

Elements and Explanation of the SHORELAND RULES and REGULATIONS

SHORELAND
MANAGEMENT

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STATE OF MINNESOTA

**Supplementary
Report
No. 2**

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MINNESOTA
DEPARTMENT OF NATURAL RESOURCES
Division of Waters, Soils and Minerals

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I. 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. Scattered 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 water frontage are subdivided into smaller parcels. Frontage lands 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. Action is being taken now to meet these problems and preserve our waters and shorelands for future generations.

Legislative Action

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The 1969 session of the Minnesota Legislature passed a law, Chapter 777, amending Minnesota Statutes 1967, Chapter 105, which requires 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 the economic and natural environmental values of shorelands, and provide for the wise utilization of water and related land resources of the state.¹

Because of the importance of shoreland management to all the citizens of the state, the legislature also directed the Commissioner of Natural Resources to establish standards and criteria for shoreland development. These standards will serve as minimum guidelines for county shoreland management ordinances which must be adopted no later than July 1, 1972. The Commissioner is authorized to enact the statewide standards into ordinance form for the counties which do not meet this deadline.

Jurisdiction

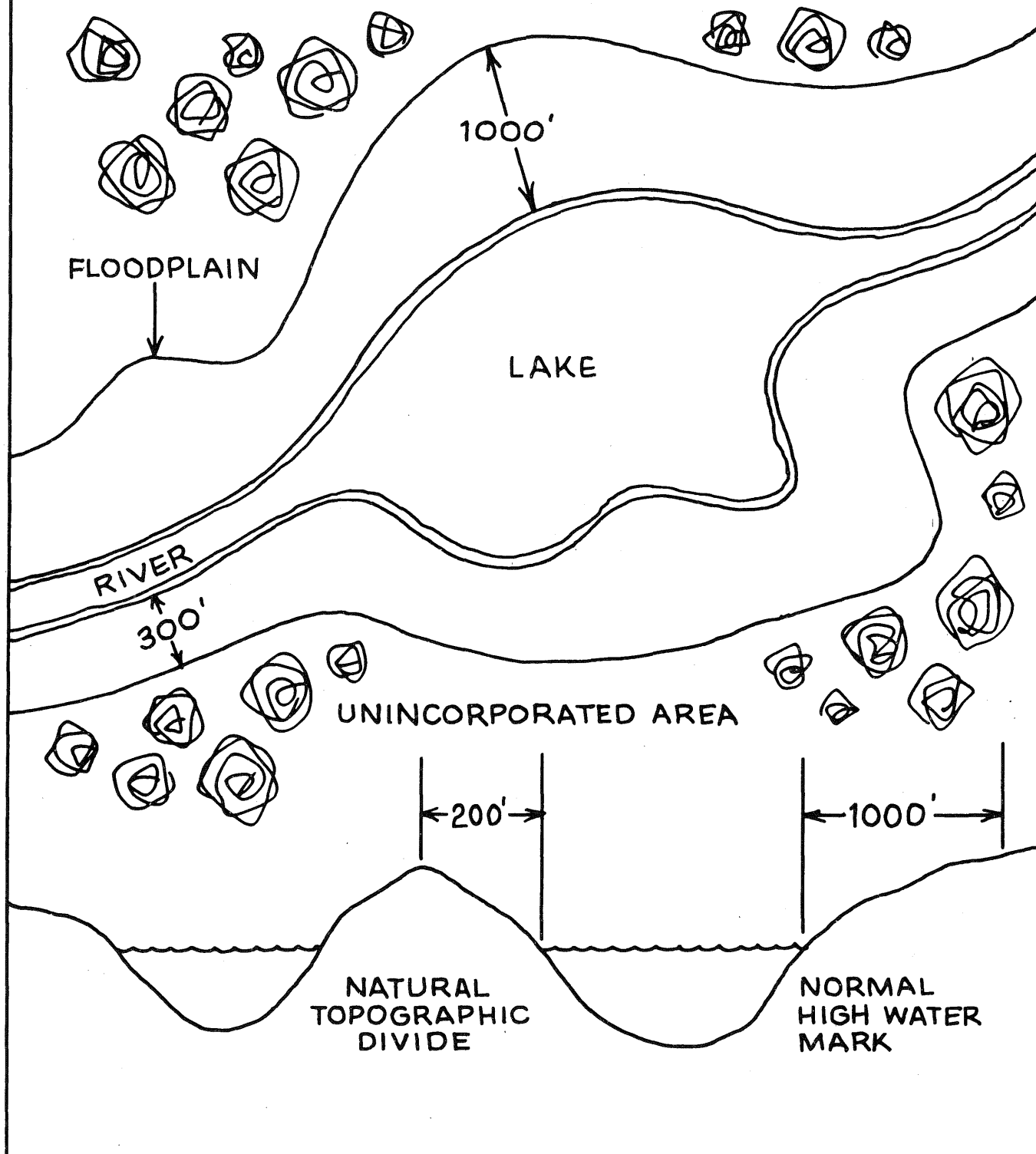
The shoreland management standards will pertain to the shorelands of public waters located in unincorporated areas.

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

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

SHORELAND STATUTORY AUTHORIZATION

LAND WITHIN 1000 FEET FROM THE NORMAL HIGH WATER-MARK 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.



"Public water" is defined by statute as any body of water capable of substantial beneficial public use. For the purposes of this program this can be interpreted as any body of water which has the potential to support 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. A lower limit of 25 acres for lakes, ponds and flowages eliminates approximately one-third of the lakes listed in An Inventory of Minnesota Lakes. Only 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, to encourage development which is compatible with the shoreland resources, and to 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 the counties and the residents of the state as a whole. These controls include:

1. Regulations governing the type and placement of sanitary and waste disposal facilities;
2. Regulations governing the size and length of water frontage of lots suitable for building sites;

3. Regulations governing the placement of structures in relation to shorelines and roads;
4. Regulations governing alteration and preservation of the natural landscape; and
5. Regulations governing the subdivision of shoreland areas.

The remainder of this report is an explanation of the goals and objectives of the Statewide Standards and Criteria for Management of Shoreland Areas of Minnesota, officially promulgated by the Commissioner of Natural Resources² on June 30, 1970. Index numbers for passages within the commentary, such as "CONS 72(a)", refer to quotations from the statewide standards.

²The Department of Conservation was renamed the Department of Natural Resources by LAWS 1969, Chapter 1129, Article 3.

POORLY PLANNED DEVELOPMENT CONTRIBUTING TO LAKE POLLUTION...



**POLLUTION! FROM GROUND WATER CONTAMINATION,
LACK OF CENTRAL SEWER SYSTEM.**

II. SANITARY PROVISIONS

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

Water Supply Facilities

CONS 72(a) WATER SUPPLY

- (1) Any public or private supply of water for domestic purposes must conform to Minnesota Department of Health standards for water quality.
- (2) 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 procedures established in Statewide Standards and Criteria for the Management of Flood Plain Areas of Minnesota

Standards for water supply quality have been established by the Minnesota Department of Health. These standards are designed to prevent contamination of 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 and geologic formations.

Sewage Disposal Facilities

The regulation of sewage facilities is particularly important in shoreland management, since inadequate disposal of wastes is generally considered a major problem and is essential to the control of pollution. Comprehensive standards for waste disposal have been established by the Department of Health and the Minnesota Pollution Control Agency in terms of construction and maintenance of individual sewage disposal systems and effluent standards for municipal

and industrial waste discharges. The Division of Waters, Soils and Minerals does not have the facilities, or the funds to conduct studies of its own to develop sewage disposal standards for shoreland areas. Therefore, this program will generally follow these existing standards.

CONS 72(b) 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.

- (1) Public or municipal collection and treatment facilities must be used where feasible.*
- (2) 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.*
- (3) 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 safety 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.*

Individual sewage disposal 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 suggested for domestic systems. For example, 300

gallons of raw sewage daily requires that the septic tank size must be 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 or dry well) is based upon the results of percolation tests.³ Properly conducted percolation tests indicate how rapidly the soil will absorb the septic tank effluent. If the soil becomes saturated, the effluent will not be absorbed. It will flow with the ground water or 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, nutrient enrichment of public waters in addition to contamination has become a real nuisance.

³ For more information on the proper construction of individual sewage disposal systems see:

Extension Bulletin No. 304, "Town and Country Sewage Systems", by Dennis M. Ryan and Roger E. Machmeier, Agricultural Extension Service, University of Minnesota.

Nutrient enrichment results when septic tank effluent seeps into bodies of surface water. The nutrients- primarily nitrogen and phosphorous compounds - not necessarily in contaminative concentrations, induce algae growth in much the same way as fertilizers stimulate the growth of crops. 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, therefore, has established its own standards for the location of soil absorption systems in an attempt to alleviate, or at least curtail, this growing problem:

CONS 72(b) (4) *Septic tank and soil absorption systems shall be set back from the normal high water mark in accordance with class of public waters:*

- (aa) On Natural Environment Lakes and Streams, at least 150 feet;*
- (bb) On Recreational Development Lakes, at least 75 feet;*
- (cc) On General Development Lakes and Streams, at least 50 feet.*

A recent 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 occurred as much as 140 feet from the source of the effluent discharge.⁴ The results of this study were used to determine the sanitary setback for Natural Environment lakes and streams - 150 feet from the normal high water mark. This setback provides a reasonable amount of assurance that no nutrient enrichment from individual sewage disposal systems will occur on these lakes.

⁴ Schroepfer, George J. and Robert C. Polta, Travel of Nitrogen Compounds in Soils, Sanitary Engineering Report 172-S, University of Minnesota, October 1, 1969, p. X-3.

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 the operation of individual sewage systems (see commentary following CONS 72 (b)(5)), so a high degree of protection is appropriate.⁵

A setback of 75 feet from the normal high water mark was established for Recreational Development lakes. These lakes are better suited for development in terms of soils and elevation above ground water. These lakes have the potential of being developed for seasonal home use in the future. They would then be affected by other sources of pollution, such as outboard motors, swimming beaches and surface runoff from development sites. It would be unreasonable to severely regulate soil absorption systems while these other sources of pollution are largely uncontrolled.

General Development lakes present another problem. These lakes are already heavily developed, usually in very small lots. Setback provisions must consider the existing lot sizes to be reasonable. In addition these lakes in many cases are bordered by municipalities where effluent from treatment plants is a problem for water quality. 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 disposal systems:

⁵ For a discussion of the classification criteria see;

Shoreland Management Supplementary Report No. 1, "Classification Scheme for Public Waters", Department of Natural Resources, Division of Waters, Soils and Minerals, April 1971.

CONS 72(b) (5) *Septic tank and soil absorption or similar systems shall not be acceptable for disposal of domestic sewage for developments on lots adjacent to public waters under the following circumstances:*

- (aa) Low swampy areas or areas subject to recurrent flooding; or*
- (bb) Areas where the highest known ground water table is within four feet of the bottom of the soil absorption system; or*
- (cc) Areas of exposed bedrock or shallow bedrock within four feet of the bottom of the soil absorption system or where subsurface conditions significantly restrict percolation of the effluent; or*
- (dd) Areas of ground slope where there is danger of seepage of the effluent onto the surface of the ground.*

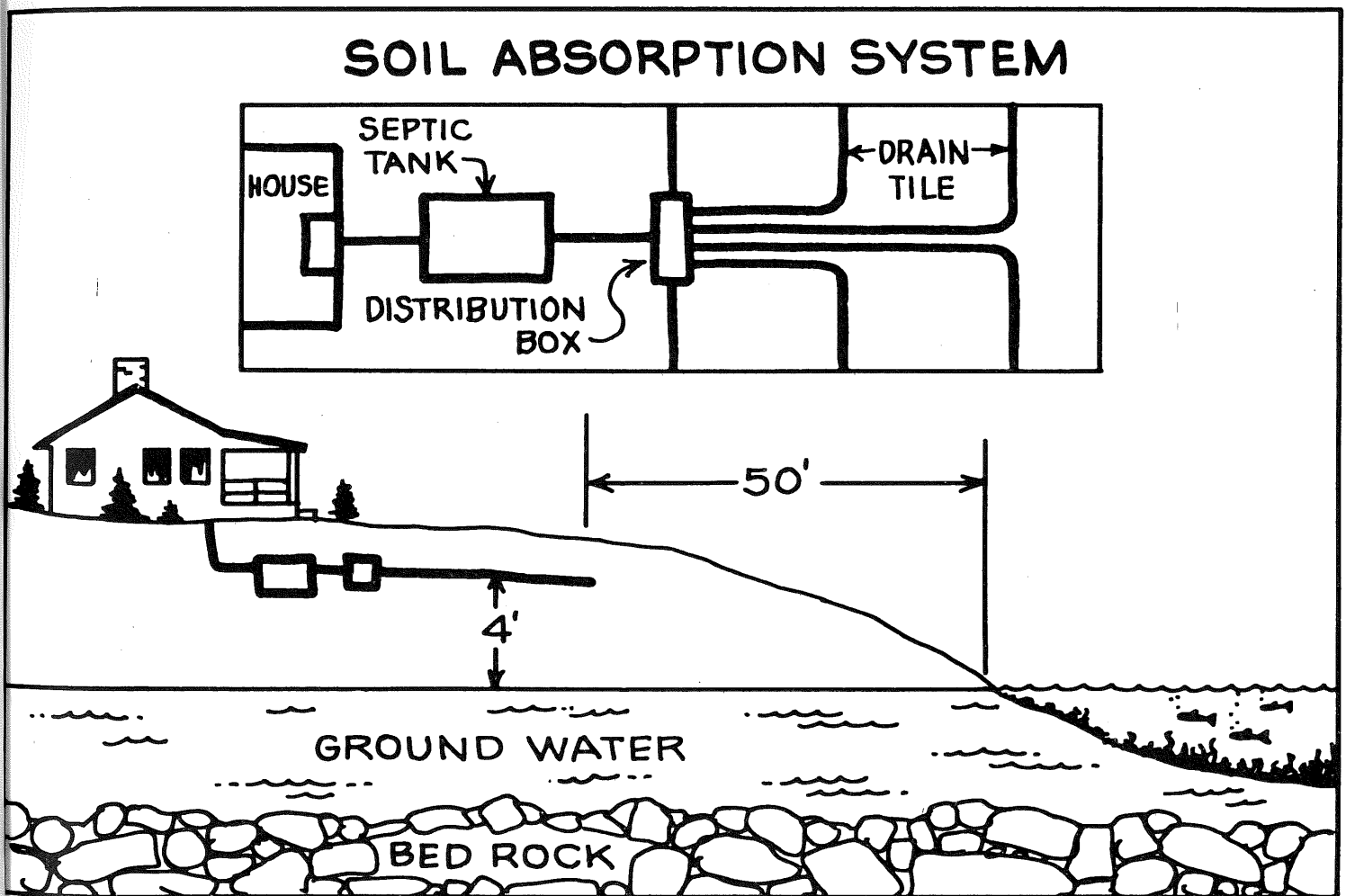
These provisions are included to insure that soil absorption systems will not be installed in areas where they will not function properly, even though they may meet setback requirements. A major job of the zoning administrator (or sanitarian) in the administration of the sanitary provisions will be site 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 absorb 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.⁶

⁶ U. S. Department of Health, Education and Welfare, Public Health Service, Publication No. 526, Manual of Septic-Tank Practice, Revised 1967, p. 4.

This distance is necessary to prevent premature failure because of continuously wet conditions and to provide for suitable adsorption of the nutrient phosphorus. Soil particles adsorb phosphorous if the effluent is retained in contact with the soil long enough. Soil absorption trenches usually are more successful than seepage pits since the effluent is distributed near the soil surface allowing for evaporation and greater soil filtration.



Rock formations or other impermeable strata should also be greater than 4 feet below the bottom of the system to provide enough soil filtration.

Ground slope is another important consideration. Where slopes are excessive, the effluent can seep onto the ground surface and pose a serious health hazard. Excessive slope values vary with the permeability of the soil. A tight soil is characterized by uniform capillary action in all directions. Thus, there is a relatively large amount of lateral seepage, and greater danger of surface runoff. Coarse or loose soils are characterized by rapid gravity flow downward. The effluent does not seep laterally for very substantial distances, thus reducing the danger of surface runoff.

The Soils Department of the University of Wisconsin has developed some critical slope values, based upon percolation rates. These values are as follows:

<u>Percolation Rate</u>	<u>Critical Slope</u>
3 min. or less	20%
3 - 45 min.	15%
45 - 60 min.	10%

A soil absorption system is unsuitable in areas exceeding these slope values for the specified percolation rate.

CONS 75(c) NONCONFORMING USES

Under authority of Minnesota Statutes 1969 § 394.36, counties may adopt provisions to regulate and control, reduce the number or extent of, or gradually eliminate nonconforming and substandard uses. The counties shall provide for the gradual elimination of sanitary facilities inconsistent with CONS 72(b)(2), (b)(3) and (b)(5) over a period of time not to exceed five (5) years from the date of enactment of the county ordinance.

Existing sanitary systems which do not meet proper standards can pose serious health hazards as well as pollution problems. For these reasons, all

A holding tank is a sealed disposal 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. Usually the wastes are then taken to a municipal disposal plant for treatment.

A distinct advantage of this system is that it allows land with soil limitations to be developed. A disadvantage is that periodic pumping may 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 approved 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

- CONS 72(b) (7) *Public sewage disposal, commercial, agricultural and industrial waste disposal, and the location of solid waste disposal sites 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 these other waste disposal problems. Therefore, the standards developed by the PCA pertaining to these problems will apply to shoreland areas.

III. ZONING PROVISIONS

Zoning provisions control the location of land uses (residential, commercial, industrial, etc.) and the manner of use (lot sizes, building setbacks, etc.). The shoreland standards focus primarily on the manner of use. The purposes are 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

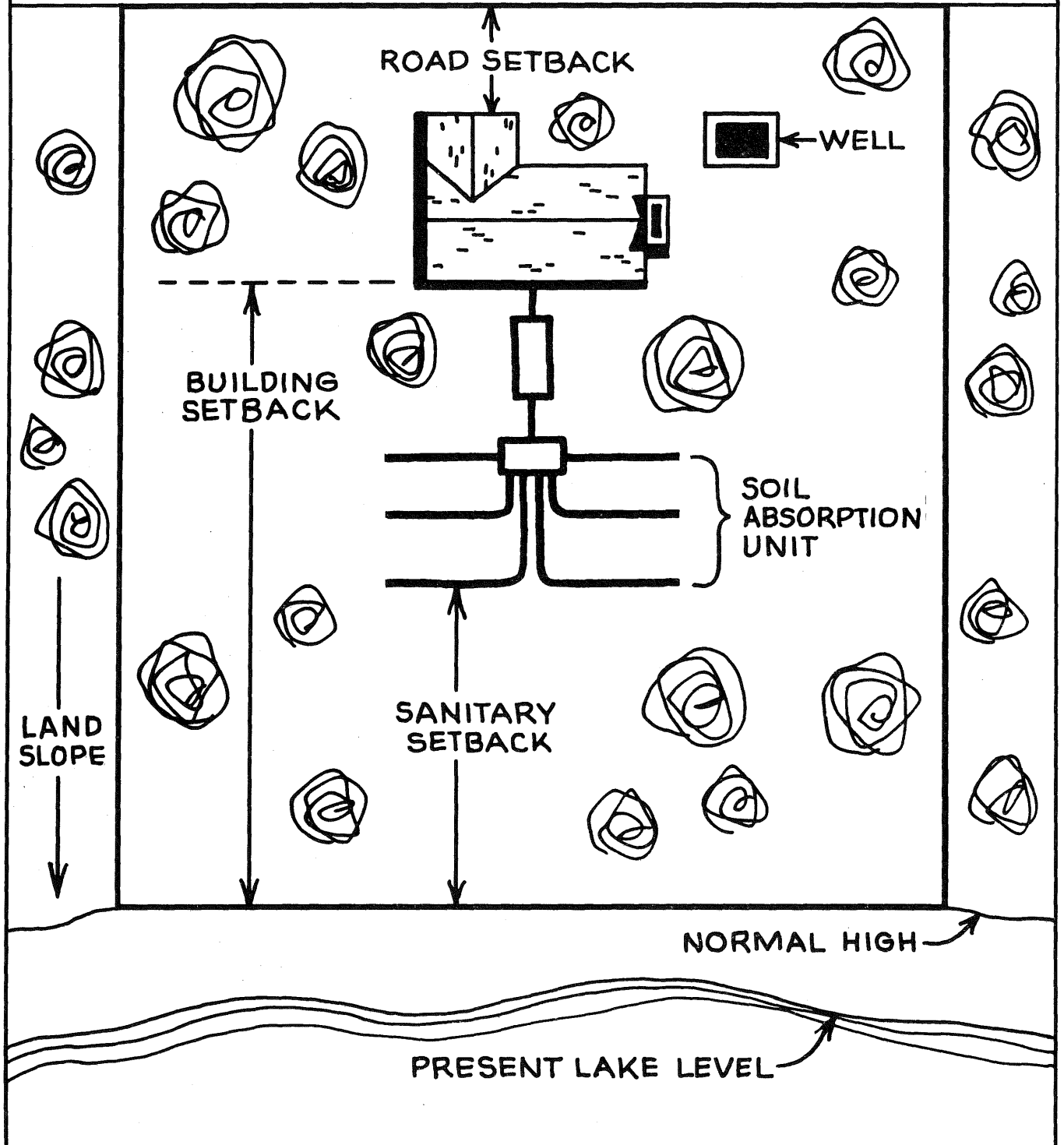
Minimum lot sizes are necessary to insure a level of protection for each class of public waters consistent with management goals and objectives. Two basic considerations in determining a proper minimum size are evident: one, to insure that a lot will be large enough to meet the various dimensional standards, especially for sanitary facilities; and two, to set an overall density of development for a given body of water. This is possible by incorporating a minimum lot width with lot area.

CONS 73(a) LOT SIZE

- (1) *For lots intended as residential building sites platted or created by metes and bounds description after the date of enactment of the county shoreland ordinance, the minimum size shall be;*
 - (aa) *For Natural Environment Lakes and Streams: at least 80,000 square feet (approximately 2 acres) in area and at least 200 feet in width at the building line and at least 200 feet in width at the water line for lots abutting a public water.*

ZONING PROVISIONS

COUNTY ROAD



- (bb) *For Recreational Development Lakes:
at least 40,000 square feet in area
(approximately 1 acre) and at least 150
feet in width at the building line and
at least 150 feet in width at the water
line for lots abutting a public water.*
- (cc) *For General Development Lakes and Streams:
at least 20,000 square feet in area and
at least 100 feet in width at the building
line and at least 100 feet in width at the
water line for lots abutting a public water.*

The rationale for the minimum lot sizes is easier to explain by starting with the bodies of water that are to receive the least restrict 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, ability to absorb high density development, and proximity to municipalities (see Supplementary Report No. 1). Hence, spatial arrangement is the relevant consideration for determining a minimum lot size.

Most lakeshore homes employ the soil absorption method of sewage disposal. A drainfield installed in accordance with the Department of Health specifications will require about 2,000 square feet. This calculation assumes a percolation rate of 60 minutes for water to fall one inch and a minimum number of bedrooms specified in Department of Health regulations. 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 portions of lots in shoreland areas would not be developable, due to lack of adequate height above water table or steep topography. To provide a reasonable measure of assurance that lots will have enough area to be developed in accordance with proper sanitary facilities, the lot size was set at 20,000 square feet for General Development lakes.

A minimum lot width of 100 feet was determined upon consideration of existing densities of development. A frequency distribution showed that only

4 percent of all government lots (less than 40 acre parcels adjoining lakes) were developed to an average density of 100 feet of shoreline per cabin or less.⁷ The implication is the people tend not to crowd together at greater densities. This minimum lot width for General Development lakes and streams provides a minimum amount of 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.

Forty thousand square feet and 150 feet of water frontage are considered necessary to achieve a higher degree of protection for Recreational Development lakes. Here a main goal is to maintain a density of development on the shore which will minimize deterioration on the shorelands and the resultant effects on the water space.

For Natural Environment lakes a minimum lot size of 80,000 square feet and 200 feet of frontage are considered necessary to provide maximum protection. These lakes are usually less suited to shoreland development and presently have little or no development. Possible conflicts between a large lot size and existing patterns will be held to a minimum. This large lot size will limit development around these lakes to avoid problems of over-crowding and unwise development on fragile shorelands.

⁷ Data gathered by the Minnesota Lakeshore Development Study, Department of Geography, University of Minnesota. See summary report Part I, Minnesota's Lakeshore: Resources, Development, Policy Needs. "Average density" was calculated by dividing the total length of shoreline of the government lot by the number of dwellings located in the lot. This method of determining densities should not be confused with average lot size. There are no consistent patterns of platting in the state, and there is no practical way of recording and comparing individual lot sizes from assessment records. For these reasons, then, average density was used.

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.

CONS 73(c) (2) *In addition to the requirements of CONS 73(a)(1) lot size shall be increased so that the total area of all proposed structures on a lot shall not equal more than 30 percent of the lot area.*

This provision is designed to prevent large commercial and industrial structures on single lots. Open space amounting to 70 percent of the lot is required. The goal is to preserve the rural character of lakes and the value of adjacent properties wherever commercial or industrial uses locate within shore-land areas.

CONS 73(a) (3) *Substandard Lots*

Lots of record in the office of the County Register of Deeds (or Registrar of Titles) prior to the date of enactment of the county ordinance which do not meet the requirements of CONS 73(a)(1) 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 county ordinance are complied with insofar as practicable. Each county ordinance may set a minimum size for substandard lots consistent with the purposes and intent of these standards and criteria.

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 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.

CONS 73(a) (4) *Exceptions and Variances*

- (aa) *Lot sizes smaller than those specified in CONS 73(a)(1) may be permitted for planned cluster developments under the provisions set forth in CONS 74(d).*
- (bb) *Lot sizes smaller than those specified in CONS 73(a)(1) may be permitted for areas served by a public sewer. The lot size shall be determined by the Commissioner after an evaluation of the individual body of water and its capabilities to support a greater density of development.*

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, smaller building sites may be permitted (see CONS 74(d)).

Sewered subdivisions are another exception. This type of development will probably be found close to urban areas where the market demand is high enough to absorb the added cost of a sewerage system. Land values in urban areas tend to make large lot sizes prohibitive to 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.

CONS 73(b) (1) Public Waters Class

The following minimum setbacks for each class of public waters shall apply to all structures except boat houses, piers and docks:

- (aa) On Natural Environment Lakes and Streams, at least 200 feet from the normal high water mark.*
- (bb) On Recreational Development Lakes, at least 100 feet from the normal high water mark.*
- (cc) On General Development Lakes and Streams, at least 75 feet from the normal high water mark.*
- (dd) Furthermore no structure shall be erected in the floodway of a stream as defined in M.S. 1969 § 104.02*

Setbacks from the normal high water mark reflect two basic considerations: adequate spacing for pollution safeguards and preservation of the natural shoreline. The established 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 a lakeshore lot, then, is to place the well behind the cabin with the sewage disposal system downslope. The difference between the minimum building setback and the disposal system setback is 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 intrinsic 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 uses 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 normal 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.

CONS 73(b) (2) *High Water Elevation*

In addition to the setback requirements of CONS 73(b)(1) above:

- (aa) For lakes, ponds or flowages: No structure except boathouses, piers and docks shall be placed at an elevation such that the lowest floor, including a basement, is less than three feet above the highest known water level. In those instances where sufficient data on known high water levels are not available, the elevation of the line of permanent terrestrial vegetation shall be used as the estimated high water elevation. When fill is required to meet this elevation the fill shall be allowed to stabilize before construction is begun.*
- (bb) For Rivers or Streams: Structures shall be placed at an elevation consistent with any applicable local flood plain management ordinances. Where no ordinances*

exist, the elevation to which the lowest floor of a structure, including a basement, shall be placed, shall be determined after 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 pose adequate building sites, because of high ground water and fluctuating lake levels. By requiring cabins to be placed at least 3 feet above the highest known lake level, it is hoped to avoid these problems. Private investment in shoreland development will be protected and water quality will be preserved when cabins 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.

CONS 73(b) (3) *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 30 feet from the right-of-way line of any town road, public street, or others not classified.

Road setbacks are largely a safety matter 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 rights-of-way are widened. Since they can be used to promote orderly development in shoreland areas, they should be included in each local ordinance.

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

CONS 73(b) (4) *Exceptions*

- (aa) *Boat houses may be located up to the normal high water mark provided they are not used for habitation and they do not contain sanitary facilities.*
- (bb) *Location of piers and docks shall be controlled by applicable state and local regulations.*

CONS 73(b) (5) *Variances to the setback requirements of CONS 73(b)(1) may be granted by the county under the following circumstances provided such structures are not within a floodway:*

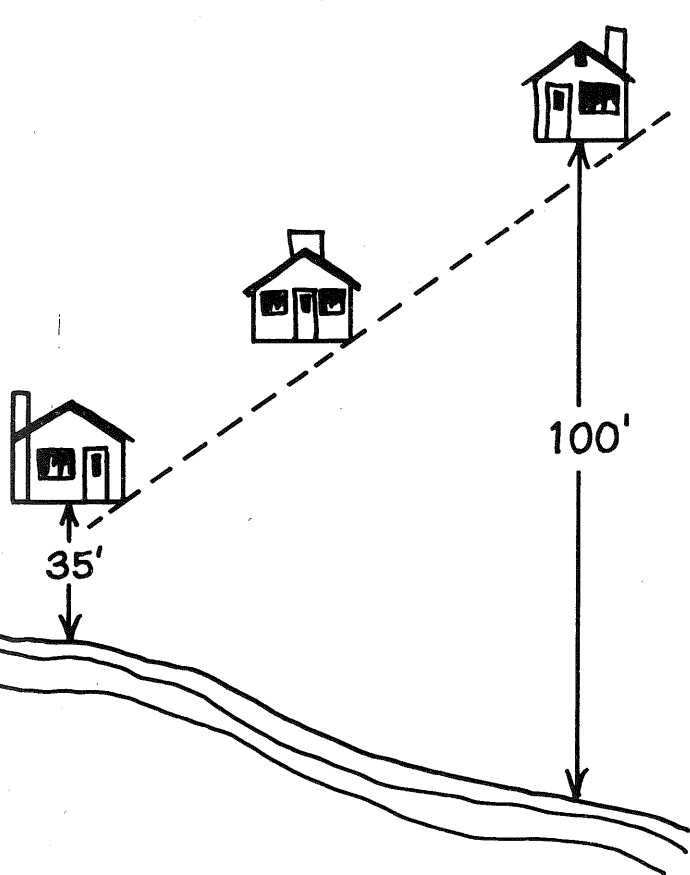
- (aa) *Where structures incorporate a method of sewage disposal other than soil absorption; or*
- (bb) *Where development exists on both sides of a proposed building site, setbacks may be varied to conform to the existing setbacks; or*
- (cc) *In areas of unusual topography or substantial elevation above the lake level, setbacks may be varied to allow a riparian owner reasonable use and enjoyment of his property.*

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 to allow reasonable development and to treat equally all property owners in similar situations. Reasonability infers that the exceptions and variances do not circumvent other restrictions, such as sewage disposal

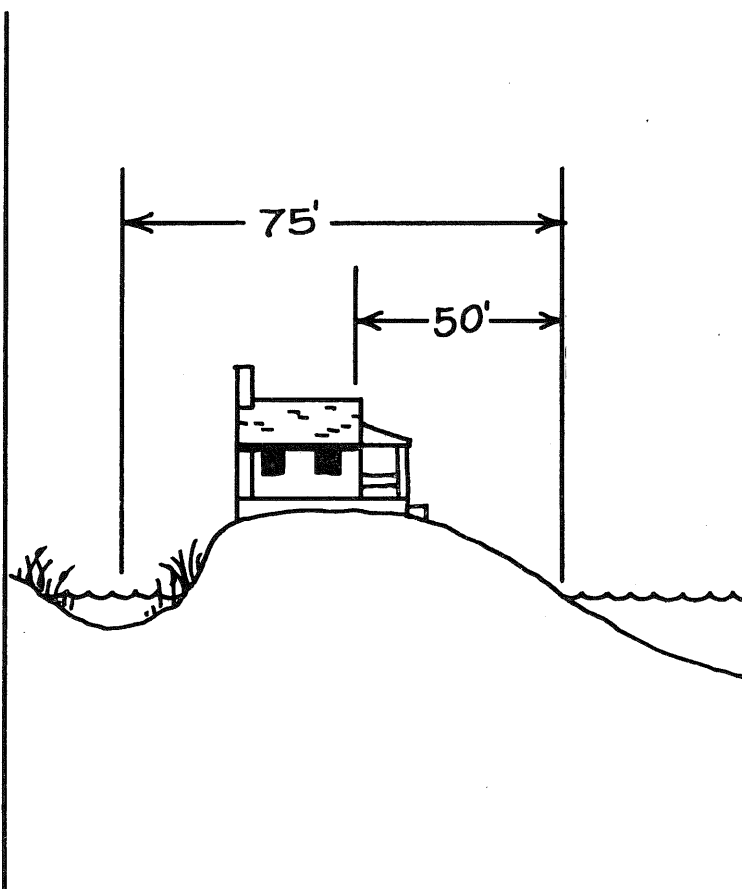
standards, and will not interfere with public use of the body of water, such as placing docks so as to obstruct navigation.

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

VARIANCES OF BUILDING SETBACK



(bb) Established Setback Line



(cc) Unusual Topography

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 base would not materially contribute to the goals of this program.

Local relief will probably be the main reason for granting variances to the 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.

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 the lakes to maintain a recreational atmosphere.

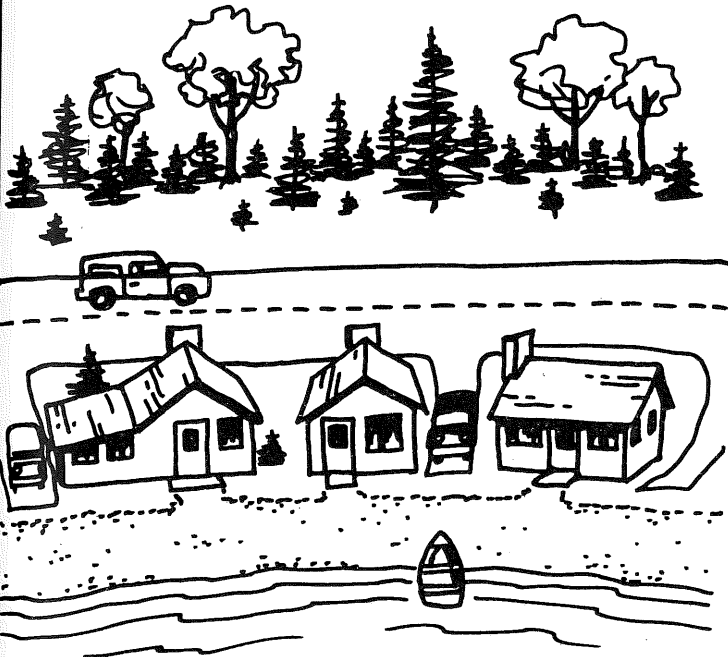
CONS 73(c) SHORELAND ALTERATIONS

- (1) *Natural vegetation in shoreland areas shall be preserved insofar as practical and reasonable to retard surface runoff and soil erosion, to utilize excess nutrients in the soil to alleviate pollution problems, and to provide sufficient cover to screen cars, dwellings, and other structures from view from the lake.*

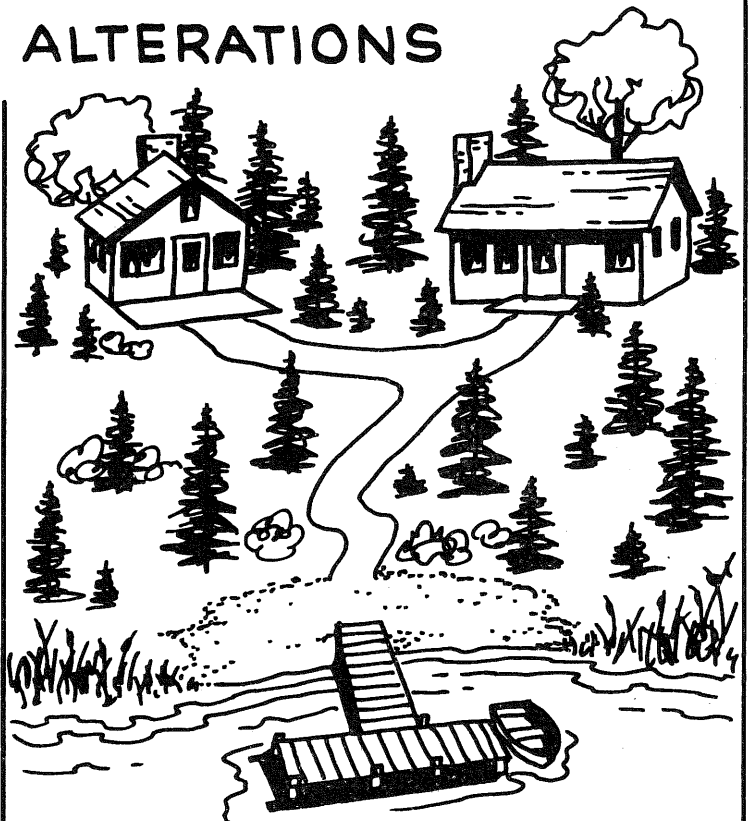
Natural vegetative cover is important for shoreland protection. Its value to achieve the goals outlined above cannot be disputed. What does remain in question is how to require the preservation of the vegetation without being overly restrictive of the individual property owner's rights.

Vegetation should be preserved as much 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 would certainly be reasonable to clear enough vegetation to provide a view of the lake.

SHORELAND ALTERATIONS



BAD



GOOD

Another question raised here is the enforceability of these provisions. It would be a full time job for the counties to patrol lakeshore areas every summer to find any violations. The proper approach is to educate the public on the need for preservation of the natural vegetation and stress voluntary compliance. For that reason, the statewide standards were worded in a general manner.

One alternative for zoning provisions is offered in the state model ordinance. This approach requires vegetation to be preserved in a strip paralleling the shoreline with exceptions made for a view corridor and silvicultural thinning.

CONS 73(c) (2) *Grading and filling in shoreland areas or any alterations of the natural topography where the slope of the land is toward a public water shall be controlled by the county shoreland ordinance to prevent erosion and siltation of public waters and impairment of fish and aquatic life.*

Similar controls also apply to grading and filling in shoreland areas. The intended purpose is not so much prohibitive, but to maintain an inventory on these activities. Specific controls are not cited because this is another area where flexibility is necessary for proper administration. Counties 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 county ordinance should specify some exact conditions for the permit evaluations. These conditions could be based upon recommendations of the local Soil Conservation Service agents.

CONS 73(c) (3) *Alterations of Beds of Public Waters*

(aa) *Any work which will change or diminish the course, current or cross-section of a public water must be approved by the Commissioner before the work is begun. This includes construction of channels and ditches, lagooning, dredging of lake bottom for*

the removal of muck, silt or weeds, and filling in the lakebed, including low lying marsh areas. Approval shall be construed to mean the issuance by the Commissioner of a permit under the procedures of Minnesota Statutes, 1969 § 105.44 and other related statutes.

- (bb) *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 county shoreland ordinance. Permission for such excavations may be given only after the Commissioner has approved the proposed connection to public waters. Approval will be given only if the proposed work is consistent with applicable state regulations for work in the beds of public waters.*

Permits for work in the beds of public waters are required by the Division of Waters, Soils and Minerals. 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 control is not being delegated to the counties to enforce these activities. The counties' role is limited to controlling alterations on the land. If each county 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 progresses, and the public interest in these areas can be safeguarded.

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:

CONS 73(d) EXCEPTIONS TO CONS 73 ZONING PROVISIONS

Counties may, under special circumstances and with the Commissioner's approval, adopt shore-land management ordinances which are not in strict conformity with CONS 73 "Zoning Provisions" provided that the proposed ordinance is based upon individual public water capabilities pursuant to CONS 71(a), and that the purposes of Minnesota Statutes § 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% 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% 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. 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. Subdivision controls are not directly concerned with the uses of lands, but are concerned with the degree of development which might be permitted on certain shorelands. Under this 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.

CONS 74(a) LAND SUITABILITY

No land shall be subdivided which is held unsuitable by the county 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 a property owner cannot be denied all reasonable uses of his land. Once land is parcelled, the only economic use remaining is for residential development. By

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denying a proposed plat for unsuitable areas, the land can be retained in a large tract and better use made of it, such as agricultural or forestry.

A measure of consumer protection can also be achieved by requiring land suitability for platting. This requires the burden of proof placed 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 regulation.

CONS 74(b) INCONSISTENT PLATS REVIEWED BY COMMISSIONER

All plats which are inconsistent with the county shoreland ordinance shall be reviewed by the Commissioner before final county approval may be granted. Such review shall require that proposed plats be received by the Commissioner at least ten (10) days before a hearing is called by the county 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 represent itself at the public hearing.

CONS 74(c) COPIES OF PLATS SUPPLIED TO COMMISSIONER

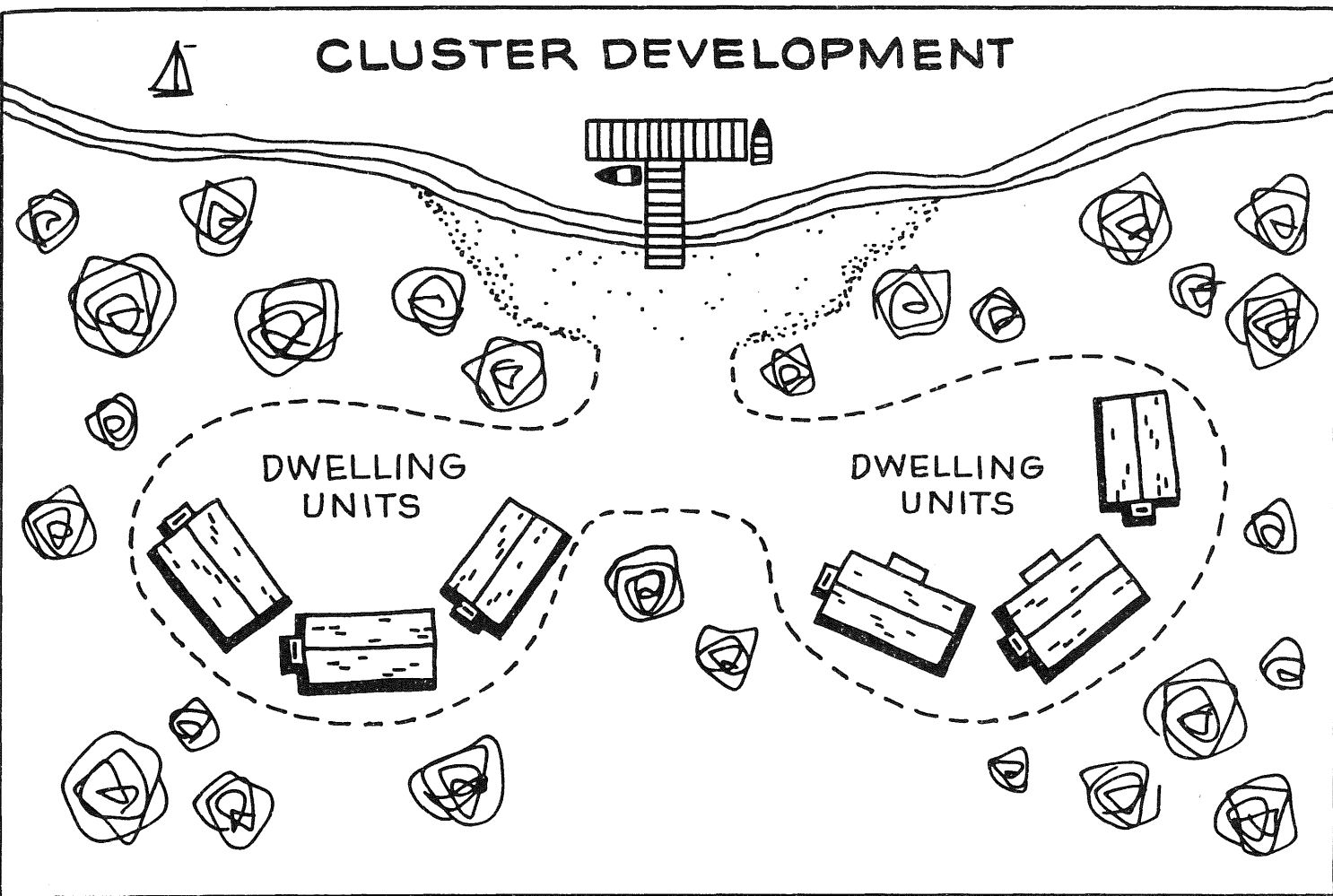
Copies of all plats within shoreland areas approved by the county shall be submitted to the Commissioner within ten (10) days of approval by the county.

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

CONS 74(d) CLUSTER DEVELOPMENT

Smaller lot sizes may be allowed as variances to the county shoreland ordinance for planned cluster developments provided:

- (1) Preliminary plans are approved by the Commissioner prior to their enactment by the county.*
- (2) Central sewage facilities are installed which at least meet the applicable standards, criteria, rules or regulations of the Pollution Control Agency.*
- (3) Open space is preserved. This may be accomplished through the use of restrictive deed covenants, public dedication, or other methods.*



- (4) *There is not more than one centralized boat launching facility for each cluster.*

Cluster development is a type of subdivision development which places housing units into compact groupings while providing a network of commonly owned or dedicated open space. This is a type of development which is much more compatible with the physical resource, provided certain conditions are met. By requiring a centralized sewage system, open space, and only one water recreation facility, the impact of development on the resource can be minimized, even if the subdivision is developed to a greater density than is allowed under individual lot restrictions.

The Department has not yet established standards for evaluating these cluster plans. It is felt that each proposal should be evaluated on an individual basis to take into account local conditions. Once the Department gains experience in cluster development evaluation, it can adopt standards and allow the review to be conducted by the individual county. Until this time, specific lot sizes will be determined upon an individual case basis.

V. POSTSCRIPT

The Statewide Standards and Criteria for Management of Shoreland Areas of Minnesota are development standards for privately owned shoreland designed to guide development to a level compatible with the physical resources. The goals and objectives of the individual standards are interwoven and complex. It is difficult to attribute specific goals to specific standards. However, this report attempts to explain individual provisions and the goals they are designed to achieve.

It is the responsibility of each county to adopt a shoreland management ordinance by July 1, 1972, which meets the statewide minimum standards. These standards can be shaped into an acceptable ordinance in a number of ways. The model ordinance contained in CONS 77 of the standards is one example. Each county should review its own land use problems, possibly with the aid of a consultant, to determine the approach best suited to its needs.

Ordinances must be adopted through the procedures prescribed in the Minnesota Statutes. Chapter 394 deals with the adoption of official land use controls and Chapter 505 deals with the platting of lands. Regulations governing county health units are contained in Chapter 145.

The county has a great deal of freedom in establishing land use and sanitary controls, provided their goals are to achieve valid public objectives. The county can establish more restrictive land use controls for shoreland areas than those called for in the statewide standards. County ordinances which exceed the state minimums will be considered acceptable, provided they do not conflict with the statewide public interest.

This series of Shoreland Management Supplementary Reports is designed to aid county officials in establishing shoreland management programs. The next report in this series will deal with the planning and legal procedures for adopting and administering local ordinances.

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