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WISCONSIN'S REQUIREMENTS FOR SHORELAND AND FLOOD PLAIN PROTECTION

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Statewide requirements for flood plain and shoreland zoning were enacted by Wisconsin's 1965 Legislature as one portion of a comprehensive water resources act.¹ The act centralized state water resource activities within one agency. It strengthened enforcement provisions with respect to pollution, provided financial assistance to aid local governments to construct sewerage and treatment facilities, and provided tax incentives to private industries for installing pollution abatement equipment. To complement this program for attacking water pollution, the 1967 Wisconsin Legislature enacted statutes for controlling air pollution and solid waste disposal.²

This article deals with the shoreland and flood plain zoning requirements of the 1965 act, which represent an attempt—through land-use regulations—to preserve the quality of surface waters. They are but one portion of a multi-faceted attempt to confront the many problems of environmental pollution caused by a growing society.

The 1965 law requires counties to zone all shorelands within their unincorporated areas. Shorelands are defined as lands "1,000 feet from a lake, pond or flowage; 300 feet from a river or stream or to the landward side of the flood plain, whichever distance is greater." The law also requires all units of government—counties, cities, and villages—to adopt flood plain zoning ordinances for areas adjacent to navigable waters where serious flood damage may occur.

The purposes of the shoreland regulations are "to further the maintenance of safe and healthful conditions; prevent and control water pollution; protect spawning grounds, fish and aquatic life; control building sites, placement of structure and land uses and reserve shore cover and natural beauty." The flood plain zoning ordinances must be drawn for areas "where appreciable damage from floods is likely to occur" and should achieve "a practical minimum of flood damage."

If local units of government failed to enact and enforce adequate

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1. Wis. Laws 1965, ch. 614.

2. Wis. Laws 1967, ch. 83. This law discouraged the location of solid waste disposal sites in flood plain and shoreland areas as defined in the 1965 law.

shoreland and flood plain regulations by January 1, 1968, the state was empowered to enact ordinances for the local unit of government and cause them to be enforced. Any costs that the state incurred in performing this function were to be assessed against the local government. The time span between passage of the law and January 1, 1968 proved to be too short for many counties to comply, and the state has been somewhat lenient in extending the date. As of December, 1969, 27 of the state's 72 counties were, in the opinion of the state, complying with the shoreland protection portions of the law.³

The new law has many interesting aspects, not the least of which is the concept that the state will act in instances where local units of government do not. This same type of approach might be used to encourage local zoning controls to protect other assets of statewide concern, such as land around highway interchanges, airports, historic or geological sites, or state institutions.

The irregular pattern of existing regulations made it necessary to devise shoreland regulations which could either supplement these existing regulations or else serve as the only regulation. The staffs of the University of Wisconsin extension and the Wisconsin Department of Natural Resources prepared "model" regulations which, if adopted by local units of government, would meet the requirements of the new law. While local governments would not have to adopt the proposed "models," their own regulations would have to achieve an equal degree of protection.

To conform with the general pattern of regulations used in Wisconsin, the proposals were broken down into sanitary, land use, subdivision and flood plain controls.⁴ The sanitary controls cover private water supplies, waste and sewage disposal. For areas not served by public sewers, minimum lot sizes were based on percolation characteristics of the soil. The zoning regulations covered lot sizes, setbacks from highways and the water, tree cutting within 35 feet of the water, filling, dredging, lagooning, billboards and land uses. Three land use districts were proposed: a conservancy district, a recreational-residential district, and a general purpose district. The general purpose district was to accommodate uses that did not fall into the other two. In some areas of Wisconsin, more sophisticated zoning would be used in place of the general purpose district.

3. This meant that they had adopted appropriate zoning, subdivision, and sanitary regulations, and had employed a zoning administrator. The other counties are making "satisfactory" progress. Compliance with flood plain zoning requirements will take much longer because of difficulties in accurately delineating flood plains.

4. Wisconsin Dep't of Natural Resources, Wisconsin's Shoreland Protection Ordinance (1967).

All of the shoreland regulations contained provisions for elevation above surface water of building sites and sanitary facilities. This was done to meet, in part, flood plain protection requirements for areas where it would be difficult to determine the precise elevations and boundaries of flood-prone areas. For areas where flood plains and floodways have been accurately delineated, more precise flood plain regulations should be used.⁵

Some local governments might wish to adopt controls that are more stringent than those required by the state. These controls may be justified by the local government as necessary to meet *their* interpretation of the law. In reality, the local government may have some different objective in mind. For example, owners of existing cottages around a lake would benefit if there were no further development permitted around "their" lake.

Problems arise in coordinating ordinances among neighboring counties. Frequently a body of water serves as the boundary between units of government. Real estate salesmen, the forestry industry, and others with multi-county interests all hope for uniformity in local regulations.

The types of local regulations which must be adopted are usually thought of as being related to a comprehensive plan. For example, it is difficult to zone for land uses without having an idea as to the relative demands for various uses. Subdivision regulations should be related to a plan in terms of requirements concerning developers, lot arrangement, and design.

It is difficult to relate these statutory requirements for shoreland and flood plain zoning to comprehensive planning. It is difficult to determine the relationship between comprehensive land-use planning and comprehensive water-use planning. While land use plans purport to pay some attention to adjacent surface water and water use plans purport to pay some attention to adjacent land uses, the usual result is that one is emphasized to the neglect of the other.

I

THE RELATIONSHIP OF SHORELAND AND FLOOD PLAIN ZONING TO WATER RESOURCE PLANNING AND TO LAND-USE PLANNING

Water resource planning means different things to different people. For example, modern techniques of river basin planning generally deal with maximizing the benefits of a stream flow apportioned among such uses as power generation, irrigation, and naviga-

5. The Wisconsin Department of Natural Resources has prepared several different "model" flood plain ordinances.

tion. Water quality may not be emphasized except where there is a direct relationship between certain of these uses and the water's quality. Also, an increased quantity of water tends to dilute certain pollutants. Water resource planning oriented toward flow of streams is not applicable to lakes.

Flood plain zoning is more closely related to streams and rivers than it is to lakes. Flood plain zoning is applicable to lakes only when shorelands may be temporarily flooded by waves or where wetlands are adjacent to a lake. Frequently, however, the wetlands adjacent to a lake are at the point where a stream is connected to the lake. In some instances it is difficult to differentiate neatly between a river and a lake since artificial lakes created along a river have characteristics of both.

One reason given for the applicability of shoreland regulations to 1,000 feet around lakes but only 300 feet along streams was that the water in a lake is not recharged as frequently—hence the need for greater protection. In an ecological sense, lakes are thought to be more delicate.

If the thrust of shoreland zoning is to be toward lake problems, conventional river basin planning is of quite limited use. Instead, one must use the more prosaic land-use planning approach and hope that land uses are regulated in such a way as to minimize, if not eliminate, sources of pollution. Even along a flowing stream, the shoreland zoning characteristics must still follow the land-use planning approach. An exception might be that one could be more tolerant of pollution since the stream might be better able to accommodate a load of pollutants. However, it is administratively difficult to become more tolerant of pollution along streams since pollution there is as illegal as it is along a lake. Possibly the Wisconsin Legislature, in setting different distances inland from lakes and streams for shoreland zoning jurisdiction, made the initial decision as to how the problem should be handled.

The state has adopted water quality standards. Local shoreland regulations might reflect these standards. However, it is more desirable that local zoning standards be so strict that they prevent all new sources of pollution. Any deviations would have to be approved by the state on an individual basis.

Flood plain zoning can be related to basin-type planning. Where certain flows of water including hypothetical floods are projected, flood plain regulations can be drawn based upon anticipated flood elevations. In fact, flood plain delineation and zoning regulations could be a by-product of any comprehensive river basin plan.

There are two other water resource planning areas where related

land use controls are significant. The first deals with "wild rivers," and the second with coordinated programs for renewing a body of water and its surrounding land uses. In recent years, with encouragement from the federal government, increased attention has been paid to preserving certain segments of rivers that are relatively undeveloped and whose character would be destroyed if development were to take place. In such locations not only is the condition of water important, but the natural state of the shoreland cover adds to the environmental setting that must be preserved. In many instances, the combination of water, wetlands, and uplands is necessary to maintain the natural conditions of the environmental "package." Stricter zoning regulations might be justifiable in such areas, especially if they were combined with a land use plan which allowed landowners to develop inland portions of their riparian holdings.

In the case of a combined renewal of both water and land, government would apply land use and sanitary regulations at the same time it attempted to clean up a body of water. For example, for a flowage behind a dam, the appropriate unit of government would drain the lake, redredge the bottom to achieve depths necessary for certain types of fish, and—as water levels were restored—the flowage would be restocked with game fish. At the same time, a sanitary district might install a sewer around the lake to which all cottages would have to connect. Programs comparable to urban renewal might be applied on the land and would include code enforcement, certain aspects of beautification, and even selected clearance. The use of these new shoreland zoning requirements in coordination with programs of improving the quality of adjacent surface waters may prove to be a more important function of the new law than initially anticipated. One reason is that lakes and streams in or near urban areas are more likely to be in need of renewal. Property values are high and the financial resources are more likely to be available for undertaking such comprehensive programs.⁶

It is also difficult to relate shoreland and flood plain zoning requirements to conventional land-use planning. One problem deals with the intent of the law which was apparently to protect water quality with some provision made for preserving shoreland esthetics. Taken by themselves, these shoreland requirements along with the flood plain zoning requirements would represent virtually single-

6. With the assistance of a grant from the Upper Great Lakes Regional Commission, the state is now studying the scientific complexities of inland lake "renewal," *i.e.*, the complementary measures that must be undertaken on the upland and in the water.

purpose zoning. Single-purpose zoning is generally objectionable because the property owner finds himself restricted by a number of zoning regulations, each drawn for a separate purpose, and no one related to another.

Conventional shoreland planning includes an analysis of adjacent water quality, beaches, soil conditions, topography, forest cover and minerals. This gives the planner an idea of the quality and quantity of the shoreland resources with which he is dealing. He can then look at demands for various types of waterfront lands. These demands would be based, for example, on need for a waterfront site, locational costs if the use were placed inland, various public and private benefits, and the relationship to water pollution. Then, activities having greater demand for waterfront sites would receive them; other activities would be located inland.

The few comprehensive approaches to waterfront land planning which have been developed deal mainly with urban waterfronts. These approaches offer some insight into what may be needed in a waterfront once it becomes developed. The following list of waterfront land planning principles is taken from a study that was based primarily on experience in Cleveland, Ohio:

1. Water areas should be designated and used for water-based activities only. Uses which do not require a waterfront location or access to surface waters should be accommodated elsewhere.
2. Incompatible uses should be separated, although compatible multiple uses of facilities should be encouraged.
3. Uses auxiliary to those which require waterfront locations, such as parking, picnic and play areas, should be located inland.
4. Recreation should be considered a major use of waterfront areas, and public recreation facilities should be included when allocating waterfront lands.
5. Provision must be made for municipal services.
6. Public access should be provided.
7. Residential subdivisions in waterfront areas should allocate the "marginal strip" along the waterfront for use of the whole development.
8. Public ownership of a percentage of the waterfront should be a long-range objective. National standards for major stretches of shoreline recommend that a minimum of fifteen percent be placed in public ownership.
9. Public agencies should acquire discontinued waterfront facilities.

10. Leases of public waterfront property for commercial or private uses are generally preferable to sales.
11. The waterfront development program should be a functional and interdependent part of a comprehensive program for the region, the metropolitan area, or the political unit containing the tributary areas for the water-based activities.⁷

Note the emphasis on public ownership. In many urban areas, outright public ownership has been found to be the only method by which satisfactory waterfront utilization can be achieved. If, in fact, this is true for urban areas, what does this portend for other waterfront areas that are yet to be developed? Should shoreland and flood plain controls be drawn to enable public acquisition to take place when needed? Is it possible to devise controls so that the necessity for later public acquisition is reduced?

A major issue with respect to shoreland and flood plain controls is the extent to which one can achieve adequate zoning without a comprehensive land-use plan. More specifically, how detailed must a plan be to accomplish this type of zoning? In flood plain zoning, a relatively extensive (and expensive) engineering determination of hypothetical flood levels is generally needed to determine which land area requires protection. Relatively detailed studies of soil conditions around each lake are required before a comprehensive land-use plan could be drawn up.⁸ An alternative approach might be the drawing of standards relating to soil types, topography, etc., which would have general applicability around most lakes. This approach falls somewhat short of comprehensive planning.

For a program such as Wisconsin's, which requires zoning along all navigable waters within a relatively short time, it must have been beyond the intent of the Legislature to require detailed comprehensive plans prior to zoning all shorelands within the state. (Wisconsin has over 9,000 lakes and thousands of miles of navigable streams!) There are many shorelands along meandering streams which will not be subjected to development pressures for many years. On the other hand, if comprehensive planning is not needed as a basis for zoning and other controls, in what situations should

7. A. Klain, *Planning for Waterfronts 25-41*, 1961 (unpublished dissertation at Case Institute of Technology).

8. Another example of a problem requiring detailed analysis was bluff erosion along Wisconsin's Lake Michigan shoreland. See A. Striegl, *Shoreland and Flood Plain Zoning Along the Wisconsin Shore of Lake Michigan* (Wisconsin Dep't of Natural Resources, 1968).

comprehensive planning be required as a prerequisite for shoreland and flood plain regulations?

II

PRESERVING WETLANDS

One environmental problem which shoreland and flood plain zoning may alleviate is the disappearance of wetlands caused by drainage, filling, lagooning or dredging. It is estimated nationally that about one-third of the original 127 million acres of wetlands in the United States has already been destroyed.⁹ Wetlands are valuable for absorbing potential floodwaters or serving as wildlife habitats, but their reclamation is frequently considered a way of life. Waterfront cities, hemmed in by suburbs, see reclamation of waterfront lands as the only direction for expansion. Reclamation of tidal marshlands and shallows in the San Francisco Bay area reached such proportions that the Bay's ecological balance was threatened, and the state established a special body to control the placement of fill.

In some urban areas, it is difficult to protect wetlands which, as swamps, serve as breeding grounds for mosquitos; and as tidal lands, they collect pockets of stagnant water when the tides recede. In fact, in some urban renewal projects, filling of lowlands to overcome problems of stagnant water and flooding has been a justifiable "site improvement" and has been assisted indirectly with federal funds.

The effectiveness of zoning in the protection of any single parcel of wetland is somewhat doubtful. To the extent that flood plain zoning discourages uses in low lying areas, it protects them from development. On the other hand, most flood plain zoning ordinances allow for filling of low lying areas as long as the flood potential is not increased. Unless public safety or health is involved, it is questionable whether zoning alone can be used to preserve and protect natural resources. It is difficult to see how to prevent the owner of a wetland from filling it if the filling neither aggravates flood problems nor contributes to water pollution.

However, a statewide program requiring flood plain zoning would in itself conserve considerable areas of wetland. This is because any controls—while not preventing developments in flood plains—tend to discourage building or make construction more expensive. This results in many developments being placed farther inland, on higher ground. Groups interested in conservation of natural

9. Strong, *Open Space for Urban America* 9 (U.S. Dept. of Housing and Urban Development, 1965).

resources and preservation of wildlife habitat might do well to press for extensive programs of flood plain zoning.

One of the problems related to development of wetlands is that it may take a number of years to determine whether, in fact, the development was adequately protected. Filled land may prove to be unstable, or unknown underground water courses may have had their flow interrupted. The canals and channels dug in a "dredge-fill" subdivision may soon be filled with silt because of the lack of current and inadequate shoreline stabilization along the newly-created banks. The desirability of a site on reclaimed land vanishes as the quality of adjacent surface water declines.

III

THE EFFECTIVENESS OF ZONING

Zoning for natural resource preservation could take the form of restricting the land to flood plain, conservancy, agricultural, or forestry uses. However, for any of these uses it is quite difficult to hold the line against developmental pressures.

The limitations of conventional zoning in the face of development, and the probable need for public control of some shoreland areas suggest that government will have to rely on more than zoning to achieve desirable long-range uses. This might be done through methods of preferential assessment whereby the owners of land zoned for various "open-space" types of use agree to dedicate their land for this use for a certain number of years, during which it would be assessed at its value for that restricted use. It may be desirable for government to purchase easements along areas of shoreland which it wishes to preserve. In Wisconsin, conflicts may develop between the shoreland zoning programs and programs under which the state currently purchases recreational or game habitat easements. A landowner adversely affected by zoning may claim that a neighboring landowner faced with identical conditions has been able to sell easements on his land to the state.

However, the new Wisconsin law also requires other types of shoreland regulations which, while not preventing development, would prevent practices which generally result in wholesale resource destruction. Other forms of developmental zoning, such as requiring large lots or encouraging cluster development, may have some effect. To the extent that it is possible to zone for "timed" development, such as by insisting on connection to public sewers—where a plan stated when and where the sewers would be available

—development could be influenced. This is an improvement over the irregular patterns of development which now occur. The new law has been interpreted to require, through zoning, certain controls of an esthetic nature. Also, the sanitary and subdivision requirements will tend to reduce any development's destructive impact.

Wisconsin's program of statewide shoreland and flood plain zoning will result in better development of waterfront areas. However, it cannot be expected to achieve, by itself, the objectives of an "open space" program. Beyond preventing additional water pollution, flood damage, or wholesale destruction of waterfront scenery, it is unlikely that government can use the zoning tool to achieve land uses which ordinarily require *acquisition* of additional public lands.¹⁰

IV

UNSOLVED PROBLEMS

It will take many years to determine the effectiveness of this method of state-local control in achieving wise resource use. Certain minor problems encountered in drafting regulations should be of interest to those contemplating a similar approach for protecting their environmental resources. The first deals with the definition of jurisdictions which are specified distances from highwater marks of lakes, rivers and streams. On the local level, this results in many questions concerning the precise inland limit of the county's (and state's) jurisdiction. One must determine whether the body of water is navigable and, if it is, its highwater mark. In addition, flood plain limits must be defined to determine shoreland zoning jurisdiction, even for areas where the floods would cause no damage.

Drawing a line around irregular shorelines leaves a peculiar pattern of area of jurisdiction. It is unlikely that any line running either 300 feet or 1,000 feet inland from a natural shoreline would coincide with lot lines. Also, it is unclear whether the new regulations cover uses on the seaward side of the water's edge. For example, would they cover a dance hall located on a pier or on a barge moored off shore?

Many of the regulations deal with areas which contain seasonal dwellings. Should, then, the regulations for seasonal dwellings be the same as if the majority of dwellings were occupied year-round? Patterns of usage change. The married couple that is contemplating retirement may winterize their cottage.

10. See also Bosselman, *Alternatives to Urban Sprawl: Legal Guidelines for Governmental Action* (prepared for the consideration of The National Commission on Urban Problems, Research Rep. No. 15, 1968).

A related problem deals with small garage-like structures for storing pleasure boats. It is unlikely that they need to be over or even adjacent to the water. However, topography limits the distance inland they can conveniently be placed. Problems associated with boat houses are that they are frequently built of salvaged lumber, are brightly painted so that the owner can recognize them when he is out on the lake, and may soon be converted into temporary dwellings. In fact, one result of requiring setbacks for cottages from a lake may be that the boat house at the water's edge is used for activities such as changing into swim suits. In other words, if the owner cannot place his cottage next to the water's edge, he may build his boat house to serve as many purposes as possible, just shy of becoming a dwelling.

One of the most difficult problems in drawing up regulations deals with preserving shoreline cover. Each cottage owner desires to clear the trees and brush between his own dwelling and the water's edge so that from his picture window he can have a clear view of a tree-surrounded lake. As more cottage owners do the same, the beauty of the lake disappears. Brush and shrubs along the shoreline help control soil erosion, but to the cottage owner they may only attract bugs and may not contribute to his enjoyment of the environment. It has proven very difficult to write understandable regulations which allow thinning but prohibit "clear cutting." Such regulations do not lend themselves to easy enforcement. Once a tree is cut down and sawed into lengths convenient for fireplace burning, establishing whether removal of the tree was contrary to the intent of the regulations is impossible. Also, a quick-witted property owner might claim that lightning had struck the tree and that he had merely evened off the stump with his chain saw.

The problems of preserving shoreline cover are also related to the slope of the land at the water's edge. Conceivably, more cover is needed along steep slopes to reduce erosion. In a few areas of Wisconsin, erosion of beaches and bluffs into the water is a major problem. The problem is similar, although not identical, to that of being in a flood plain. The danger to the property owner is that unless he takes certain—frequently expensive—measures to protect his shoreline from eroding, his dwelling will be undermined.

Controlling agricultural practices can, within limits, be achieved under the new law. Barnyards are sometimes placed so that the fecal matter drains into the adjacent surface water. Fertilizers and pesticides spread on fields or commercial forests drain into the water. The problem is that forestry and agriculture are thought to be very unintensive uses of land. That is, it is already very restric-

tive for government to tell a property owner that he can only plant trees or farm, so the owner may be less than happy to learn that there are also controls on how he plants trees or farms. However, most farmers and foresters are thought to follow good soil and water conservation practices, and to the extent that fertilizer or pesticides drain into the water, the farmer or forester considers this his loss. Nonetheless, the result is water pollution. Finally, there is the problem caused by cattle trampling the banks of streams. This increases erosion and frequently destroys game habitat. The ideal solution is to keep cattle away from most of the shoreland through use of fences, and to have crossings covered with gravel. This solution, however, is not likely to be achieved through the use of the zoning power alone.

CONCLUSION

Wisconsin has attempted, through controlling land uses, to protect surface water quality and to lessen flood damage. This represents a broadening approach to environmental protection. However, neither land-oriented nor water-oriented planning is sufficient when dealing with complex relationships between man and his surroundings. Nevertheless, the approach used in Wisconsin represents a massive, if somewhat tardy, attempt to prevent man from damaging—if not destroying—his habitat.