrangement, because most developers are often aware of the minimum lot size requirement.⁷

Performance zoning was established to overcome the above problems. The idea is to determine through future

⁷Herbert, H. Smith. "The Citizen's Guide to Zoning." 1983, p. 181-182.

land-use planning the total number of dwelling units the community can handle for a specified area and desired density. This technique uses the term "density factor" which is the measure of the number of dwelling units per acre of net developable area, rather than "gross density" (the number of dwelling units of the entire site. The density factor is a tool to protect physical and natural features of the community.

Floor Area Ratio

The Floor area ratio is the density of nonresidential land use measured as a ratio, derived by dividing the total floor area by the gross site area. It shows the difference between the total floor area of a building and the total area of its site. Floor area is not only the total base area of the building or structure in the zoned development area. It is a measure of the impact of nonresidential uses, which may affect adjoining uses or entire communities.

In summary, conventional zoning is based on minimum lot size to protect the environment which is very difficult to accomplish. Practically, the conventional approach has failed to protect natural resources; for example, with floodplains. Conventional zoning either prohibits development or allows filling, which destroys the floodplain. Therefore, lot size is not effective in solving environmental problems.

In the past, the conventional approach has not been achieved with respect to natural resource protection, because the developer will seek to maximize intensity in order to maximize his/her profit. The theory of this approach is simply that the more natural limitations a site has, the larger the lot requirement should be in order to reduce the damage done by roads, buildings, and utilities. Also denser lots should be permitted in the site that has fewer environmental limitations.

Performance zoning is based on the use of a density factor which can only be applied to buildable areas. The intensity of use on any piece of buildable land within a zoning district relies on formulations, and is held constant, although the gross density may vary depending on the characteristics of certain property. The major concern of performance zoning is to protect natural resources by specifying developable lands on a resource-by-resource basis. For example, wetlands and floodplains or any other natural limitations should not be destroyed, while some less sensitive features may be compromised.

The performance approach seeks to permit maximum development and at the same time to protect resources by requiring a site capacity rather than a lot capacity analysis of developmental constraints. By setting a maximum use intensity (density factor) on the buildable area of a site,

this technique eliminates conflict between that portion of the site and less densely developed surrounding property. It is a rational approach which often relies on the physical characteristics of the site.

Part II

Bath Township Zoning Ordinance
(performance zoning)

Bath Township Zoning Ordinance

The Bath township zoning ordinance includes both conventional zoning and performance zoning. For this particular study, this section is devoted to performance standards of the ordinance.

By its nature, traditional zoning forces confrontation between landowners and the public interest, or landowners against each other. Because of these problems, the ordinance has devised technical solutions which minimize the conflicts often forced by traditional zoning. Traditional ordinances do not take fairness and rationality into account. For example, if the ordinance permits a use, the surrounding, existing landowners are unprotected from any of its adverse impacts. The Bath township ordinance has been designed to protect and accommodate both competing interests. Every effort has been made to make uses a matter of right subject to performance standards capable of reducing the number of times that case-by-case decisions need to be made.

Why performance zoning?

Many townships are concerned about the loss of farm land, overdevelopment of highway interchanges, and rapid growth. Even normal growth may cause problem if the growth without good planning. Community planning and land use management are essential to insure effective community development.

Some land uses are incompatible when compared to other land uses and may create negative consequences on adjoining uses. This may happen if residential districts adjoin uses that create a large amount of noise, dust, smoke, or odors. Performance zoning seeks to establish a land use pattern based upon flexibility and rationality. An appropriate balance of various land uses within the township is typically sought. Similarly, considering land uses with similar needs or direct relationships helps maximize efficiency and minimize conflicts, while protecting land values, amenities and reducing public service costs.

Performance zoning can help preserve property values by preventing undersirable land uses. It can also prevent adverse social and economic impacts of new developments from effecting existing developments. Performance zoning can control the density of open space and preserve natural resources in order to protect the environment of communities.

Performance Criteria

For traditional zoning, a landowner considering some type of development would first check the zoning map to see what district his/her property is located in and then look at the section of the ordinance to find out which uses are permitted in that district to determine if what he was considering is allowed. Next the landowner would refer to the the site standards for the district to determine the lot and

yard requirements for the district. The technique imposes such requirements without referring to the characteristics of the particular site. Major concerns such as natural resources, and surrounding land uses are typically ignored.

Bath township's performance approach still has the initial activities of the above sequences. The landowner needs to refer to the zoning map and list of uses. However, there are many options particularly in the development and village core districts. The performance approach seeks to solve the site specific orientation existing in conventional zoning. The natural constraints of the site are considered, an intensity of the site is taken into account and provisions to reduce or compensate for this intensity are applied.

Under performance zoning the landowner has the choice of determining at what point the increased intensity is no longer worth the increased performance required.

Each zoning district has a list of site development standards which provide the framework of lot and yard requirements. Performance criteria provide further, detailed regulations and restrictions in order to protect neighboring uses from possible adverse impacts of any use. Flexibility is a major goal of this ordinance and these performance standards provide a wider range of development opportunities and locational options while still protecting neighboring

land uses and the general health, safety and welfare of the township.

District Performance Standards

Section 14.03 of the zoning ordinance presents the basic criteria which apply to various land uses in the zoning districts. These standards are used in determining the intensity of use to be permitted on a specific piece of land. The basic factors considered in determining site capacity are base site area, building floor area and required open space. The base site area of a parcel is the gross area of the site excluding land necessary for rights of way and easements, and land for required bufferyards. The allowed building floor area is determined by multiplying the base site area by the floor area ratio for the district found in section 14.03 of the ordinance. This ratio is an intensity measure controlling the amount of building floor area permitted on the lot. Required open space is also determined by applying a ratio from section 14.03 to the base site area. This open space may include roads and drives built on the site; however, open space land cannot be used for parking lots.

Bufferyards

Theoretically, in traditional zoning, a community shall be divided into districts which contain compatible uses.

Those uses allowed in each district would have similar characteristics such as intensity and negative impacts. Those uses within the individual districts, therefore would be protected. In practice, almost all different type of uses are located next to one another without sufficient protection. Under the performance approach, bufferyards use both distance and plant materials to lessen negative impacts.

The bufferyard is a required strip of yard or open space, together with plant materials, barriers or fences, designed to lessen the impact between neighboring land uses. By using both distance and landscaping, potential nuisances such as noise, dust, unsightly views and so on, can be minimized. The bufferyard requirements are stated in terms of the width of the bufferyard and the number and types of plant materials.

The bufferyard requirements are very flexible. A single standard applied to all circumstances might not function well or might impose unnecessary costs on the developer. A variety of solutions are allowed depending upon the characteristics of the proposal and the adjoining uses involved. It is the intent of this ordinance to provide flexibility to the developer or landowner depending on four basic elements: distance, plant material types, plant material density and structural or land forms.

Nonconforming uses.

This zoning ordinance has been designed to permit the lawful continuance of any building or land existing at the effective date of the ordinance, even though it may not conform with the provisions of the ordinance. It is recognized that nonconformities which have negative impacts upon the adjoining development and the value of neighboring property should not be permitted to continue without restriction. The continued existence of nonconformities is frequently inconsistent with the purposes for which the zoning ordinance was established and their gradual elimination is generally desirable. However, the zoning regulations permit nonconformities to continue without a specific limitation of time but are intended to restrict further investment which would make them more permanent.

Part III

Environmental Protection

Environmental Protection

Environmentally Sensitive Areas

Recently, many interested people and the U.S. Environmental Protection Agency have paid much attention to environmental problems in the United States. The necessity of governmental involvement in environmentally sensitive land comes from the recognition of the value of land resources. The destruction of environmentally sensitive areas can mean not only the possible loss of environmental values, but also loss to the social and economic welfare of a community. The destruction of environmentally sensitive areas, will immediately effect a community by either (1) creating hazards such as flooding (2) destroying natural resources such as wetland, groundwater, and the quality of lakes and rivers, or (3) wasting productive or valuable lands and renewable resources.⁸ The costs of not protecting these areas can be high. In the private sector, costs may include the reduction of property value or the actual destruction. In the public sector, the cost of environmental neglect may reduce water quality or raise the cost of storm and sewer installations.

The protection of these land areas, however, may involve public costs and benefits which are inadequately

⁸Planning Advisory Service, Environmental Problems #328 p. 16-19.

considered by the private sector. Wisely, communities should turn to their police power to make sure a balance, between the public interest:- the health, safety, and welfare of the community and the private interest:- the landowner's desires to use his property, is maintained.

There are four common problems for environmentally sensitive areas: watersheds of streams and creeks, aquifers, wetlands and hillsides. These areas provide important public benefits because of their physical and ecological functions. While each of these land types has its own functions and benefits, the common characteristic of all four areas is a sources of water. The wise use of these areas will help preserve the natural flow of clean groundwater, the unwise use will result in more contaminated groundwater.

The public need to preserve these areas involve land-use controls which includes many traditional public objectives: (1) the reduction of the risk of flooding and drought; (2) the prevention of erosion, runoff and water pollution, and (3) the reduction of the danger of contaminated water supplies. All of these are long term public objectives which can be helped by governmental involvement in land-use decisions.

The methods to preserve these areas are also common. Most are zoning ordinances which define a special district or

an overlay district. They establish a list of permitted uses, prohibited uses, and special uses on conditional use procedures. Where permits are required, the ordinances are reviewed by the planning agency and other related agencies, with final authority falling in the legislative body.⁹

These ordinances shift land use controls from what is on the land to how the land functions. These ordinances are not designed to specify the use of the land. Instead they guarantee how the land perform while the land is used no matter what the use. Generally, this change of zoning ordinance shifts from detailed specifications concerning site requirements to performance standards.

Detailed specifications are often inadequate for this land area, and also differ from the purpose of the ordinances. They are inadequate because the functions of these areas are often highly localized. Only one category, the functions will vary from site to site depending on local conditions. Consequently, there is no appropriate method for treating these areas.

Because of the shortcoming of detailed specifications modern ordinances have moved toward performance standards.

⁹Bair H. Frederick, "Special Public Interest District". Planning Advisory Service, Report No. 287 January 1973, p. 3.

The community establishes the way it wants the land to perform and then allows the developer to select his own method to meet these standards. Then each proposed development is judged as to whether or not it meets the performance standards outlined in the ordinance. The alternative to performance standards method is environmental performance standards. In this case, the community sets a specific, measurable level at which the key functions of the sensitive area must operate, then the developer must show that this development will meet these standards.¹⁰

Environmental Performance Standards

The use of specification standards to make development more compatible with environmental features is necessary, however; it is essential to move away from specification standard toward performance standards. Zoning ordinances normally mandate what kind of a use is to be implemented for each area. However, a zoning ordinance using performance standards will indicate how the use should perform, in terms of traffic congestion and other factors.

The development of performance controls for land use has two levels of regulation. The communities have maintained

¹⁰Thurrow Charles, "Performance Control for Sensitive Lands" Planning Advisory Service, Report No. 307, 308.

traditional zoning with a designation of permitted and prohibited uses, but add another level of regulation through special use provisions. Under these provisions, a landowner may use his land for uses other than outlined in the ordinance if he meets environmental performance standards. The landowner is allowed to do anything on his land if he can show that it will not adversely affect natural resources.

Environmental performance standards are typically used as general regulations for all developments, and provided the most important methods of controls for resource management and protection. All the environmentally sensitive areas can benefit substantially from controlling development effects. The reason to maintain or preserve these sensitive areas is to maintain water quality and reduce the risks of increased runoff.¹¹

Finally environmental performance standard regulations need not completely be like performance standards. In this case, a community creates a performance level for the landowner's use of the land, but in environmental performance standards attempt to preserve or maintain a performance of the land already there. In addition, the environmental performance standards greatly improve the equity of environmental controls. For example, in the past we attempted to

¹¹Ibid., p. 96.

stabilize or improve water quality by requiring major polluters to clean up without requiring other land users to do the same. Under environmental performance standards, each land users must share the same **process** of protection natural resources in proportion to the problems he creates.

Conclusion

This report has provide an idea of zoning. The major purpose of zoning is to provide protection from the misuse or overcrowding of the land. Although conventional zoning attempts to insure proper land use of a community, it has failed to protect and preserve natural resources such as wetlands of floodplains.

Conventional zoning has four shortcomings in terms of protecting the environment and natural resources. First, a rigid system of zoning lacks flexibility. Secondly, zoning is based on a faulty premises. Thirdly, zoning is too general and irrational because it depends too much on a comprehensive plan. Lastly, zoning in nature lacks a negative feedback mechanism. Therefore, mistakes happen from time to time as zoning regulations are changed to respond to future developments.

Recently, performance zoning was establish to solve the problems of traditional zoning. This technique is based upon flexibility, creativity, and rationality. Its major purpose is to protect the environment and natural features of a site. Nevertheless, many constraints such as size, shape, and natural features of a site may limit to development potential under both conventional and performance zoning. Therefore, we should carefully consider these certain

variables before make any development decision.

Bath Township Ordinance is given as an example of performance zoning. The Bath Township Ordinance has been designed to solve technical problems which minimize the conflicts often caused by traditional zoning. In addition, this ordinance attempts to protect and accommodate both developers and public interests. Every effort is subject to performance standards capable of shortening the decision making process.

Under section 14.03 of the zoning ordinance, the basic criteria which apply to various land uses in the zoning districts is outlined. These standards are used in determining the intensity of use to be permitted on a specific piece of land. The basic factors in determining site capacity are base site area, building floor area and the required open space.

For performance zoning, the bufferyard is used to protect adverse impacts of individual districts from adjoining land uses. Under this approach, bufferyards uses both distance and plant materials to lessen negative impacts. The bufferyard requirements are very flexible. A variety of solutions are imposed depending upon the characteristics of the proposal and the neighboring uses involved.

Environmental problems have become a major concern in the United States. In order to preserve the value of land resources, the necessity of governmental involvement in environmentally sensitive areas can not be avoided. The common problems of environmentally sensitive areas include the preservation of watersheds of streams and creeks, aquifers, wetlands and hillsides. These areas are important for the public because of their physical and ecological functions.

The public objectives to preserve these areas are to reduce the risk of flooding and drought; prevent erosion, runoff and water pollution; and reduce the danger of contaminated water supplies. Zoning ordinance is the most important method to preserve and manage these areas. These ordinances shift land use controls from what is on the land to how the land is performed.

Detailed specifications are often inadequate for these land areas, therefore modern ordinances have moved toward performance standards. Under the performance approach, the community sets down how the land is performed, and then allows the developer to use his own technique to meet these criteria. The alternative to this method is environmental performance standards. Basically, this is the same technique as performance standards, but the community must set a specific measurable level of sensitive areas when it is performed,

then the developer must meet these standards. The major purpose of environmental standards is to preserve and maintain natural resources, including environmentally sensitive areas. As a result, the risks of a contaminated water supply and increased runoffs are reduced.

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