ELEMENTS and EXPLANATION of the MUNICIPAL SHORELAND RULES and REGULATIONS

SHORELAND MANAGEMENT

Supplementary Report No. 5

May 1976

MINNESOTA DEPARTMENT OF NATURAL RESOURCES
Division of Waters

ELEMENTS AND EXPLANATION
OF THE
MUNICIPAL SHORELAND RULES AND REGULATIONS

INTRODUCTION

Lakes and streams are two of Minnesota's most valuable natural resources. Rapidly expanding recreational needs, as well as increased agricultural, domestic, and industrial demands for water, must be satisfied from a fixed natural supply. The economy of many areas is dependent upon the fate of water bodies and their shorelands. As man is drawn to shoreland areas, he often creates problems, such as water pollution, over-crowding, unwise development, destruction of fish and wildlife habitat, and the impairment of natural beauty. Cabins and resorts are built to form continuous ribbons of buildings along lakes and streams. When prime lands immediately adjacent to the shore are in use, a second tier of cabins is often built behind the first. As land values rise, lots with steep slopes, high groundwater, and flooding conditions are platted and put to use in spite of their unsuitability for development. Uncontrolled lake and stream development may ultimately result in blighted recreational areas unless action is taken to meet these problems and preserve our waters and shorelands for future generations.

Legislative Action

The 1969 session of the Minnesota Legislature passed a law, Chapter 777, amending Minnesota Statutes 1967, Chapter 105 which required each county to adopt a shoreland management ordinance to combat these

growing problems:

> *In furtherance of the policies declared in Minnesota Statutes, Section 105.38, and Chapter 116, it is in the interest of the public health, safety, and welfare to provide guidance for the wise development of shorelands of public waters and thus preserve and enhance the quality of surface waters, preserve and provide for the wise utilization of water and related land resources of the state.*[1]

The jurisdiction of this law was extended in 1973, when the Minnesota Legislature passed Chapter 379, amending Minnesota Statutes 1971, Chapters 105 and 462 to include shorelands in municipalities.

This legislation also directs the Commissioner of Natural Resources to establish standards and criteria for municipal shoreland development. These standards will serve as minimum guidelines for shoreland management ordinances which must be adopted by the municipalities no later than one year after notification by the Commissioner. The Commissioner is also authorized to enact the statewide standards into ordinance form for the municipalities which do not meet this deadline.

Jurisdiction

The municipal shoreland management standards pertain to the shorelands of public waters located in incorporated (i.e. municipal) areas.

"Shoreland," by statutory definition, includes lands within 1,000 feet of a lake or 300 feet from a river or stream. In certain cases, the limit may be defined as the watershed divide wherever this divide occurs at lesser distances than the statutory limits of shorelands since land uses

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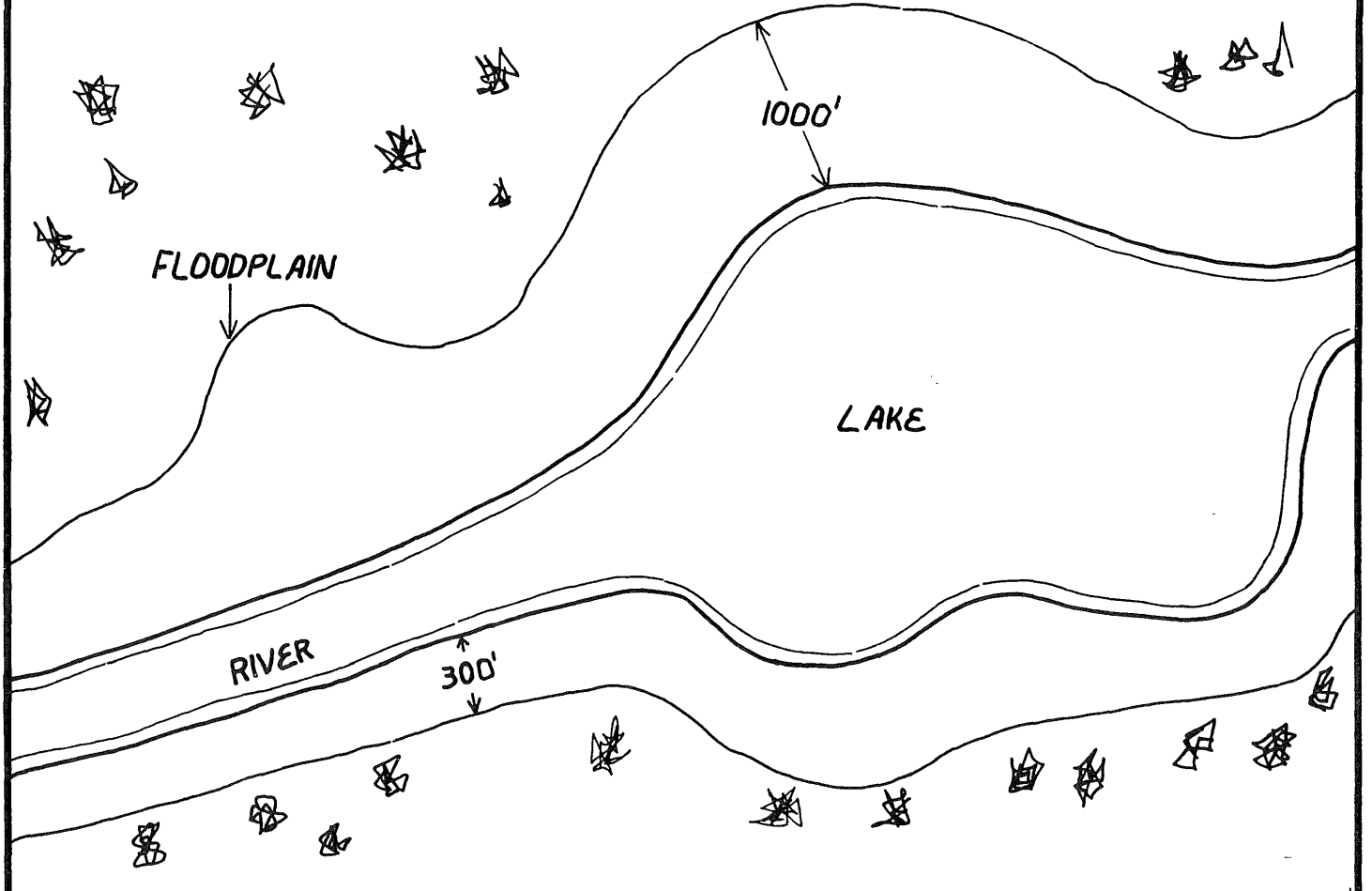
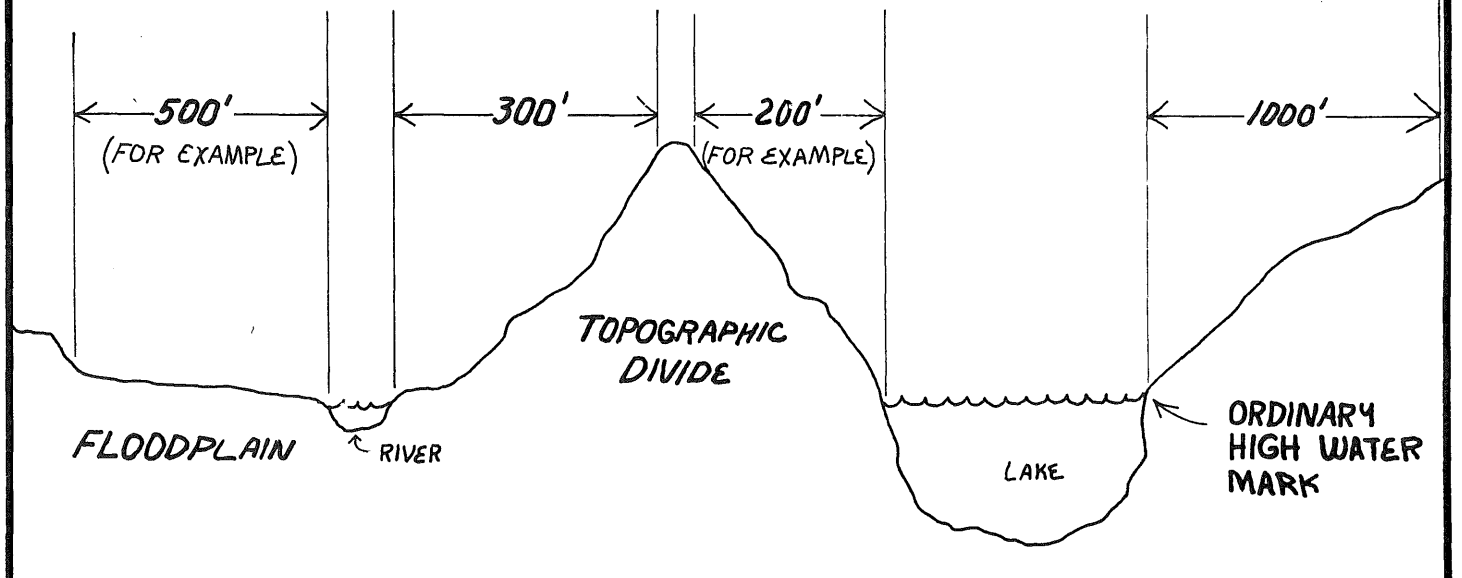
[1]Laws of Minnesota, 1969, Chapter 777, Sec. 1.

SHORELAND STATUTORY AUTHORIZATION

LAND WITHIN 1000 FEET FROM THE ORINARY HIGH WATERMARK OF A LAKE, POND OR FLOWAGE OR LAND WITHIN 300 FEET OF A RIVER OR STREAM OR THE LANDWARD SIDE OF A FLOODPLAIN DELINEATED BY ORDINANCE.





beyond a lake's watershed divide generally have little effect on the water quality of that lake.

"Public water" is defined by statute as all waters of the state, which serve a beneficial public purpose. For the purposes of this program, this is interpreted as any body of water which supports any type of recreational pursuit or water supply purpose. However, this program is designed to protect public waters from improper shoreland development. Many of the state's lakes and streams are so small that they probably will never be developed for recreational uses. For this reason, and to simplify the administrative load, lower size limits for public waters were established. Only those lakes, ponds and flowages greater than 10 acres and those streams draining an area greater than two square miles need be included in this program.

Scope

No single solution will solve all the problems associated with shoreland development. A variety of land use controls are needed to deal with the major causes of the problems. The goals of this new shoreland management program are to coordinate land uses, encourage development which is compatible with the shoreland resources, and discourage development which is not. The approach, then, is to establish a set of land use controls which will guide shoreland development for the benefit of both individual communities and the residents of the state as a whole. These controls include regulations which:

1. Provide for the designation of land use zoning districts compatible with shoreland management classification.

2. Provide minimum zoning provisions for lot sizes, placement of structures on lots and amount of impervious surface allowed on each lot.
3. Govern the alteration of natural shorelands in municipalities, including the placement of roads and parking areas.
4. Stipulate the type and placement of sanitary waste treatment facilities.
5. Control the subdivision of shoreland areas in municipalities.

The remainder of this report is an explanation of the goals and objectives of the Statewide Standards and Criteria for Management of Municipal Shoreland Areas of Minnesota, officially promulgated by the Commissioner of Natural Resources on March 15, 1976. Index numbers for passages within the commentary, such as "NR 82(a) refer to quotations from the statewide standards.

I. LAND USE ZONING DISTRICT PROVISIONS

As prescribed in the statewide standards, municipalities are required to delineate land use districts:

NR 83 Land Use Control Provisions

(a) LAND USE DESIGNATION

The development of shorelands of public waters shall be controlled by means of land use zoning districts which are designated to be compatible with the classes of public waters set forth in NR 82 (f). Land use zoning districts shall be established to provide for:

(1) The management of areas unsuitable for development due to wet soils, steep slopes, flooding, inadequate drainage, severe erosion potential, or any other feature likely to be harmful to the health, safety or welfare of the residents of the community.

(2) The reservation of areas suitable for residential development from encroachment by commercial and industrial uses.

(3) The centralization of service facilities for residential areas and enhancement of economic growth for those areas suitable for limited commercial development.

(4) The management of areas where use may be directed toward commercial or industrial uses which, by their nature, require location in shoreland areas.

(b) CRITERIA FOR LAND USE ZONING DISTRICT DESIGNATION

The land use zoning districts established by municipalities shall be based on considerations of: preservation of natural areas; present ownership and development of shoreland areas; shoreland soil types and their engineering capabilities; topographic characteristics; vegetative cover; municipal socio-economic development needs and plans as they involve water

and related land resources; the land requirements of industry which, by its nature, requires location in shoreland areas; and the necessity to preserve and restore certain areas having significant historical or ecological value.

It is the responsibility of each municipality to prescribe uses of shorelands, such as residential or commercial, in order to provide for the most beneficial public use. These uses should be designated to be compatible with the established public waters classes.[2] NR 83(a) and (b) point out the considerations which should determine the types of allowable uses, stressing compatibility with the resource base.

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[2]Minnesota Department of Natural Resources, Division of Waters, Shoreland Management Classification System for Public Waters: Supplementary Report No. 1 (2nd ed. rev.; St. Paul, 1976).

II. ZONING PROVISIONS

Zoning provisions also control land use by controlling, among other things, lot sizes and building setbacks. They are intended to reduce the effects on the public waters of over-crowding and poorly planned development of the shoreland areas, to maintain property values, and to preserve the natural characteristics of shorelands and adjacent water areas.

Lot Size

Minimum lot sizes are necessary to insure a level of protection for each class of public waters consistent with management goals and objectives. Some basic considerations in determining a proper minimum size are: *structure setbacks, sewage system setbacks and siting requirements, economics associated with lot widths and public sewers, and surface water runoff problems.*

NR 83(c)(1) Lot Size

All lots intended as residential building sites platted or created by metes and bounds description after the date of enactment of the municipal shoreland ordinance shall conform to the following dimensions:

(aa) For Natural Environment Waters: Lots not served by public sewer shall be at least 80,000 square feet (approximately 2 acres) in area and at least 200 feet in width at the building line and at the ordinary high water mark (for lots abutting a public water). Lots served by public sewer and which abut a public water shall be at least 40,000 square feet (approximately 1 acre) in area and at least 125 feet in width at the building line and at least 20,000 square feet (approximately ½ acre) in area and at least 125 feet in width at the building line.

Errata Sheet for
Shoreland Management Supplementary Report No. 5

Page 7, Add the following paragraph at the bottom of the page:

(bb) For Recreational Development Waters: Lots not served by public sewer shall be at least 40,000 square feet (approximately 1 acre) in area and at least 150 feet in width at the building line and at the ordinary high water mark (for lots abutting a public water). Lots served by public sewer and which abut a public water shall be at least 20,000 square feet (approximately ½ acre) in area and at least 75 feet in width at the building line and at the ordinary high water mark. All other lots served by a public sewer shall be at least 15,000 square feet in area and at least 75 feet in width at the building line.

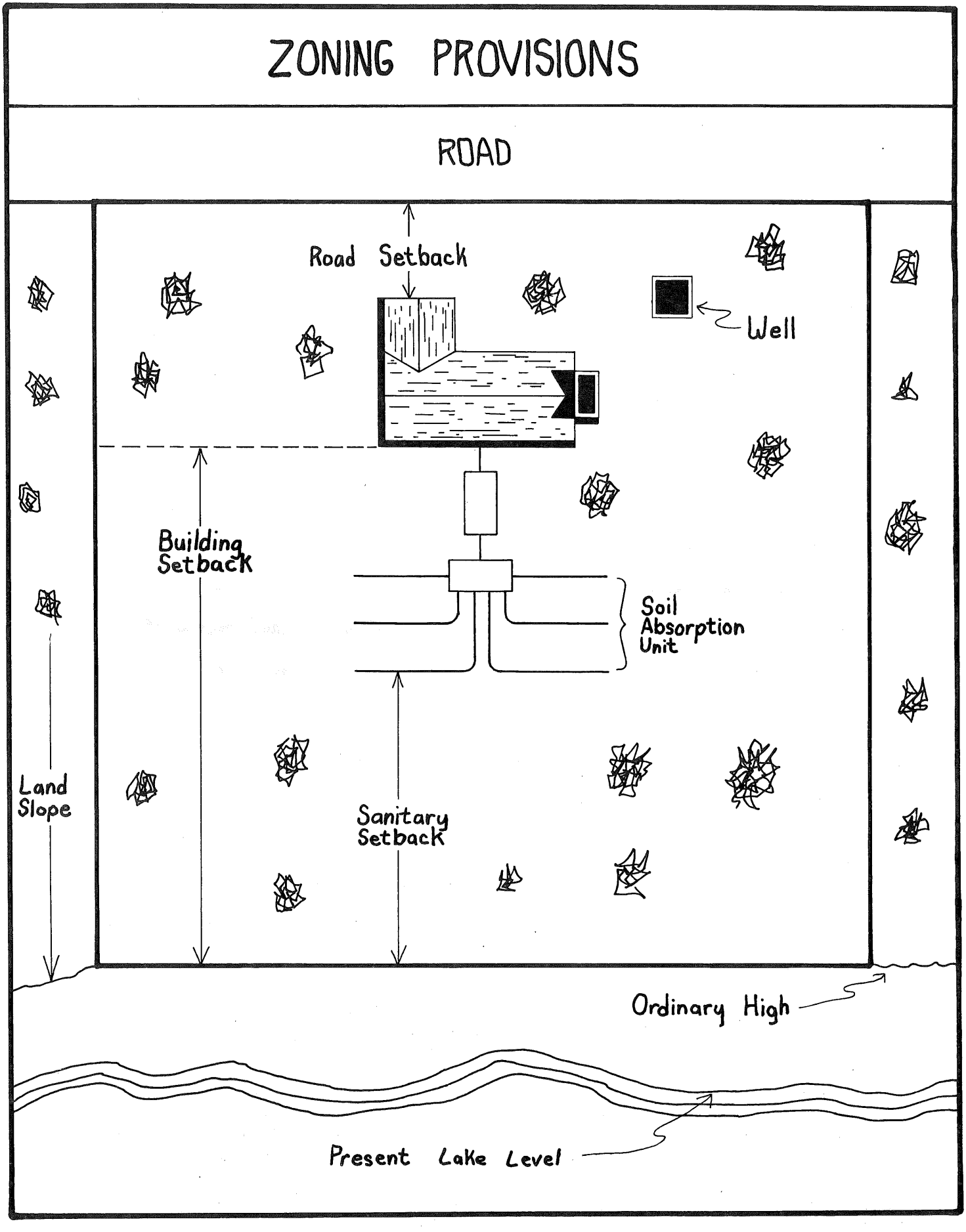
Page 8, paragraph 3, line 7. The word "undevelopable" should be inserted in place of the word "developable".

(cc) For General Development Waters: Lots not served by a public sewer shall be at least 20,000 square feet (approximately ½ acre) in area and at least 100 feet in width at the building line and at the ordinary high water mark (for lots abutting a public water). Lots served by a public sewer and which abut a public water, shall be at least 15,000 square feet in area and at least 75 feet in width at the building line and at the ordinary high water mark. All other lots served by a public sewer shall be at least 10,000 square feet in area and at least 75 feet in width at the building line.

The rationale for minimum lot sizes is easiest to explain by starting with the bodies of water which receive the least restrictive set of development standards--General Development lakes and streams. These were classified as General Development for a number of reasons, including existing high levels of development and their ability to absorb additional high density development. Spatial arrangement of facilities is the relevant consideration here for determining a minimum lot size.

Most lakeshore homes employ the soil absorption method of sewage treatment. A drainfield installed in accordance with state requirements will require about 2,000 square feet. This calculation assumes a slow percolation rate (60 minutes/in.) and two bedrooms. This area, when added to area requirements for building setbacks and for the building itself, total approximately 15,000 square feet. In addition, it can be assumed that some portion(s) of most lots in shoreland areas are developable, because of inadequate height above the water table or steep topography. To provide a reasonable measure of assurance that lots will have enough area to be developed in accordance with sewage treatment requirements, new lots must be at least 20,000 square feet for General Development waters.

ZONING PROVISIONS



An examination of existing development densities led to designation of a 100 foot minimum lot width for unsewered shoreland on General Development waters. A frequency distribution showed that 4 percent of all government lots (parcels 40 acres or less adjoining lakes) were developed to an average density providing 100 feet or less of shoreline per cabin.[3] The implication is that people tend to crowd together at greater densities. This minimum lot width for General Development lakes and streams provides the minimum necessary room to develop a lot consistent with individual preferences.

Larger lot areas and widths for the other classes of public waters reflect the desired management policies--policies designed not only to prevent pollution, but also to keep development densities low enough to preserve the natural environment.

Minimum dimensions of 40,000 square feet of lot area and 150 feet of shore frontage are considered necessary to provide a higher degree of protection for unsewered shoreland on Recreational Development waters. These lots generally have moderately suitable soils and occassionally have high ground water. The larger lot size provides a higher probability of finding suitable locations for all improvements, including structures, well, and sewage treatment system, somewhere on the lot while still maintaining necessary setbacks and separations. The total possible density of development on the shoreland is also kept to a level which will preserve the economic value

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[3]University of Minnesota, Center for Urban and Regional Affairs, Minnesota's Lakeshore: Resources, Development, Policy Needs, Part I (Minneapolis: University of Minnesota, 1970). "Average density" was calculated by dividing the total length of shoreline of each government lot by the number of dwellings located in the lot. This method of determining densities should not be confused with average lot size. Average density was used because there is not a consistent pattern of platting in the state, and there is no practical way of recording and comparing individual lot sizes from assessment records.

Copies of the report cited are available at University of Minnesota libraries and may be purchased from the Documents Section (State of MN), Room 140, Centennial Bldg., 658 Cedar St., St. Paul, MN 55155.

of all properties and capitol improvements around the water body. The lot size is reasonably consistent with existing lots, which will minimize administrative conflicts as these lots of record are developed.

For Natural Environment waters a minimum lot size of 80,000 square feet and 200 feet of water frontage is considered necessary on unsewered shoreland to provide maximum protection. These waters are usually less suited to shoreland development because of poor soils and high ground water and presently have little or no development. Possible conflicts between a required large lot size and existing patterns will be held to a minimum. This large lot size will limit development around these waters to a density which will enhance the value of all lots and capitol improvements.

Where shoreland areas are served by public sewer, the large lot sizes described above are not necessary. However, minimum sizes are still needed to prevent problems such as congestion, excessive surface runoff, noise, impairment of property values, and large-scale destruction of natural vegetation associated with dense shoreland development. Since cities in Minnesota vary greatly in size, density, and function, shoreland controls must be flexible enough to reflect these diverse conditions.

Lot size requirements which incorporate this needed flexibility were consequently developed. These include reduced minimum lot sizes and widths for riparian lots and even smaller lot sizes for back lots.

For Natural Environment waters the minimum size for riparian lots was halved (from 80,000 ft^2 to 40,000 ft^2), and halved again (to 20,000 ft^2) for back lots. Since sewering costs are generally assessed to landowners based on length of road frontage and the economic feasibility of installing sewer lines drops off rapidly as lot widths exceed 125 feet, this width was selected as the minimum. The building setback was reduced from 200 feet to 150 feet because of the reduced lot depth associated with the smaller lot size.

The lot size for Recreational Development waters was also halved (from 40,000 ft^2 to 20,000 ft^2) for riparian lots. A minimum size of 15,000 ft^2 was established for back lots. The minimum lot width requirement was reduced from 150 feet to 75 feet and the building setback from 100 feet to 75 feet.

In aggregate, these changes produce lots which can be economically served by public sewer and which are narrow enough to keep purchase prices within reason. These objectives can be obtained while still keeping roads as far back (267 ft) as on Natural Environment waters, which reduces the chances of petroleum residues and organic debris reaching the water body.

Minimum standards were also revised for General Development waters. Lot sizes were reduced from 20,000 ft^2 for all lots to 15,000 ft^2 for riparian lots and 10,000 ft^2 for back lots. Since most of these waters are either already heavily developed or can accommdate considerable future development, the standards were selected to reflect existing conditions. A recent survey by the Minnesota State Planning Agency concludes that lot sizes in this range are currently in general use within the state's municipalities.[4]

Minimum lot width was reduced from 100 feet to 75 feet and structure setback from 75 feet to 50 feet to reflect the smaller lot size. An absolute minimum setback of 50 feet is considered necessary to protect water bodies from siltation and erosion associated with construction activities, petroleum products and organic debris associated with driveways and parking lots, and degraded aesthetic appearances of unscreened structures at the water's edge.

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[4]Minnesota State Planning Agency, Office of Local and Urban Affairs, Subdivision Control for Minnesota Communities (St. Paul, 1975) p. 25.

The provision that lots must have a minimum width at the building line, as well as at the water line, is designed to eliminate platting of irregularly shaped lots, a practice which could allow a higher density of development than is desired. Pie-shaped lots on curved shorelines or peninsulas would allow density levels inconsistent with management goals and objectives. Lots must now be approximately rectangular.

NR 83(c)(1)(dd) Substandard Lots

Lots of record in the office of the County Register of Deeds on the date of enactment of the Municipal Shoreland Ordinance which do not meet the requirements of NR 83(c)(1)(aa) through (dd) may be allowed as building sites provided such use is permitted in the zoning district, the lot is in separate ownership from abutting lands and sanitary and dimensional requirements of the shoreland ordinance are complied with insofar as practicable. Each municipal ordinance may, consistent with these standards and criteria, set a minimum size for substandard lots or impose other restrictions on the development of substandard lots, including the prohibition of development until the substandard lot(s) are served by public sewer and water.

Any newly adopted zoning ordinance does not usually apply to existing uses. Lots which have been platted but not developed before the ordinance is enacted should usually be considered developable. A zoning ordinance cannot deprive a property owner of all reasonable uses of his property. Persons who purchased lots in good faith should not be deprived of what was considered a reasonable use at the time of purchase. At the same time, the purposes and intent of the shoreland program should not be sacrificed. The solution is to require new development on substandard lots

to meet sanitary provisions and building setbacks as far as practicable without placing an unreasonable burden on the owner.

NR 83(c)(1)(ee) Exceptions

Exceptions to the provision of NR 83(c)(1)(aa) through (ee) may be permitted for Planned Unit Developments pursuant to NR 83(e)(4).

Provisions are made here to relax the standards for types of development which incorporate added provisions for protecting public waters and shoreland areas. Cluster developments are one such exception. When development plans are approved by the Department of Natural Resources and the plans are consistent with department recommendations, any or all of the zoning requirements such as lot size, setbacks, and maximum height may be waived by the municipality. This type of development preserves more of the natural features of shorelands than standard lot-block subdivision arrangements and is, therefore, an excellent form of development.

Placement of Structures on Lots

The statewide standards call for buildings to be placed at specified distances from public waters and roads and at elevations sufficient to avoid flooding conditions. These provisions are necessary to provide safe and sound building sites and to preserve the aesthetic qualities of shoreland areas.

NR 83(c)(2)(aa)

The following minimum setbacks for each class of public waters shall apply to all structures except those specified as exceptions in NR 83 (c)(2)(ff):

(i) For Natural Environment Waters: at least 200 feet from the ordinary high water mark for lots not served by public sewer and at least 150 feet from the ordinary high water mark for lots served by public sewer.

(ii) For Recreational Development Waters: at least 100 feet from the ordinary high water mark for lots not served by public sewer and at least 75 feet from the ordinary high water mark for lots served by public sewer.

(iii) For General Development Waters: at least 75 feet from the ordinary high water mark for lots not served by public sewer and at least 50 feet from the ordinary high water mark for lots served by public sewer.

(iv) Furthermore, no structure shall be erected in the floodway of a river or stream as defined in Minnesota Statutes 1974, Section 104.02.

Setbacks from the ordinary high water mark reflect two basic considerations: adequate spacing for pollution safeguards and preservation of the natural shoreline. In areas not served by public sewage systems, the building setbacks are slightly greater than the setbacks for sewage disposal systems. The land slope in shoreland areas is generally toward the water. It is desirable from a health standpoint to install a well upslope from the disposal system to avoid contamination. The best layout for most lakeshore lots, then, is to place the well behind the cabin with the sewage disposal system downslope on the lake side. The difference between the minimum building setback and the disposal system setback is generally not large enough to allow installation of the whole system directly

in front of the cabin but it is enough to allow the system to extend past the cabin on one side.

Where cabins develop in a continuous ring around a lake, the scenic qualities of the lake are greatly reduced. By requiring cabins to be placed back off the shoreline, vegetative screening can preserve these qualities. Shoreland owners and lake users would not be faced with a ring of development around the lake that would be highly visible from the lake or opposite shore. Setbacks also provide a measure of protection against erosion of the immediate shoreline and resultant siltation of the lakebed arising from cleared construction sites.

The ordinary high water mark is considered to be the highest water level which has been maintained for a sufficient period of time to leave evidence upon the landscape. It is commonly that point where the natural vegetation changes from predominantly aquatic to predominantly terrestrial.

NR 83(c)(2)(bb) High Water Elevation

In addition to the setback requirements of NR 83(c)(2), municipal shoreland ordinances shall control placement of structures in relation to high water elevation. Structures shall be placed at an elevation consistent with any applicable local flood plain management ordinances. When fill is required to meet this elevation, the fill shall be allowed to stabilize to accepted engineering standards before construction is begun. When no ordinances exist, the elevation to which the lowest floor, including basement, shall be placed shall be determined as follows:

(i) For lakes, ponds, and flowages by (a) an evaluation of available flood information and consistent with Statewide Standards and Criteria for Management of Flood Plain Areas of Minnesota or (b) placing the lowest floor at a level at

least three feet above the highest known water level. In those instances where sufficient data on known high water levels are not available, the ordinary high water mark shall be used.

(ii) For rivers and streams, by an evaluation of available flood information and consistent with Statewide Standards and Criteria for Management of Flood Plain Areas of Minnesota.

These provisions are designed to prevent development in areas susceptible to flooding conditions. Many areas around lakes do not contain adequate building sites because of high ground water and fluctuating lake levels. By requiring structures to be placed at least 3 feet above the highest known lake level, future flooding problems will be reduced. Private investment in shoreland development will be protected and water quality will be preserved when structures are separated vertically from the ground water table.

Development on rivers and streams must be placed at elevations consistent with available flood data, especially in the absence of a flood plain management ordinance. By considering these data, potential problems of nonconforming flood plain uses can be avoided.

NR 83(c)(2)(cc) Proximity to Roads and Highways

No structure shall be placed nearer than 50 feet from the right-of-way line of any federal, state or county trunk highway; or 20 feet from the right-or-way line of any town road, public street, or others not classified.

Road setbacks are designed to keep structures away from traffic flows and to maintain adequate visual clearance at intersections. They can also be used to protect investment in properties by avoiding the need to relocate structures once road right-of-ways are widened. Since they can be used to promote orderly development in shoreland areas, road setbacks should be included in each local ordinance.

NR 83(c)(2)(ee)

The total area of all impervious surfaces on a lot shall not exceed 30 percent of the total lot area.

Surface water runoff has been identified as the second most important source of nutrient pollution (after sewage effluent) to many lakes. This provision is intended to maintain sufficient pervious area in lakeshore areas to minimize overland runoff and thus preserve water quality. The provision will also help minimize erosion and sedimentation caused by excessive runoff.

Several exceptions to the setback provisions are incorporated into the statewide standards to allow the reasonable development of recreational facilities under unusual conditions.

NR 83(c)(2)(ff) Exceptions

(i) Boathouses may be located landward of the ordinary high water mark as a conditional use provided they are not used for habitation and they do not contain sanitary facitities.

(ii) Location of piers and docks shall be controlled by applicable state and local regulations.

(iii) Where development exists on both sides of a proposed

building site, structural setbacks may be altered to take setbacks of existing structures into account.

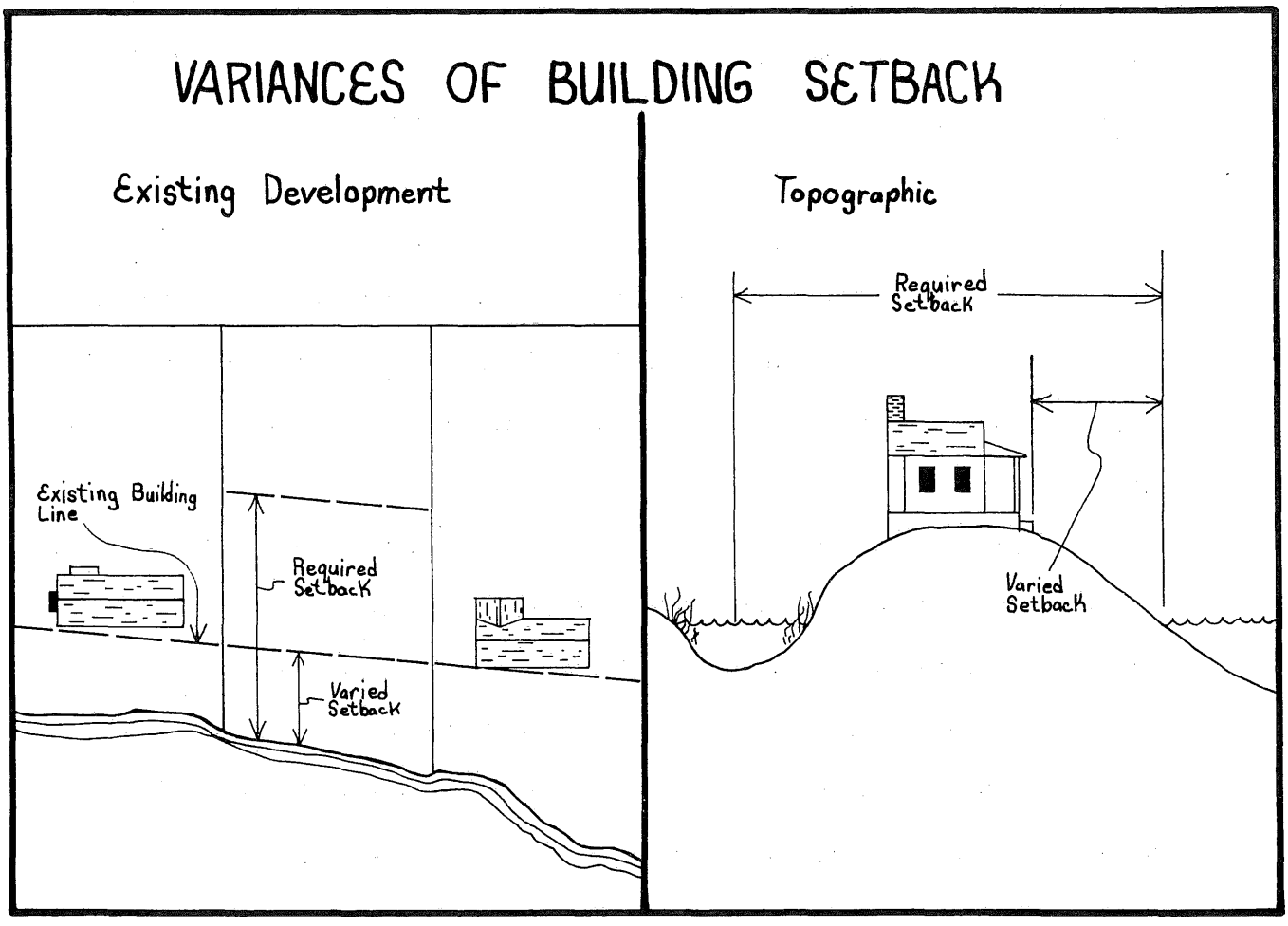
(iv) Commercial, industrial, or permitted open space uses requiring location on public waters may be allowed as conditional uses closer to such waters than the setbacks specified in NR 83(c)(2).

Building setbacks are probably the most difficult standards to prescribe in a zoning ordinance. A wide variety of local conditions can make these standards unreasonable when applied to individual cases. Therefore, these standards are, and should be, flexible enough to allow reasonable development and to treat equally all property owners in similar situations. Reasonability infers that the exceptions do not circumvent other restrictions, such as sewage treatment standards, and will not interfere with public use of the body of water, such as placing docks which obstruct navigation.

Much of the reasoning for building setbacks is based upon the need for adequate sewage treatment. Where methods of treatment other than soil absorption are employed, the need for large setbacks is reduced. This condition, then, constitutes a strong argument for varying setback requirements.

Proximity of existing development is another reason for varying the standards. To require one property owner to place his cabin 100 feet from the waterline, while existing cabins on either side are only 50 feet back, would be unreasonable. Existing cabins would obstruct the view from any future cabins, and to strictly interpret a setback provision in such a case would not materially contribute to the goals of this program.

Local relief is probably the main reason for granting variances to setback standards. Steep slopes, high bluffs, or irregular topography often dictate practical sites for lakeshore homes. Uniform setback requirements cannot be reasonably applied to all localities. Setback standards must be flexible to achieve their desired results--preservation of the quality of the shoreland environment.



III. SHORELAND ALTERATIONS

Closely coordinated with the setback provisions are the provisions concerning alterations of the natural vegetation and topography of shoreland areas. The attempt here is to preserve the natural setting of lakes to maintain their recreational values.

NR 83(c)(3) Shoreland Alterations

(aa) Natural vegetation in shoreland areas shall be preserved insofar as practical and reasonable in order to retard surface runoff and soil erosion, and to utilize excess nutrients. The removal of natural vegetation shall be controlled by the municipal shoreland ordinance in accordance with the following criteria:

(i) Clearcutting shall be prohibited, except as necessary for placing public roads, utilities, structures, and parking areas.

(ii) Natural vegetation shall be restored insofar as feasible after any construction project.

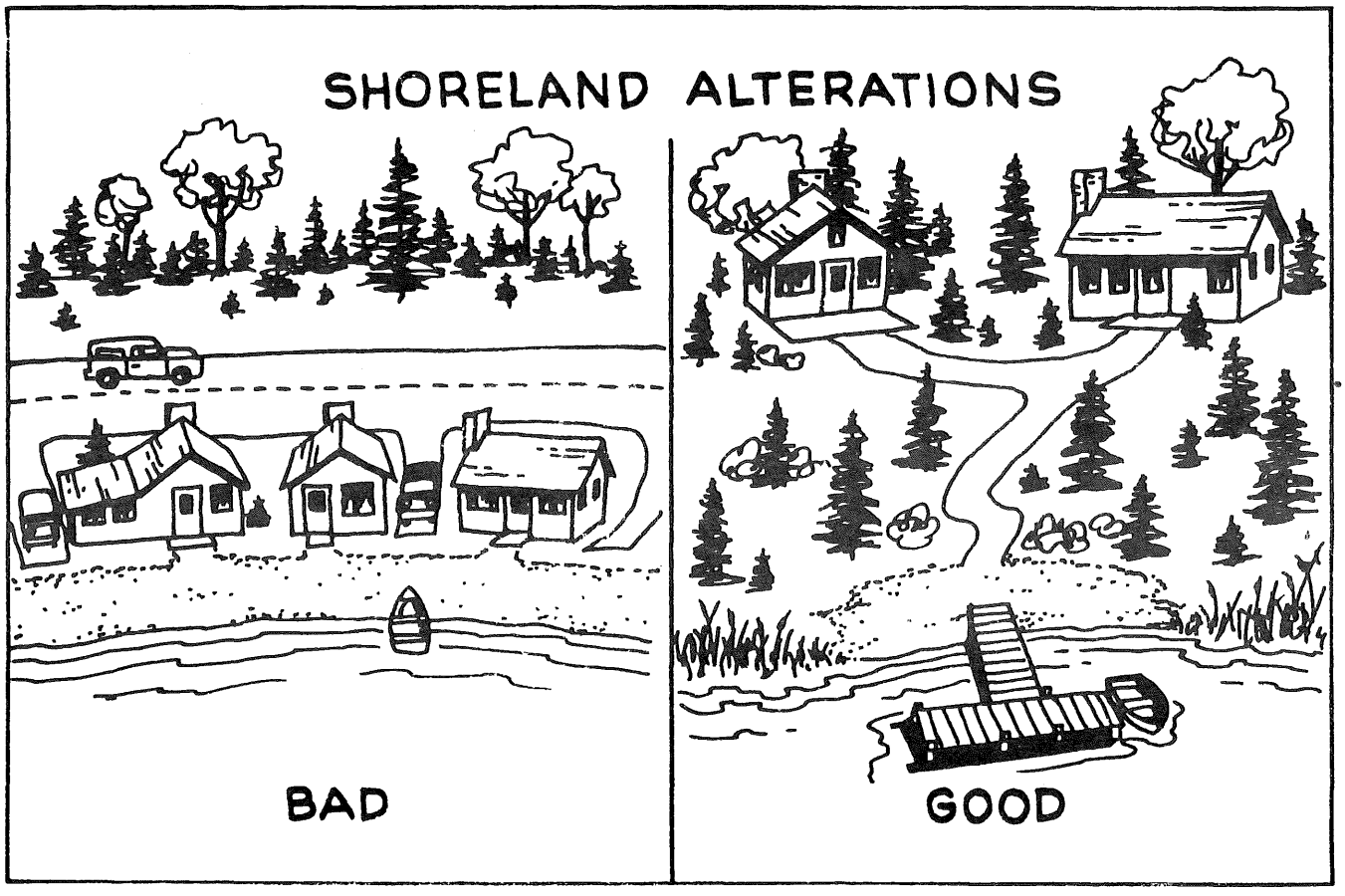
(iii) Selective cutting of trees and underbrush shall be allowed as long as sufficient cover is left to screen motor vehicles and structures when viewed from the water.

Natural vegetative cover is important for shoreland protection. Its value to achieve the goals outlined above cannot be disputed. What does remain in question is how to require the preservation of the vegetation without being overly restrictive of the individual property owner's rights.

As much vegetation should be preserved as possible, but this must be determined on an individual basis. Certainly a property owner must be

allowed to remove enough trees for a cabin site. Also, many property owners build cabins to simply enjoy the scenery of a lake setting. It is certainly reasonable to clear enough vegetation to provide a view of the lake.

It would be time consuming and perhaps impossible for municipalities to patrol lakeshore areas every summer to enforce these provisions. A more feasible approach is to educate the public on the need for preservation of the natural vegetation, stressing voluntary compliance. For these reasons, the statewide standards are worded in a general manner.



NR 83(c)(3)(bb)

Grading and filling in shoreland areas or any other substantial alteration of the natural topography shall be controlled by the municipal shoreland ordinance in accordance with the following criteria:

(i) The smallest amount of bare ground shall be exposed for as short a time as feasible.

(ii) Temporary ground cover, such as mulch, shall be used and permanent vegetative cover, such as sod, shall be provided.

(iii) Methods to prevent erosion and trap sediment shall be employed.

(iv) Fill shall be stabilized to accepted engineering standards.

Similar controls also apply to grading and filling in shoreland areas. The intended purpose is not necessarily to prohibit these activities, but to ensure they are properly performed to minimize undesirable effects and to maintain an inventory of the actions. Specific controls are not cited because this is another area where flexibility is necessary for proper administration. Municipalities should require permits for large-scale activities, and evaluation of permit applications should be coordinated with the overall objectives of the shoreland management program. The municipal ordinance should specify some exact conditions for the permit evaluations. These conditions could be based upon recommendations of the local Soil Conservation Service agents.

NR 83(c)(3)(cc) Alterations of Beds of Public Waters

(i) Any work which will change or diminish the course, current, or cross section of a public water shall be approved by

the Commissioner before the work is begun. This includes construction of channels and ditches, lagooning, dredging of lakes or stream bottom for removal of muck, silt or weeds, and filling in the lake or stream bed. Approval shall be construed to mean the issuance by the Commissioner of a permit under the procedures of Minnesota Statutes 1974, Section 105.42 and other related statutes.

(ii) Excavations on shorelands where the intended purpose is connection to a public water, such as boat slips, canals, lagoons, and harbors, shall be controlled by the municipal shoreland ordinance. Permission for such excavations may be given only after the Commissioner has approved the proposed connection to public waters. Approval shall be given only if the proposed work is consistent with applicable state regulations for work in beds of public waters.

Permits for work in the beds of public waters are required by the Division of Waters. This state-controlled program is authorized under Minnesota Statutes 1969 § 105.42. The Commissioner of Natural Resources still retains control of this program. Its inclusion in the statewide standards is to draw attention to the fact that permits are required, and that enforcement responsibilities are not being delegated to municipalities. The municipalities' role is limited to controlling alterations on the land. If each municipality adopts regulations to control these activities, the state program can be strengthened. The effects of the proposed canals, channels, or other alterations on the shorelands can be evaluated before work commences, and the public interest in these areas can be safeguarded.

Road and Parking Area Regulation

NR 83(c)(4) Placement of Roads and Parking Areas

The placement of roads and parking areas shall be controlled in order to retard the runoff of surface waters and excess nutrients. The placement of roads and parking areas shall be controlled by the municipal shoreland ordinance in accordance with the following criteria:

(aa) No impervious surface shall be placed within 50 feet of the ordinary high water mark.

(bb) Where feasible and practical, all roads and parking areas shall meet the setback requirements established for structures in NR 83(c)(2).

(cc) Natural vegetation or other natural materials shall be used in order to screen parking areas when viewed from the water.

Controls on the placement of roads and parking areas are designed to control surface water runoff pollution problems and to provide adequate visual screening. Runoff from these facilities can contribute significant amounts of petroleum residues and organic materials (leaves, paper) to water bodies. The setbacks for roads and parking areas follow those established for structures to minimize their visual impact and pollution potential.

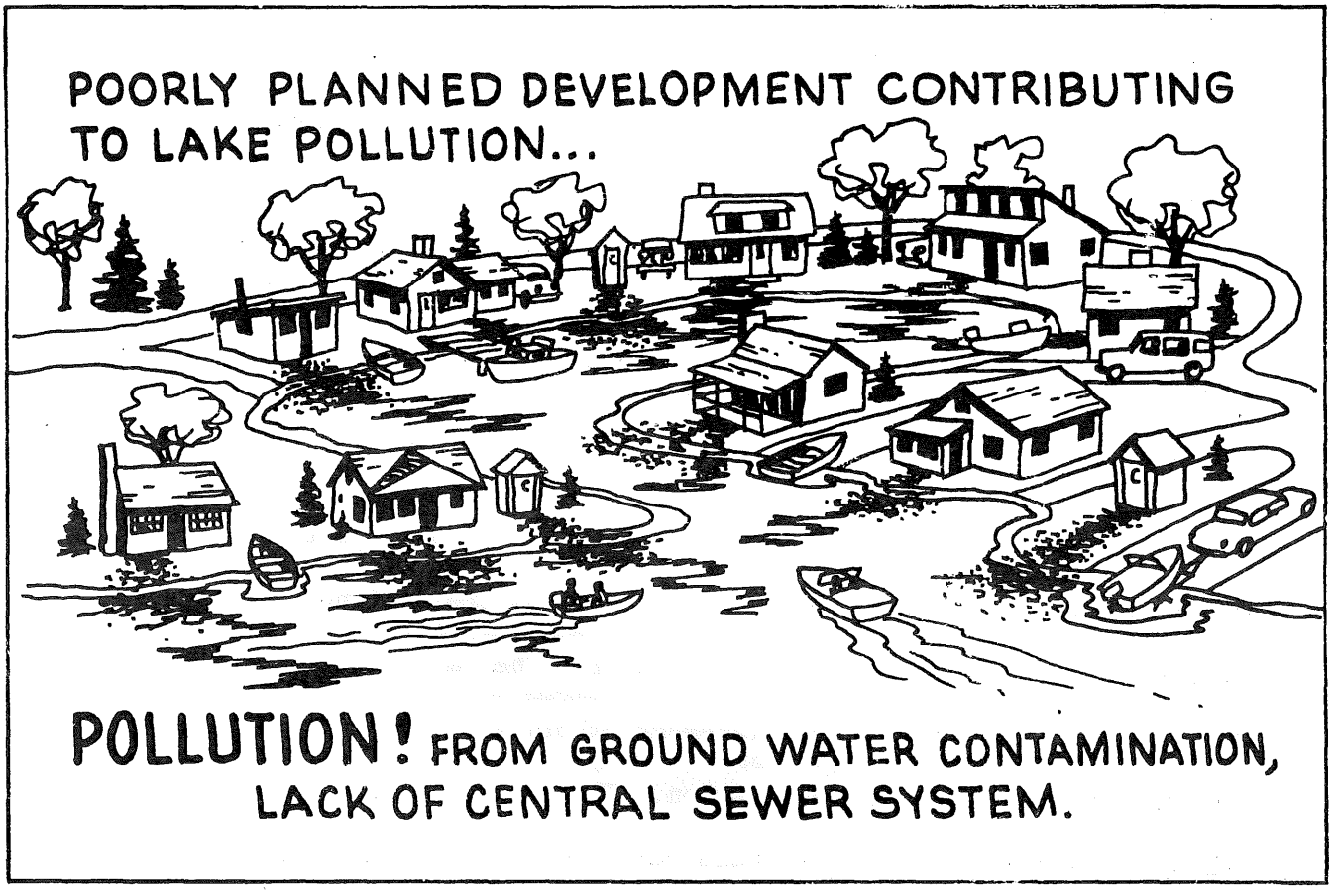
Exceptions

Exceptions to the various zoning provisions are cited in the text of the statewide standards. The Department also may approve a local ordinance which takes a different approach to shoreland management:

NR 83(c)(5)

Municipalities may, under special circumstances and with the Commissioner's approval, adopt shoreland management ordinances which are not in strict conformity with NR 83(c) "Zoning Provisions" provided that the proposed ordinance is based upon individual public water capabilities and that the purposes of Minnesota Statutes 1974, Section 105.485 are satisfied.

Unusual circumstances may render the statewide standards unreasonable or impractical for whole lakes or for large areas. Such an example may be a large lake of which 70 percent of the shoreline is in public ownership. The lake may be able to support a much greater amount of development than could occur on the 30 percent of the shoreline in private ownership. It may be more reasonable to draft an ordinance based upon the capabilities of the lake basin, provided proper measures are incorporated to protect these lakes for public use and enjoyment. The condition for approval by the Commissioner will be "substantial" compliance with the purposes and intent of the statewide standards.



IV. SANITARY PROVISIONS

Sanitary provisions, incorporated into a code or ordinance, are a distinct type of land use control. They are designed to protect the public health by preventing pollution of both underground and surface waters. The term "pollution" here includes accelerated nutrient enrichment of surface waters by seepage from soil absorption sewage treatment systems. Sanitary provisions deal typically with two general areas: water supply facilities and waste treatment facilities.

Water Supply Facilities

NR 83(d)(1) Water Supply

(aa) Any public or private supply of water for domestic purposes shall conform to Minnesota Department of Health standards for water quality.

(bb) Private wells shall be placed in areas not subject to flooding and upslope from any source of contamination. Wells already existing in areas subject to flooding shall be flood proofed, in accordance with accepted engineering standards.

Standards for water supply quality have been established by the Minnesota Department of Health. These standards are designed to protect the public from contaminated drinking water. The main concern of the shoreland management program is the placement of private wells. This is largely a matter of individual site evaluation. Therefore, specific spacing requirements are not set. This should be left to the local zoning administrator in his evaluation of building permit applications. The main considerations for evaluating the proposed location of a well include: ground slope, ground water elevation, soils, and geologic formations.

Sewage Treatment Facilities

The regulation of sewage facilities is particularly important in shoreland management, since inadequate treatment of wastes has been a major problem in shoreland areas. Comprehensive standards for waste treatment have been established by the Department of Health and the Minnesota Pollution Control Agency which specify standards for construction and maintenance of individual sewage treatment systems and effluent standards for municipal

and industrial waste discharges. The Division of Waters does not have the facilities nor the funds to conduct studies of its own to develop sewage treatment standards for shoreland areas. Therefore, this program will generally follow these existing standards:

NR 83(d)(2) Sewage and Waste Disposal

Any premises used for human occupancy shall be provided with an adequate method of sewage disposal to be maintained in accordance with acceptable practices.

(aa) Public or municipal collection and treatment facilities must be used where available or feasible.

(bb) All private sewage and other sanitary waste disposal systems shall conform to applicable standards, criteria, rules and regulations of the Minnesota Department of Health and the Pollution Control Agency and any applicable local governmental regulations in terms of size, construction, use and maintenance.

(cc) Location and installation of a septic tank and soil absorption system shall be such that, with reasonable maintenance, it will function in a sanitary manner and will not create a nuisance, endanger the quality of any domestic water supply, nor pollute or contaminate any waters of the state. In determining a suitable location for the system, consideration shall be given to the size and shape of the lot, slope of natural and finished grade, soil permeability, high ground water elevation, geology, proximity to existing or future water supplies, accessibility for maintenance, and possible expansion of the system.

Standard individual sewage treatment systems consist of two parts: the septic tank, and the soil absorption system. Raw sewage from the household enters the septic tank where bacteria reduce the solids to liquids.

Tank size must be large enough to provide sufficient time for the bacteria to act on the solids. A 3-day detention time is considered adequate for domestic systems. For example, a daily flow of 300 gallons requires a septic tank of at least 900 gallons. (A suggested minimum size is 1,000 gallons.)

The septic tank must be a watertight tank of sound and durable material not subject to excessive corrosion or decay. Suitable materials are precast concrete, poured concrete, concrete blocks with mortar joints and two plaster coats on the inside, metal with proper corrosion proofing, and fiberglass. The Code of the Minnesota Department of Health specifies other requirements of the septic tank such as: properly located inlet and outlet baffles; twenty percent of the tank volume reserved for floating scum storage; outlet pipe at least 2 and preferably 3 inches below the inlet pipe; provision for inspection and pumping; and other features.

The function of the soil absorption system is to dispose of the effluent from the septic tank. The design of the system (seepage area of the drainfield) is based upon the results of percolation tests.[5] Properly conducted percolation tests indicate how rapidly the soil will absorb water. If the soil becomes saturated, the effluent will not be adequately treated. It will flow with the ground water or on the ground surface into nearby lakes and streams.

The Department of Health recommends placement of these systems at least 50 feet from a lake or stream. This figure was based upon recommendations of the U.S. Public Health Service, which generally considers this distance adequate to avoid contamination of bodies of water. However,

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[5]For more information on the proper construction of on-site sewage treatment systems see: Dennis M. Ryan and Roger E. Machmeier, Town and Country Sewage Systems: Bulletin No. 304, University of Minnesota, Agricultural Extension Service (St. Paul, 1969).

nutrient enrichment of public waters in addition to contamination has become a real nuisance.

Nutrient enrichment occurs when septic tank effluent seeps into bodies of surface water. The nutrients--primarily nitrogen and phosphorous compounds--induce algae growth in the water in much the same way as fertilizers stimulate the growth of crops on land. From the increased number of algae blooms in Minnesota lakes, it is evident that our lakes have been receiving an increased amount of nutrients in the past few years. The Division of Waters, therefore, has established additional standards for the location of soil absorption systems in an attempt to alleviate, or at least curtain, this growing problem:

NR 83(d)(2)(dd)

Septic tank and soil absorption systems shall be set back from the ordinary high water mark in accordance with class of public waters:

(i) On Natural Environment Waters, at least 150 feet;

(ii) On Recreational Development Waters, at least 75 feet;

(iii) On General Development Waters, at least 50 feet.

A study completed by the Department of Civil Engineering, Sanitary Engineering Division, University of Minnesota, found that nitrogen compounds move readily with the ground water flow, and high concentrations can occur as much as 140 feet from the source of the effluent discharge.[6] The results of this study were used to determine the sanitary setback for Natural Environment lakes and streams--150 feet from the ordinary high water mark. This setback provides a reasonable amount of assurance that no nutrient

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[6]Schroepfer, George J. and Robert C. Polta, Travel of Nitrogen Compounds in Soils, University of Minnesota, Sanitary Engineering Report 172-S (Mpls, 1969), P. x-3.

enrichment from individual sewage treatment systems will occur on these lakes. Since these lakes are little developed at present, conflicts with existing patterns of use will be minimized. Also, these lakes tend to have physical characteristics, such as soils and ground slopes, which are not conducive to proper functioning of individual sewage systems (see commentary following NR 83(d)(2)(ee), so a high degree of protection is appropriate.[7]

A setback of 75 feet from the ordinary high water mark was established for Recreational Development lakes. These lakes are better suited for development because of suitable soils and elevation above ground water. They are generally larger and deeper than Natural Environment lakes and can accommodate some limited nutrient contributions without seriously degrading water quality.

General Development lakes present another problem. These lakes are already heavily developed, usually with very small lots. Setback provisions must reflect existing lot sizes to be reasonable. For these reasons, a setback of 50 feet was established for General Development lakes and streams.

In addition to distance from surface waters, other site characteristics are important for determining proper construction of individual sewage treatment systems:

NR 83(d)(2)(ee)

Soil absorption systems shall not be allowed in the following areas for disposal of domestic sewage:

(i) Low, swampy areas or areas subject to recurrent flooding;

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[7]For a discussion of the classification criteria see Minnesota Department of Natural Resources, Division of Waters, Shoreland Management Classification System for Public Waters: Supplementary Report No. 1 (2nd ed. rev; St. Paul, 1976).

(ii) Areas where the highest known ground water table, bedrock or impervious soil conditions are within four feet of the bottom of the system; and

(iii) Areas of ground slope which create a danger of seepage of effluent onto the surface of the ground.

These provisions are included to insure that soil absorption systems will not be installed in areas where they will not function properly, even though they may meet setback requirements. A major job of the zoning administrator (or sanitarian) in the administration of the sanitary provisions is site evaluation for installation of soil absorption systems. It is his duty to deny a permit for such a system wherever any of the above conditions occur.

Soil absorption systems do not function properly in low-lying swampy areas. The soil in many shoreland areas is subject to high ground water conditions during much or a part of the year. Saturated soils cannot adequately treat the sewage.

There must be an adequate amount of soil to filter the effluent if ground water and surface water pollution is to be avoided. A standard recommended by the U.S. Public Health Service is 4 feet of soil between the maximum seasonal elevation of the ground water table and the bottom of the soil absorption system.[8] This separation is necessary to provide for suitable absorption of pathogenic organisms and the nutrient phosphorus. Soil particles absorb phosphorus if the effluent is retained in contact with the soil long enough. Soil absorption trenches usually are more successful than

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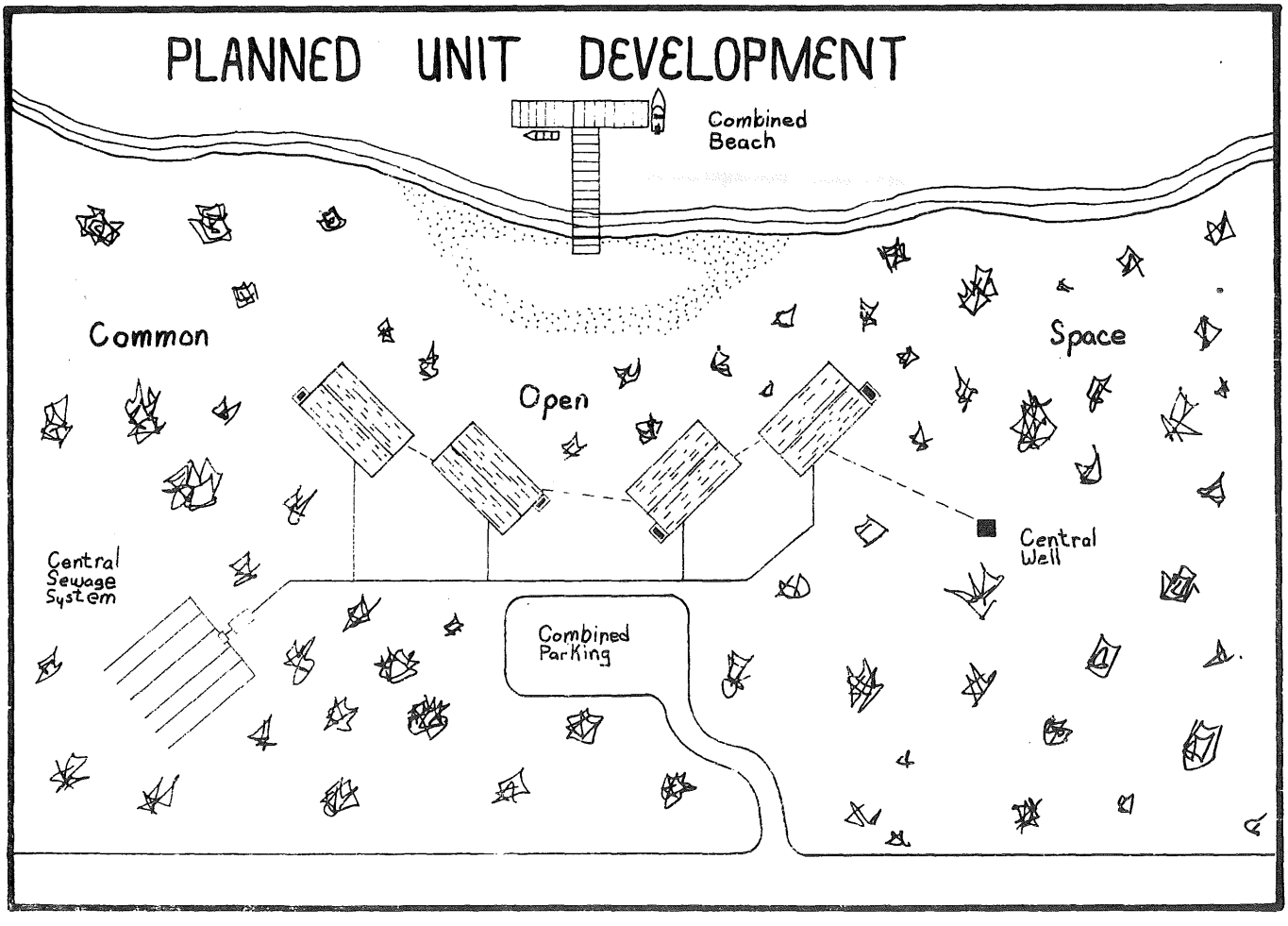
[8]U.S. Department of Health, Education and Welfare, Public Health Service, Publication No. 526, Manual of Septic-Tank Practice, (Washington: U.S. Government Printing Office, 1972) p. 4.

seepage pits since the effluent is distributed near the soil surface allowing for evaporation, uptake by plants, and greater soil filtration. Rock formations or other impermeable strata should also be at least 4 feet below the bottom of the system to provide enough soil filtration.

Ground slope is another important consideration. When slopes are steep, extra care must be used in designing and installing sewage treatment systems. Effluent surfacing problems will soon be encountered if systems on steep slopes are not carefully designed and constructed. For situations where the elevation difference of the ground surface exceeds 28 inches in any direction within the soil absorption area special distribution has many advantages.



NR 84(a)(3) Nonconforming Uses

Under authority of Minnesota Statutes 1974, Section 462, municipalities may adopt provisions to regulate, control and reduce the number or extent of and gradually eliminate nonconforming and substandard uses. Municipalities shall provide for the elimination of sanitary facilities inconsistent with NR 83(d)(2)(bb), (2)(cc), and (2)(ee) over a period of time not to exceed five (5) years from the date of enactment of the municipal ordinance.

Existing sanitary systems which do not meet proper standards can pose serious health hazards as well as pollution problems. For these reasons, all sanitary systems in shoreland areas must comply with the standards specified by the municipal ordinance within five years from the date the ordinance is adopted.

This nonconforming provision does not mean that all sewage treatment systems must meet the requirements for setbacks from the waterline. Where a system is functioning properly, the property owner should not be required to move it just to meet the setback. Indeed, on many substandard lots, this would be impossible due to area limitations. The nonconforming provision does mean that an existing system setting in the water table would have to be replaced. It does mean cesspools are no longer considered an adequate method of sewage treatment. And it does mean that existing soil absorption systems are not adequate in areas of exposed or shallow bedrock. Five years is considered a reasonable period of time since the investment in older sanitary systems is not usually large and improperly constructed systems tend to fail within a few years anyway.

Alternatives to Individual Sewage Facilities

Realistic and effective regulations for soil absorption systems must necessarily prohibit their use in unsuitable areas. The local ordinance should recognize these areas and prescribe alternative forms of sewage treatment.

NR 83(d)(2)(ff)

Municipal shoreland ordinances may require or allow alternative methods of sewage disposal, such as holding tanks, privies, electric or gas incinerators, biological and/or tertiary waste treatment plants or land disposal systems, provided such facilities meet the standards, criteria, rules, and regulations of Minnesota Pollution Control Agency and the Minnesota Department of Health.

A holding tank is a sealed system. Instead of wastes being continually discharged into the soil, they are collected in a tank. The tank must be pumped by a commercial collector when full to prevent back-up into the dwelling. The wastes are then either taken to a municipal disposal plant for treatment, or distributed on a suitable land disposal site.

A distinct advantage of this system is that it allows land with soil limitations to be developed. A disadvantage is that periodic pumping can be expensive. Such systems are most feasible where use of the dwelling is light and shower and bathing facilities are not installed. The volume of wastes must be kept at a minimum if the expense of pumping is to be held at a realistic level.

Privies, under certain conditions, may be more effective than septic tank systems. Soil conditions have little effect on the operation of privies, since the amount of liquids is usually not large. If a four-

foot soil separation exists between the bottom of the pit and ground water or bedrock, there is little danger of bacteriological contamination.

Other types of chemical or mechanical treatment facilities are available, but most have the disadvantage of high cost or low volume capacity. However, they may be necessary in order to develop certain sites. Information on these systems can be obtained from the Minnesota Pollution Control Agency. All such systems must be allowed by the PCA and Department of Health before they may be installed. These alternative systems should be required wherever site limitations prohibit the use of individual soil absorption systems.

Disposal of Other Wastes

NR 83(d)(2)(gg)

Public sewage disposal and commercial, agricultural, solid waste and industrial waste disposal, shall be subject to the standards, criteria, rules and regulations of the Minnesota Pollution Control Agency.

The Pollution Control Agency, by legislative act, is responsible for waste disposal. It would be impractical for the Division to establish additional standards for all of these disposal problems. Therefore, the standards developed by the PCA pertaining to these problems apply to shoreland areas.

V. SUBDIVISION REGULATIONS

Regulations governing the subdivision of lands must be included in a complete shoreland management program. These controls are designed to regulate the process and manner of parcelling large tracts of land into smaller lots for sale or building purposes. Under the shoreland program a subdivision is defined as improved or unimproved land or lands which are divided for the purpose of ready sale or lease, or divided successively within a five year period for the purpose of sale or lease, into three or more lots or parcels of less than five acres each, contiguous in area and which are under common ownership or control.

NR 83(e)(1) Land Suitability

No land shall be subdivided which is held unsuitable by the municipality for the proposed use because of flooding, inadequate drainage, soil and rock formations with severe limitations for development, severe erosion potential, unfavorable topography, inadequate water supply or sewage disposal capabilities, or any other feature likely to be harmful to the health, safety, or welfare of the future residents of the proposed subdivision or of the community.

Lands which are unsuitable for development should not be allowed to be platted. Once such lands are platted and lots sold to individuals, it is a much more difficult task to prevent development. Court decisions on zoning stress that a property owner cannot be denied all reasonable uses of his land. Once land is parcelled into relatively small lots, the only economic use remaining is for residential development. If unsuitable areas are not allowed to be platted, the land can be retained in large tracts,

making other activities such as agriculture and forestry reasonable alternative uses.

A measure of consumer protection can also be achieved by requiring land suitability for platting. This places the burden of proof upon the subdivider, rather than the purchaser of an individual lot. Subdivision controls can require that each lot in a proposed subdivision contain an adequate building site. Then a buyer is assured that he actually can develop his lot after purchase. Until now, there has been no assurance of this from the local or state levels of government.

NR 83(e)(2) Inconsistent Plats Reviewed By Commissioner

All plats which are inconsistent with the municipal shoreland ordinance shall be reviewed by the Commissioner before approval by the

municipality may be granted. Such review shall require that the proposed plats be received by the Commissioner at least ten (10) days before a hearing is called by the municipality for consideration of approval of a final plat.

The intent of this provision is to allow the Department of Natural Resources time to review any plats which request a relaxation of the provisions of the shoreland ordinance. Then if the Department feels it should comment on the proposal, there is the opportunity to participate in the public hearing.

NR 83(e)(3) Copies of Plats Supplied to Commissioner

Copies of all plats within shoreland areas shall be submitted to the Commissioner within ten (10) days of final approval by the municipality.

To provide a basis for continuing shoreland management, the Department is requiring municipalities to submit copies of all approved plats in shoreland areas. In this way, we can keep informed of shoreland platting trends to use as a basis for future management decisions.

NR 83(e)(4) Planned Unit Development

Altered zoning standards may be allowed as exceptions to the municipal shoreland ordinance for planned unit developments provided:

(aa) Preliminary plans shall be approved by the Commissioner prior to their approval by the municipality.

(bb) Central sewage facilities shall be installed which at least meet the applicable standards, criteria, rules, or regulations of the Minnesota Department of Health and the Pollution Control Agency or the Planned Unit Development is connected to a municipal sanitary sewer.

(cc) Open space is preserved. This may be accomplished through the use of restrictive deed covenants, public dedications, or other methods.

(dd) That the following factors are carefully evaluated to ensure that the increased density of development is consistent with the resource limitations of the public water:

(i) Suitability of the site for the proposed use;

(ii) Physical and aesthetic impact of increased density;

(iii) Level of current development;

(iv) Amount and ownership of undeveloped shoreland;

(v) Levels and types of water surface use and public access; and

(vi) Possible effects on over-all public use.

(ee) Any commercial, recreational, community, or religious facility allowed as part of the planned unit development shall conform to all applicable federal and state regulations including, but not limited to the following:

(i) Licensing provisions or procedures;

(ii) Waste disposal regulations;

(iii) Water supply regulations;

(iv) Building codes;

(v) Safety regulations;

(vi) Regulations concerning the appropriation and use of Public Waters as defined in Minnesota Statutes 1974, Chapter 105; and

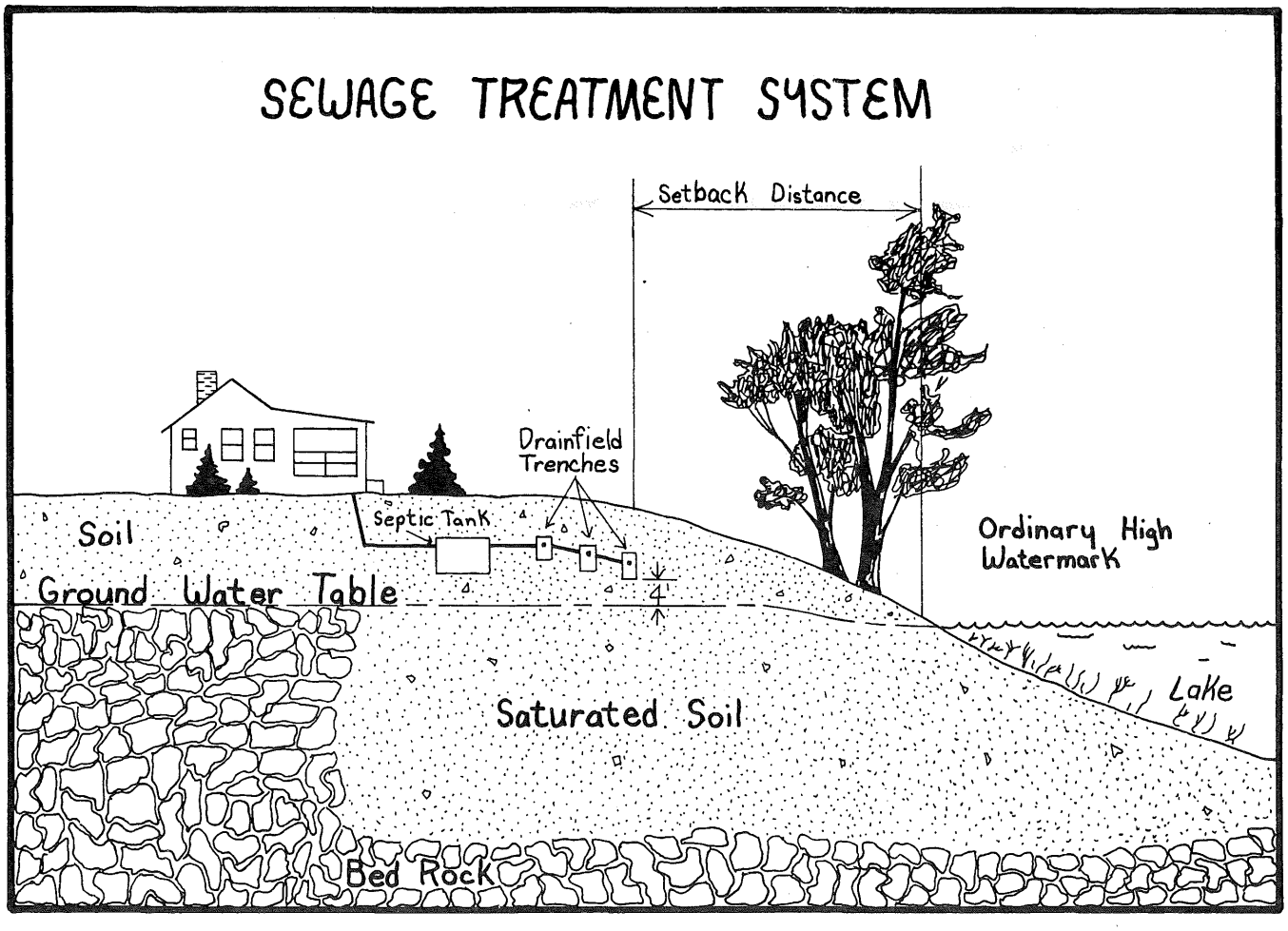
(vii) Applicable regulations of the Minnesota Environmental Quality Council.

(ff) The final plan for a planned unit development shall not be

modified, amended, repealed, or otherwise altered unless approved in writing by the developer, the municipality, and the Commissioner.

(gg) There are centralized shoreline recreation facilities such as beaches, docks and boat launching facilities.

Planned unit or cluster development is a type of development which places housing units into compact groupings while providing a network of commonly owned or dedicated open space. This arrangement is much more compatible with the physical resource, provided certain conditions are met. By requiring a centralized sewage system, open space and centralized recreation facilities, the impact of development on the resource



can be minimized, even if the subdivision is developed to a greater density than is allowed under an individual lot subdivision.

The Department has not established specific standards for evaluating planned unit development proposals. It is felt that each proposal should be evaluated on an individual basis to take into account local conditions. The concept of planned unit development and the basic guidelines used by the Department in evaluating such developments are fully explained in Shoreland Management Supplementary Report No. 4.