

AN INVESTIGATION OF LAKESHORE
LAND USE CONTROLS IN VERMONT

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ABSTRACT

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by William H. Bingham

The problem of controlling the burgeoning recreational development on and around the lakeshores of this country is becoming more and more vexing as the development process advances. The problems faced by Vermont in this area, although not as advanced, are just as perplexing as the ones found in more heavily populated areas.

To develop a more profound insight into these problems, an extensive series of interviews was conducted with all levels of individuals in the lake community from lake association officers to state officials.

The information gleaned from these interviews yielded ten basic problem areas, which are discussed in some detail throughout this thesis. The second chapter is devoted entirely to the construction of an ideal lake development, leaving the remainder of the paper to deal with a description of the present Vermont situation and the roles of various members of the lake community in either moving the lakes under their jurisdiction toward the model or preventing any further departure therefrom.

The levels upon which meaningful action could be taken in this area are (1) individual, (2) lake association, (3) town government, (4) regional planning, and (5) state government. The evidence gathered during the course of this study suggests that action taken on successively lower levels of jurisdiction are progressively more effective, primarily because the people taking the action are closest to the problem and

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have direct interest in seeing it solved. The job of the higher echelons of government, then, is to bring the problems to the attention of the lower echelons and provide the incentive for action.

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By

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CHAPTER I

DEFINITION OF THE PROBLEMS OF LAKESHORE LAND USE

Introduction

The external effects from water use are of such an order of magnitude that they demand special attention in organizing governmental activities from federal to local. The organization must be large enough to encompass major interests, be responsible enough to negotiate and make contracts, and provide a service with both security and flexibility.

The traditional institutional setting for attacking water problems such as lakeshore land use control has been to approach them singly. Thus, we have single function agencies dealing with floods, supply, pollution, etc. This approach has had its merits. However, each agency should view its task within the total context of the problem.

A study of the public press and some of our leading periodicals reveals that the current concern for these types of problems is not likely to lead to better processes of management and to greater use of economic principles in dealing with water problems. Instead of concern for new or improved institutions and procedure for management of our resources, the emphasis is often upon massive crash-spending programs to meet so-called needs or requirements.

Underlying all of our water problems is the simple fact that there is competition for the use of water resources. But why do we have water problems which are seemingly more difficult to solve compared to the use of most of our other natural resources? The answer lies in the fact that existing processes, institutions and procedures for managing our water resources do not lead to satisfactory

results. We have not yet developed institutions for more appropriate management of our water resources. In addition, we have not, for the most part, applied economic principles to water allocations and water investment. The water problem, then, is not primarily one of water, but instead is one of institutions, management and economic principles.¹

In this same vein, the problem of lakeshore land use control in Vermont includes economics, politics and conservation. Each specific area and lake in Vermont has its own particular and unique problems, and solutions must be worked out in the light of the situation as it exists. At the close of this paper, several basic suggestions concerning the future use and control of lakeshore in Vermont will be made. These suggestions will not be applicable in all situations. If they but spark the realization in the minds of a few key people in the state that something needs to be done in this broad area and provide a few basic ideas as to how to proceed, the objectives will have been reached.

Chapter I will be devoted to a brief discussion of the problems encountered on lakeshore property and a description of some of their causative factors. Chapter II will be devoted entirely to the description of a model lake development. This is sort of a "pie in the sky" type of thing which could never be fully realized but will form a type of goal which individual landowners and lake associations could work toward.

¹J. W. Milliman, "Economics of Water Resource Allocation," Farm Policy Forum, XVIII, No. 2 (1965-66), p. 21.

Chapter III will be a presentation and analysis of the data gleaned from a series of personal interviews granted by the officers of various lake associations, sportsmen's clubs and boating clubs on the lake frontage of Vermont. Chapter IV will attempt to detail the role of various levels of the lake community, from the individual lakeshore property owner to the state government, with respect to maintenance of the quality and natural beauty of the lakes of Vermont. Chapter V will then summarize the material presented and suggest a plan of attack for the people of Vermont with priorities assigned to the tasks before each of various levels of the lake community. It is anticipated that this chapter will become the basis for an extension bulletin to be distributed to lake associations and town government officials in Vermont. It will, therefore, be necessary to repeat and reemphasize some of the material in other chapters.

Definition of the Problems of Lakeshore Land Use

The use of lakeshore land has many unique and perplexing problems. It will be the objective of this thesis to discuss some of the most pressing of these problems and to suggest possible solutions or alternatives which may be followed to avoid their development.

To gain a first-hand look at the situation, a study, which included most of the lakes in Vermont of 100 acres or more in size, was conducted. During the course of the study, large numbers of property owners, lake association officers and numerous Vermont State officials were interviewed to discern their impressions concerning the problems of lakeshore use and what, if anything, they were doing about it. A copy of the interview guide is included in Appendix A.

It was anticipated that ten major problem areas would become evident during the course of the study. These problem areas are listed below in the order of their importance.

1. Strip development.
2. Sewage pollution of lake water.
3. Lack of public access.
4. Competing use of lakeshore land and the water surface.
5. Haphazard placement of mobile homes and cottages.
6. Haphazard commercial development.
7. Maintenance of water levels.
8. Prolific installation of docks and floats.
9. Low investment use of lakeshore land.
10. Lack of regional planning.

All of the lakes visited during the course of the study had three or more of the above problems in evidence.

Vermont is in the enviable position of having many of the developments around its lakes in such a condition that with concerted action, it could be possible to guide their future development in such a way as to preserve their present scenic beauty. This can be noted by referring to Figure 1. To further clarify the problems, each of the points mentioned above will be discussed in detail at this point.



Figure 1. Lake Seymour from North Shore Public Beach, Orleans County, Vermont.

Strip Development

The usual chronology of events in the development of a lake is first the sale of the lakeshore to a depth of 100 to 400 feet back from the waterfront to private individuals on a front-foot basis. The sale is made either out of financial necessity, due to rising taxes on the valuable lakefront property, or to supplement the landowner's income. Very seldom is there any thought of planning for the use of property behind the front strip with the possible exception of maintenance of a narrow right-of-way to the water.

Since the property was purchased in order to be close to the lakeshore, the tendency is for the individuals concerned to build their cottages as close to the water as possible, often times even out over

the water. In order to accomplish this, the natural vegetation must be removed and any marsh must be filled to form a firm footing for the building. This chain of events leads directly into the second major problem area.

Sewage Pollution of Lake Water

In many cases, the presence of large numbers of seasonal dwellings on a lakeshore contribute large amounts of septic tank effluent to the waters of the lake. Many lakes have poorly drained soils on their periphery which only compounds the problem. In addition, many areas in Vermont have very shallow top-soil in upland areas, which severely limits the efficiency of rural sewage disposal systems such as septic tanks and cesspools. Also, 50 percent of the lakeshore in Vermont rises from the water's edge in the form of high rock studded banks, which even further aggravates the septic tank problem. Figures II and III show this.

The effects of sewage effluent upon a lake is first noticed when the submerged plant and algae growth increases to the point where they interfere with such uses as swimming, drinking water supplies and fishing. When small to medium sized towns such as St. Albans, Vermont add their inadequately treated sewage to a lake, the problem soon reaches crisis proportions as it does each summer on St. Albans Bay in Lake Champlain. Samples taken throughout the summer showed populations of Spirogyra, Oscillatoria and Chlorococcum in excess of what normally could be expected. Late in the summer the consistency of the water was approaching that of "pea-soup". Efforts are being made on the part of the summer residents of this area to deal with the problem by the application of copper sulfate. This produces a



Figure II. Lake Morey, Orange County, Vermont



Figure III. Woodward Reservoir, Windsor County, Vermont.

short-term solution at the peak of the bloom, but does not attack the root cause, which is the rise in nutrient level caused by the introduction of untreated sewage effluent. The plants and algae which are killed by the copper sulfate sink to the bottom, there to decompose and release their nutrients for the growth of more algae and plants.

Lack of Public Access

In recent years the Vermont Fish and Game Department has made great progress in acquiring and developing fishing access points. These access points consist of a boat launching ramp, parking lot, trash barrel and a chemical toilet. The installation of this type of facility on a small or even a large lake is strongly opposed by private landowners. They feel that the presence of such a "wide open door" threatens the water surface with overcrowding, especially on weekends when the largest percent of the cottages are in use. Although it was not mentioned, public access also removes the feeling of exclusiveness on a lake.

It was observed, however, that despite the increased numbers of tourists in the state during the 1967 Exposition in Montreal, that seldom were there more than three or four cars at any one fishing access. The reason for this was the large number of points of access that have been established in the state, thereby spreading the load fairly evenly over a large area and precluding the overuse of any one access point. It seems logical that if the same approach were followed in the establishment of swimming beaches and camp grounds, the present periodic overcrowding of these facilities could be largely avoided.

Competing Use of Lakeshore Land and the Water Surface

Basically, there are three types of uses which can be made of water. (1) Neutral uses which neither help nor detract from other uses of the same water. An example is the use of water in a major river both for navigation and receiving effluent discharge from a factory. (2) Complimentary uses which arise when one use improves the water for a second use. An example is the use of the water for both swimming and air conditioning. In this instance, only temperature is altered. In using the water for cooling, the water would absorb heat which would improve the temperature quality for swimming. In the case of complimentary and neutral uses no decisions are necessary for proceeding with both uses. However, the third type of use, (3) Competitive uses, forms the basis for all conflicts over water. There is competition between agricultural and power interests and, most important to the subject at hand, competition between various recreational interests. The most common conflict of this type is between water skiers and fishermen. The problems connected with water surface control and zoning will be explored in Chapter IV.

Haphazard Placement of Mobile Homes and Cottages

One of the concerns of property owners on lake frontage is that someone will purchase land on "their" lake and put in a trailer court, or even one trailer. For the most part, their anxiety is not misplaced, because even the most well meaning trailer parks have a tendency to develop and age into the situation shown in Figures IV, V, and VI.

In the first place, trailers are never large enough to suit their occupants, so additions and annexes are soon added to temporarily solve



Figure IV. High concentration of people very close to the water's edge poses the threat of sewage pollution of the lake water, Grand Isle County, Vermont.



Figure V. Trailers are never large enough to suit their occupants, Grand Isle County, Vermont.



Figure VI. Some people who live in trailers have a tendency to collect junk and wrecked cars, Grand Isle County, Vermont.

the problem. They soon become the problem, because they are often built of second-hand materials and poorly designed. Second, maintenance of a trailer is very difficult. Most of the trailers built today have aluminum siding, which the trailer brochures claim is maintenance free. However, once it is dented or torn, it becomes unsightly and is very seldom repaired. This is one reason why trailers depreciate so rapidly. Third, a trailer court produces large concentrations of people close to the water's edge, often with overloaded septic tanks, which in turn cause sewage pollution of the lake water discussed previously.

Haphazard Commercial Development

All of the lakes in Vermont fall under the local jurisdiction of the town or towns in which they are located. Very few of these towns

have seen fit to enact zoning or building codes to guide the development of the real property under their jurisdiction. More likely than not, situations such as that shown in Figure VII develop. Vermont being the conservative state that it is, holds to the doctrine of strict maintenance of the individual property owner's right to use or misuse his property as he sees fit. Noble as this may seem, the injury done to the public interest by the practice of such a doctrine is unjustifiable. The fact remains, however, that the initiative for rectification or prevention of this situation must come from the local constituents. Methods open to the residents of an area interested in maintaining the appearance of their town are discussed in Chapter IV.



Figure VII. Road near Lake St. Catherine,
Rutland County, Vermont.

Maintenance of Water Levels

Another problem confronting the users of lakeshore is that of controlling the level of the water to provide the optimum beach area. This control should be accomplished without requiring unnecessarily long docks or exposing soft bottom deposits to the air, causing unpleasant odors. Ordinarily, when Vermont lakes come to mind the tendency is to look upon them all as natural lakes with little or no controlling works. Nothing could be further from the truth. Of the 255 bodies of water listed in the Department of Water Resources' Survey of the Status of Outlets and Control Structures of Lakes and Ponds over 20 Acres in Size in Vermont, only 112 were listed as natural.¹ All the rest had some sort of earth, concrete or masonry dam or fill which could be used to control the level of the water in the lake in question. Most of these structures were originally constructed to provide water power for textile mills or saw mills in the early history of Vermont. Many have fallen into disrepair since the textile and lumber activity has diminished in the state. The ownership of many of these dams has reverted to the state, which has allocated little or no money for maintenance or improvement of these structures. The effect on the landowners around the lake when one of these structures collapses, however, is catastrophic. The position of the State Government when confronted with a request to repair or replace a water control structure is: "We cannot justify

¹Reinhold W. Thieme, Status of Outlets and Control Structures of Lakes and Ponds Over Twenty Acres in Vermont, (Montpelier, Vermont: Vermont Department of Water Resources, September 1964), p. 37.

the expenditure of such a large sum for the benefit of such a small segment of the population." Therefore, the major responsibility for care of this type of structure will fall to the landowners in the area, who will directly benefit from such work. In order to undertake such a project, these people will have to band together and form associations. Not only that, but they must be willing to contribute adequate funds toward the operation, which in the end result, will protect their investment in land and structures.

If these associations succeed in securing a workable control structure, a great deal of ice damage could be prevented simply by lowering the level of the lake prior to freeze-up.

Prolific Installation of Docks and Floats

Man in his quest to establish something for his exclusive use, tends to expend a great deal of duplicate effort. This tendency extends, in the case of lakeshore use, to the construction of docks and floats for swimming and boating. In a limited survey of approximately ten miles of shoreline on Lake Champlain and Lake Bomoseen, it was estimated that 95 percent of the shoreline property owners had either a dock or float or both installed thereon. The installation of such a large number of these structures greatly detracts from the appearance of the shoreline and, in most cases, destroys the natural vegetation leaving the bank exposed to the ravages of erosion as shown in Figures VIII and IX.



Figure VIII. The effects of heavy traffic up and down the bank can be clearly noted. A pit privy can be seen approximately 20 feet from the shoreline. Caledonia County, Vermont.



Figure IX. The presence of large numbers of docks detracts from the natural beauty of the shoreline. Rutland County, Vermont.

Low Investment Use of Lakeshore Land

Another condition, which greatly detracts from the scenic beauty of a lakeshore is low investment use of the shore and uplands directly behind the shore as shown in Figure X.



Figure X. A remote section of shoreline on Grand Isle in Lake Champlain, Grand Isle County, Vermont.

The slums that often develop from situations such as this are extremely difficult to prevent or correct, since they often occur in remote areas. These areas have little or no tax base and thus no financial support for clean-up projects.

In addition to the financial obstacles, there are also innumerable sociological hurdles which must be dealt with before proceeding to correct this type of situation. The first to be encountered is the

attitude expressed by the statements: "You are discriminating against the poor." "Just because a family cannot afford to build a fancy cottage, you exclude them." Also, very little support for zoning ordinances will be found in the towns concerned, because the people will take the attitude: "We have gotten along very nicely in the past without zoning; why should we change now?" This problem also will be discussed in Chapters II and IV.

Lack of Regional Planning

Nicholson and Sametz partially define a region as a "somewhat homogeneous area or community of interest according to one or more criteria."¹ They also state that the term region "is not generally applied to local areas representing the normal horizon of man in his daily activities such as the municipality or county, but is reserved for somewhat wider combinations of such local areas."² It would seem that the most workable unit in the development of the regional concept would be the watershed with a maximum area of ten square miles. This unit is large enough to encompass most of the major problems and interests which would have a direct bearing upon the lake and its property owners and yet be small enough to be comprehensible to people untrained in the science of regional planning. There is definitely a function for such organizations as the Northeastern Vermont Development Association. Perhaps, one of the functions of

¹Ralph R. Krueger and Others, Regional and Resource Planning in Canada, (Toronto: Mott, Rinehart and Winston of Canada, Limited, 1963), pp. 6-32.

²Ibid.

the county and multi-county organizations could be the coordination of the efforts of the smaller local groups; another could be provision of planning and technological expertise.

The problems involved in organization of such groups as suggested above must be dealt with expeditiously, because without consideration of all factors and interests involved in a lakeshore problem, any attempt to solve one facet will only cause other problems to arise elsewhere. Take, for example, the case of a group of cottage owners attempting to control mosquitoes by draining a marsh near the lake; the destruction of mosquito breeding habitats is an accepted method of mosquito control. However, the effect of this action on the ecological balance of the lake must be considered. In the case mentioned above, a marked decrease in the fish population was noted due to the destruction of fish feeding and spawning grounds.

CHAPTER II

A MODEL LAKESHORE DEVELOPMENT

Introduction

The following editorial written by Sylvan Meger concerning the effect of Metropolitan Atlanta on a major lake in the area appeared in the Upper Chattahoochee Valley Area Southeaster in August 1958.

"Problems? On July 4 weekend, 150,000 persons visted the lake. Every weekend 8,000 persons visit a marina whose road from Highway 23 still isn't paved. Recreation areas that have been developed already are jammed on weekends. The Corps of Engineers said last week that 50,000 lots have been subdivided on the shoreline. Fifty thousand! A hord of visitors every weekend jam highways leading to the lake. These people could be a great resource in tourist income and in summer residents, but only when facilities are available for them. Imagine what will happen with 50,000 lots and more, each containing a septic tank. There are no subdivision regulations. No regulations for septic tank installation, water, or roads. Not a single county on the reservoir requires a building permit. Many of these lots, indeed thousands, are only 50 feet wide and many of those are only 50 feet deep. Near Gainsville last week several lots of 2,500 square feet on the lake sold for \$1,000 each. Building codes now and subdivision regulations soon will help control that area within the city limits of Gainsville, but what about the remainder?"¹

Although the situation described above is an extreme case, today pressures approaching the magnitude described there will soon be applied to Vermont. These demands for recreation opportunities are met in two ways: (1) through public recreation facilities, and (2) through private investment in resorts and cottages.

¹American Society of Planning Officials, Waterfronts: Planning for Resort and Residential Use, (Planning Advisory Service, Information Report 118, Chicago: American Society of Planning Officials, January 1959), p. 1.

A Model Lakeshore Development

The usual procedure followed in developing a model lakeshore development plan is to start with a hypothetical lake, which has no man originated encroachments whatsoever and lay out the ideal plan or plans for the area. This approach, however, is unrealistic in many ways, because an untouched lake in this day of high demand for recreational and domestic water is extremely rare. It is estimated that only three to four percent of the lakes over 100 acres in Vermont fall into this classification.

The approach that will be taken, therefore, will be to take an existing large inland lake, which has already been partially developed, and work on the assumption that this area will follow the national population trend from now to the year 2000.¹

The lake which has been selected is Lake Seymour, located in the town of Morgan in Orleans County, Vermont. The present stage of development is shown in Figure XI. The population in the area is extremely seasonal, fluctuating from 200 in the winter to approximately 1,000 in the summer. As can be noted in Figure XI, there is a considerable percentage of the lakeshore property which has not been changed from its natural state. It should be noted, however, that this area was logged over during the early history of Vermont. It was this state which produced George Perkins Marsh and his conservation classic, Man and Nature.² There is still a considerable amount of

¹This assumption is only one of many which could have been made.

²Stewart L. Udall, The Quiet Crisis, (New York: Holt, Rhinehart and Winston Company, 1963), p. 83.



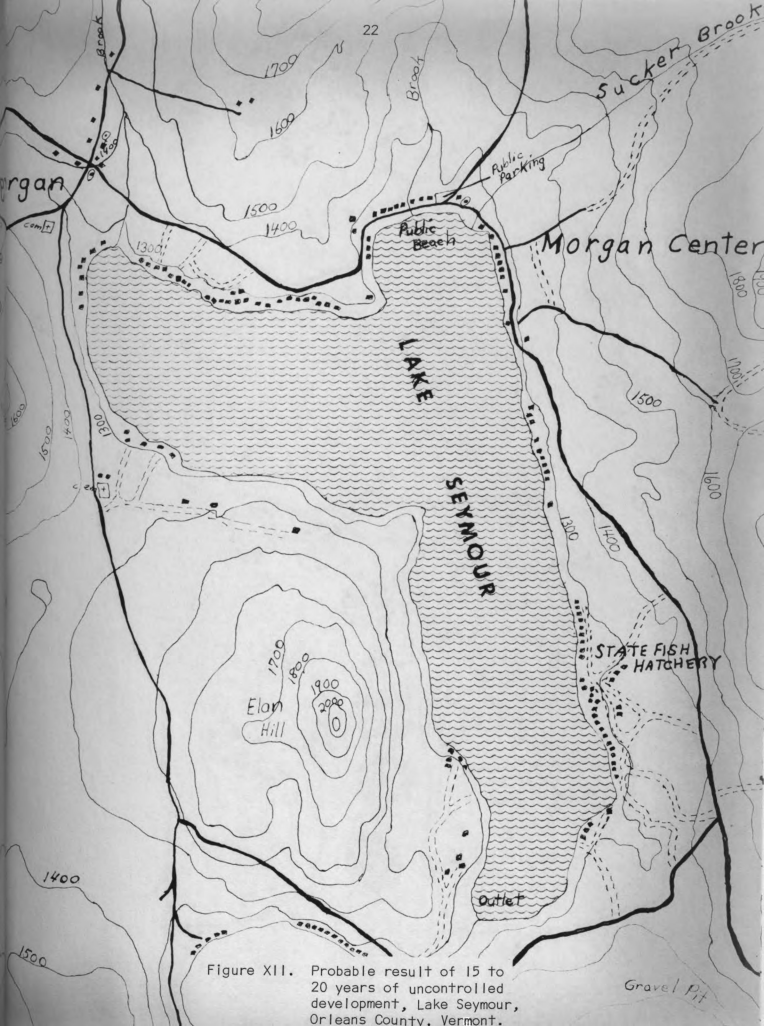


Figure XII. Probable result of 15 to 20 years of uncontrolled development, Lake Seymour, Orleans County, Vermont.

logging activity in this area, but for the most part, the industry is operated on a sustained yield basis. The cutting operation is not visible from any of the roads in the area.

Since a large percent of the cottage owners are from the southern New England states such as Massachusetts and Connecticut where populations are much denser, they are aware of the prospects for the future of Lake Seymour and have organized an active lake association. This association is working hard toward control measures such as zoning, building codes, and sanitary regulations. A certain sense of urgency has been added to their efforts by the prospect of drastically increased tourist and summer resident pressure within the immediate future brought about by the planned completion of Interstate 93 from Boston and Interstate 91 from New York. The latter will pass less than ten miles from Lake Seymour. There is also a good prospect for increased winter population in the area due to the opening of a new ski area and lodge three miles from the lake. It is with the foregoing factors in mind that the following model lake development plan is proposed.

There are many features which should be included in an ideal lake development such as the one under construction here. A relatively complete list of these features follows:

1. Cluster placement of buildings.
2. Proper sewage disposal.
3. Adequate public access.
4. Patrol of lake and surrounding area where needed.
5. Control of mobile home placement
6. Control of dredging and filling.

7. Separated commercial and residential zones.
8. Control of water level.
9. Control of the quantity of docks and floats.
10. Water zoning.
11. Development in accordance with regional planning.
12. Preservation of native vegetation and supplement by new plantings.
13. Control of boat and motor size.
14. Common beach and boating facilities for riparians.
15. Setback regulations where no cluster placement is used.
16. Adequate fire protection.
17. Navigational aids.
18. Weed control.
19. Ice damage.
20. Maintenance of foot trails in the area.
21. Control of signs and billboards.
22. Proper maintenance of roads plus control or restrictions on road construction.
23. Control of unregistered automobiles, junk and abandoned boats.
24. Control of ice fishing and other recreational uses.
25. Shoreline open to all riparians.
26. Concealed power lines.
27. Maintenance of skimobile trails.
28. Provision for canoe trails to pass through the lake.
29. Fish population control.

Each of the foregoing features will not be discussed in detail in the text, since many of them such as cluster placement of houses and water zoning are more efficiently presented through the use of drawings and

diagrams. Others such as fire protection and concealed power lines are self-explanatory.

Lake Seymour has a limited amount of each type of facility as is shown in Figure XI. Figure XII shows the probable result of 15 to 20 years of uncontrolled development. Figure XIII shows what could be possible with an active, hard working citizens' group willing to enact the proper regulations for their protection.

There are several of the features of the model lakeshore development listed above that cannot be adequately shown in a figure such as XIII. These will be briefly discussed at this point.

Shoreline Open to all Riparians

Provision should be made by the town officials to have included in all deeds the provision stating that the shoreline and the first 50 feet be open to all who use the lake, and that no structures be placed thereon. This provision would allow the maintenance of foot and cross-country ski trails that would circumscribe the perimeter of the lake and perhaps include the summits of nearby mountains. An ordinance such as this would also do a great deal in preserving the natural vegetation and preventing sewage effluent from entering the lake.

Water Zoning

An ordinance should be passed and enforced, when the need becomes apparent, to make provision for water zoning in an attempt to control conflict between the various recreational users of the lake such as fishermen, swimmers, boaters, and waterskiers. It may be that on lakes of small size only one type of recreation should be permitted. On large bodies of water perhaps the area should be divided as is done in Lake George, New York with its camping islands and picnic islands.

Adequate Public Access

Public access is an extremely important factor in relieving the public recreation demand pressure. Access can be provided only by protection of existing ways and provision of additional means of access. Lake Seymour has, at present, adequate public access in the form of a State Fishing Access point and a 1,500 foot public sand beach on the north end of the lake complete with parking lot. Further, there is little chance that either of these points will be closed, since Vermont State Route 111 passes directly behind the public beach.

It is conceivable that as recreation pressure increases, additional public or quasi-public facilities will be needed. Perhaps a well-designed marina could be located on the northeast corner of the lake near the end of the public beach. This one commercial use is the only one which should be allowed access to waterfront property. All other commercial endeavors such as drive-in theaters, roadside refreshment stands, grocery stores, taverns and the like should be zoned to specific areas removed from the lakeshore. The topic of controls exerted within the commercial areas will be discussed later in this chapter.

Zoning Regulations and Cluster Development

Since this paper is concerned only with the shoreline, the discussion of zoning will be limited to the area from the high water mark to one-half mile inland.

It is the normal practice of zoning boards or commissions, when dealing with lakeshore districts or zones, to specify a minimum square footage or front footage for the lots laid out in this area assuming

that the area is designated residential.¹ This practice leads directly and even promotes one of the most difficult problems listed in Chapter I. By so specifying the front footage, cluster development of cottages or residences is very effectively precluded, and the well known strip development soon evolves. This is not to say that these zoning ordinances cause strip development. They just rule out any other plan.

Zoning regulations for residential buildings, as they have evolved through the years, have traditionally established an envelope within which a structure of specified types for a specified use could be constructed and maintained. This envelope is defined by the minimum lot size and frontage, the setback requirements, the side and rear yard specifications, the height limitations, etc. Given the location of the roads, the pattern of the development is early determined.² This envelope pattern is unavoidable unless the leaders of the area take positive steps to plan the development of their community. It will, in fact, evolve to some extent, without any type of development control. It is felt that in order to prevent the evolution of the envelope concept specific ordinances or zones must be established where they are not permitted.

One alternative to strip development is cluster development. There are two features that distinguish what is thought of as a "true"

¹Town of Morgan proposed zoning ordinance, as revised May 16, 1967. Board of Selectmen, Morgan, Vermont.

²American Society for Planning Officials, Zoning for Group Housing Developments, (Planning Advisory Service Information Report 27, Chicago: American Society for Planning Officials, June 1951), p. 12.

cluster development. The first is a characteristic of design and site planning in which several houses are grouped together on a tract of land. Each cluster of houses serves as a module, which is set off from others like it by an intervening space that helps give visual definition to each individual group. The second characteristic of cluster development is the presence of undeveloped land that is held for the common enjoyment of the neighboring residents or the community at large. Various types of cluster development are shown in Figure XII.

The advantages of the cluster design are obvious to the builder, for it means extensive savings in road construction costs and length of utility lines. In the case of lakeshore development, it also means that sewage effluent can be treated in a common system, which can be adequately designed and constructed under the supervision of the proper authorities. Further, it would provide for preservation of a maximum amount of native vegetation on the land surrounding the lake. The common objective to this type of development, especially in resort areas, comes from the prospective owners of the homes, who assert that the main reason they want a summer cottage is to get away from the crowded conditions in the city and find some degree of isolation. Cluster development does not provide for this ideal. However, with careful use of differences in elevation and orientation of the individual houses in the cluster and imaginative use of landscaping, each house within the cluster can retain a certain amount of isolation even if it is only 30 to 40 feet away from its neighbors. Also, the large amount of undeveloped land around the clusters will add to this effect and provide the sought after "elbow room".

Another objection to cluster development is the fact that very few of the cottages actually front on the water. However, due to the rugged terrain in the Lake Seymour area, most, if not all, will have an excellent view of the lake. Through the open land left undeveloped by the cluster placement of the cottages, all will have easy access and ample swimming and boating facilities. In order to facilitate the use of cluster development, a special cluster district or portions of the lakeshore land could be designated by the zoning board.

There is a danger, however, when using this type of cluster development. It is the danger of high density development brought about by later development of open spaces between the clusters. A simple device which can be used to prevent this is an ordinance which limits the number of cottages or dwelling units per acre.

There is another type of zoning which Vermont, as yet, does not include in its enabling legislation. It is called petition zoning and is described in detail in Chapter IV under the discussion of water law needs of Vermont. Basically, it is a system whereby the residents and absentee landowners both have a voice in the decision to zone. This, in fact, is a type of "spot" zoning which is supposedly unconstitutional. However, some type of special zoning or regulation is needed to encourage action on the part of local officials and landowners to control the haphazard development of the lakes of Vermont.

Control of Billboards and Signs

Vermont is one of the leaders in the field of billboard control. For many years the state has had a statute requiring the registration

of each sign or billboard which is erected. Before the registration was completed, the location, design, and color of the structure had to be approved by the Secretary of State. This statute has been very effective in limiting the number of signs and billboards on the highways and in the towns of Vermont. When the Highway Beautification Act was passed in 1965, Vermont was one of the first to qualify and sign an agreement under the Act with the United States Department of Commerce. In addition to the above mentioned law, there is legislation now pending before the State Legislature to do away with all but "on premise" signs. Any attempt to further regulate the erection of signs and billboards on the part of local government would be superfluous.

Control of Unregistered Automobiles, Junk and Abandoned Boats

As with the control of signs, the control of junkyards and junk is the subject of a state statute. The job of the local governments is to see that the law is properly enforced and to be certain that their own dumps and sanitary land fills are properly maintained and screened. This responsibility has been met in the Lake Seymour area. All that is required is a continuation of the present efficiency. Many other areas in Vermont are not so fortunate.

Road Maintenance and Control of Construction

In order to be sure that the areas in Figure XIII designated to remain undeveloped or wild, are left in that condition, the building of roads into the area should be prohibited. This will leave the area accessible only by water and beyond the reach of utilities unless underwater cables are laid. This was the route of

development which Lake Placid in New York State took, and the result, although not ideal, is far better than many lakeshore developments.

Control of Mobile Home Placement

One of the greatest concerns of lakeshore owners is the possibility that someone will buy land and set up a trailer park. It is this fear that provides the driving force and the votes to pass many zoning ordinances. As mentioned in Chapter I, the reasons for this fear are founded on the tendency of trailer occupants to cause accelerated depression of adjacent real estate values through their tendency to collect junk, build unsightly additions and generally overcrowd the property. This can be noted in Figure V, page 10 and Figure VI, page 11. As shown in Figure XII, the aim of the ordinance with respect to mobile homes should not be elimination or prohibition, but control. Such control would insure proper placement. Perhaps, several of the clusters of seasonal homes could be set apart for mobile homes. Additional restrictions should be laid down in the case of mobile homes subjecting them to periodical inspection for deterioration.

Control of Boat Size

Although Lake Seymour is a relatively large lake (1,732 acres), the size of outboard, inboard, and outboard-inboard recreational boats being produced today are threatening the safety of all who use the lake unless these boats are used with care and prudence. There is definitely a need, therefore, for a means of controlling the size of motors commensurate with the size of the lake. The specifics of the law and a suggested formula for arriving at the maximum horsepower and speed for the lake in question will be discussed in Chapter IV.

Summary

Lake Seymour and the town of Morgan have several excellent leaders who are fully capable of guiding the town into adoption of workable ordinances, such as those mentioned above. The effect of such action would result in a widening tax base and a healthy local economy based on the priceless resources of Lake Seymour.

The "Northeast Kingdom" of Vermont which consists of Essex, Orleans, and Caledonia counties already has a regional planning commission. Although this commission is made up almost entirely of commercial interests, there would undoubtedly be some people willing to help with various aspects of the planning process and possibly in doing so, be persuaded to establish high quality commercial establishments in the area. For an excellent example of the divergent courses two lakes can take in their commercial development, the reader is invited to compare Squam Lake and Lake Winnepesaukee in New Hampshire. These two lakes are only ten miles apart and have been subjected to almost the same development pressure. Yet, the attractiveness and property values of Squam Lake exceeds by far those of Lake Winnepesaukee.

One observer of the water recreation situation in Wisconsin suggests that the state manage all navigable waters and also that it undertake a land use planning and zoning program in areas bordering on waters where local governments have failed to take needed action.¹ A plan very similar to this is under consideration today in Vermont,

¹G. Graham Waite, "The Delimma of Water Recreation and a Suggested Solution," Wisconsin Law Review, July 1958.

but in the opinion of this writer, even if enacted, such a plan is doomed to failure for the simple reason that the enforcement of such a plan would fall to the local residents of an area. If they opposed the ordinances in the first place, they would certainly not provide adequate enforcement.

CHAPTER III

THE PRESENT LAKESHORE SITUATION IN VERMONT

Introduction

This chapter will present, in tabular form, the data collected during the summer of 1967. The data were obtained almost exclusively through personal interviews between the writer and officers of various types of associations of people on lakeshore land in Vermont.

According to a recent survey by the Vermont Department of Water Resources, Vermont has 255 lakes and ponds of 20 acres or more.¹ It was determined during the week prior to the start of field work on the study that the majority of the developmental and organizational activity was likely to be found on lakes and ponds of 100 acres or more in size. It was, therefore, decided to expend most of the available time and effort on lakes of this size but keeping the schedule flexible enough to allow inclusion of an organization on a smaller lake should one be encountered. It was also decided, at this time, to exclude bodies of water designated as reservoirs, since most of the land around these lakes is state-owned in order to protect the water quality. The extent of the development on most reservoirs is a fishing access point. The rest of the land is inaccessible by car.

The lakes and ponds of 100 acres or more number 78. However, this figure does not include the large expanse of shoreline found on Lake Champlain. When associations were found in bays and on points on Lake Champlain, they were treated as separate lakes and questions were

¹Reinhold W. Thieme, Status of Outlets and Control Structures of Lakes and Ponds Over Twenty Acres in Vermont, (Montpelier, Vermont: Vermont Department of Water Resources, September 1964), p. 37.

directed only at that portion of Lake Champlain which fell under the association's sphere of influence.

The objective of the study was to interview a knowledgeable representative from 100 percent of the associations¹ in existence in Vermont at the time of the study.

Description of the Present Situation in Vermont

What are Vermont's lakeshores like today? June, July, and August of 1967 were devoted entirely to the task of traveling around the state of Vermont in an attempt to answer the question posed at the beginning of this paragraph. The main area of inquiry during these visits was an attempt to talk with the leaders of the community around or near the lake in question and determine what, if anything, was being done on the local or individual level to maintain the quality of the lake. A large portion of the available time was spent talking to the officers of lake associations. At the start of the study, an attempt was made to talk to at least two people from each lake or lake association. It was ascertained after one or two weeks, that the difference between the responses of the two representatives was insignificant. As a result, the practice was dropped except in situations where there was an obvious difference of opinion between various parties around the lake.

A four-page questionnaire was used as a guide in discussing the problems of each lake and is included in Appendix A. The questionnaire

¹Associations refer to all formal or informal organizations within the lake community including sportsmen's clubs, lake associations, boating clubs and road associations.

was filled out during personal interviews with each respondent with no advance notice of the interview given to the individual concerned. Cooperation of the respondents was excellent, and 100 percent of the people approached consented to answer the questions.¹

Procedure

When approaching a lake a quick "windshield survey" was made of the stage and quality of the development. Then, one cottage or house on or near the waterfront was selected at random and inquiries made as to the existence of any type of organization or banding together of the property owners or users of the lake. If such an organization was found to be in existence, the president or secretary of the organization was sought out and asked to respond to the questionnaire. Invariably, the process of filling out the questionnaire produced extended discussions on the wide and varied problems which the various organizations face. If no formal or informal organization was found on a lake, inquiries were made of several of the cottagers as to the existing problems, if any, on that particular lake. However, in this situation, no questionnaire was completed. The major effort was expended upon lakes of 100 acres or more. However, if an organization was encountered on a smaller lake or pond, a questionnaire was completed.

For the most part, the study was confined to Vermont. Although, several trips were included to the neighboring states of New Hampshire, Massachusetts, and New York when the existence of particularly interesting types of control came to the attention of the writer. The most

¹A pretest of a similar questionnaire was conducted in August 1966 by Dr. Frederick O. Sargent and members of his staff at the University of Vermont.

noteworthy of which was the control methods used on Lake George and Lake Placid in New York State.

The Lake George Association is undoubtedly the "trail blazer" and "pioneer" in programs to guide and protect the development of lakeshore property. The Association was established in 1880 and through the years has established and maintained a wide variety of improvements and controls around the lake. Recently, the state of New York established the Lake George Park Commission, which has assumed responsibility for maintenance of many of the facilities originated by the Lake George Association. These improvements include:

1. Installation of a navigational bouy system.
2. Establishment of patrol boats.
3. Inspection and control of septic tanks.
4. Control of biliboards.
5. Establishment of a lake water testing program.
6. Establishment of lake level gauges and maintenance of records of readings therefrom.
7. Establishment of lakeshore zoning through petition.
8. Establishment and maintenance of hiking trails in the area.
9. Requirement of all sanitary facilities on boats to be sealed and certified prior to launching.

The accomplishments achieved by the Lake George Association illustrate what is possible with concerted action and cooperation among all concerned.

When the questionnaire was first assembled, it was anticipated that 100 to 150 would be completed during the course of the summer. With this in mind, the questionnaire was designed to enable a key-punch operator to transfer the data directly from the questionnaire to punch

cards for use in the computer. However, due to the large number of lakes with no organization, only 45 questionnaires were completed. Of the 45 questionnaires completed, 11 were not tabulated due to duplications resulting from the first two weeks of interviewing in which two representatives from the same associations were interviewed, and the fact that some associations outside the state of Vermont were interviewed. It is estimated, however, that the 34 associations represented by the tabulated data presented here account for 85-90 percent of such associations in existence in Vermont at the time of the study.

It did not appear economical or logical to run such a small number of cards through the computer, so the tabulations were made by hand. The responses to the questions are presented in Tables I through 16. By examining the questionnaire, it will be noted that the first eight items were reserved for computer identification. Therefore, the first question was Item 9.

Results of the Study

The first item, Item 9, determined the type of organization that was active on the lake. The possibility exists that more than one type of organization could be active on any given lake, however, this situation was not encountered, except on Lake Champlain, and in this case the sphere of influence of each organization was treated as a separate lake. The response to Item 9 is shown in Table I, page 40. The heavy predominance of lake associations found in preference to the expected large number of road associations indicates an interest on the part of the property owners to protect their investment and work to improve it.

Table 1. Types of associations prevalent on Vermont lakes.

Associations	Percent of Respondents
Road association	2.9
Sportsmen's club	21.7
Boating club	0
Lake association	76.4
Total	100.0

Item 10 attempted to establish the type or class of people or occupational groups which predominated in the organization. This information would give some indication of the financial and educational status of the membership. The responses to this question, shown in Table 2 are nonconclusive due to the fact that large numbers of associations had to be classified as "varied or combinations of" all occupations listed.

Table 2. Characteristics of members of lake associations.

Occupation	Percent of Respondents
Professional	11.7
Managerial	5.8
Farmers	0
Craftsmen	0
Laborers	0
Retired	5.8
Varied	76.7
Total	100.0

Item 11 was, perhaps, the most important part of the entire questionnaire since it established the degree of cooperation and support

the association was receiving from the property owners around the lake. In most cases, the respondent bases his answer on the percent of property owners who paid dues the previous year. Table 3 shows a relatively strong or high level of support. A curve plotted using this data would definitely be skewed to the left. Also, the mode falls in the 76 to 90 percent range.

Table 3. Degree of support received by lake associations from property owners on lakeshore.

Percent of Property Owners Active in Association	Percent of Total
0-15	2.9
16-30	5.8
31-45	2.9
46-60	17.6
61-75	17.6
76-90	26.8
91-99	14.7
100	11.7
	<u>100.0</u>

Item i2 was an open-end question which attempted to discern what groups, if any, were excluded from membership. Response to this question was digested down to the five categories listed in Table 4, page 42.

Table 4. Restrictions to membership in lake associations.

Restrictions	Percent of Total
None	27.3
Own property on lake	51.5
Approval of majority of membership	12.2
Resident two years	3.0
Corporation permission	6.0
Total	100.0
Total responses 33	

Item 13 and 14 established the nature of the development on the lakeshore with respect to seasons of use. Summer resident is intended to indicate the period from the last frost in the spring to the first frost in the fall or approximately from May to October. The responses to these questions are shown in Tables 5 and 6.

Table 5. Proportion of summer residents in lake associations.

Percent of Summer Residents	Percent of Total
0-25	3.0
26-50	0
51-75	0
76-99	75.8
100	21.2
Total	100.0
Total responses 33	

Table 6. Proportion of year around residents in lake associations.

Percent of Year Around Residents	Percent of Total
0	88.0
1-25	9.0
26-50	0
51-75	3.0
76-100	0
Total	100.0
Total responses 33	

The heavy predominance of summer residents shown in these tables comes as no surprise, and lends credence to the notion that the people most active in improvement and protection of Vermont's lakeshores come from areas far removed from the lake in question and are usually not voters in the town where the lake is located. This situation is one of the primary reasons why needed action such as enactment of zoning and building codes are so long overdue. Vermont desperately needs legislation to give property owners some voice in local issues regardless of where they are registered to vote, because it is this segment of the lake community which is cognizant of the threat.¹

Item 15 was an open-end question designed to evoke a short discussion on the program or activities of the association. The responses were condensed down to six types of activities listed in Table 7, page 44.

¹This approach is used in the Lake George, New York area with a considerable amount of success.

Table 7. Control methods used by lake associations.

Types of Control	Percent of Total
Maintenance of dam and water level	15.1
Maintenance of vacant land	3.0
Mosquito control	9.0
Setback of cottages	3.0
Pollution control	66.9
Total	100.0
Total responses 33	

Items 16 through 27 were a list of possible additional controls which might or might not have been mentioned in Item 15. If one of the items was mentioned in the process of answering Item 15, the appropriate answer was noted and the item skipped. The responses to Items 16 through 27 are given in Table 8.

Table 8. Additional control methods used by lake associations.

Control Methods	Percent of Respondents		
	Yes	No	Don't know
16. Petition zoning	3.1	96.8	0
17. Precinct zoning	3.1	96.8	0
18. Conventional zoning	18.7	81.2	0
19. Deed restriction	37.5	62.5	0
20. Developer design	21.8	78.2	0
21. Water zoning	25.0	75.0	0
22. Owner restrictions	90.6	9.3	0
23. Fire district controls	37.5	62.5	0
24. Building codes	18.7	81.3	0
25. Dumping restrictions	100.0	0	0
26. Pet restrictions	6.2	93.7	0
27. Leasing controls	37.5	62.5	0

Tables 7 and 8 indicate what seems to be a dearth of constructive actions on the part of the lake associations. On the other hand, with the exception of water zoning, water supply and land use, the chronic problems of lakeshores seem to be effectively controlled, at least in the opinion of the respondents, Table 9, page 46. If these organizations were given some type of legal status and some incentive to embark upon constructive programs through such things as matching grants or other devices, much could be accomplished in the way of lakeshore development control. Since any financial assistance would come from public funds, public access to the water surface at reasonable intervals should be prerequisite to the granting of any funds.

Items 28 through 38 were a list of common problems which often result in some type of control action by the landowners. The group of items was intended to determine if there was a problem, and if so, how effective was the control measures taken by the association. The large values in the "Not Effective" column resulted, in many cases, from lack of any regulation to deal with this problem. Water zoning was one such control. The responses to Items 28 through 38 are given in Table 9.

Table 9. Effectiveness of controls imposed by lake associations

Control	Percent of Effectiveness			
	Very Effective	Moderately Effective	Effective With Some Restrictions	Not Effective
28. Trespassing	43.7	40.6	9.3	6.2
29. Vandalism	43.7	40.6	9.3	6.2
30. Speeding	18.7	53.1	21.8	6.2
31. Pollution	31.2	18.7	18.7	31.2
32. Land use	15.6	9.3	0	68.7
33. Dumping	75.0	25.0	0	0
34. Road maintenance	43.7	34.3	3.1	18.7
35. Water supply	25.0	6.2	0	68.7
36. Sewerage	21.8	31.2	15.6	31.2
37. Water zoning	9.3	12.5	0	75.0
38. Other	0	0	0	100.0
Total responses 32				

Item 39 was an open-end question concerning what the respondent considered the most important accomplishment of the association. The response to Item 39 was condensed into eight areas and is given in Table 10.

Table 10. Major accomplishment of lake associations.

Accomplishment	Percent of Total
Installation of dam	6.0
Mosquito control	6.0
Establishment of water level	6.0
Maintenance of quality of neighborhood	9.0
Maintenance of natural beauty	9.0
Pollution abatement	21.3
Social	27.4
None	15.3
Total	100.0
Total responses 33	

Pollution abatement and social gatherings seem to be the major accomplishments of lake associations as is shown in Table 10. If, in fact, lake associations are effective in controlling pollution, this would be no small accomplishment. Some doubt persists, however, as to the true effectiveness of measures taken in this area. Most of the action consisted of appeals to the Water Resources Commission to investigate and correct the situation. The association on Lake Bomoseen, however, had actually hired a sanitary inspector to make periodic rounds of the lake testing the bacteriological condition of the lake and attempting to trace the source of any dangerous levels of pollution.

The second major accomplishment by associations was social gatherings. Initially this may seem to have little to do with the job of maintaining and improving the condition of the lake, but if an annual function such as a chicken barbecue is well attended, it can provide the setting for many thought provoking discussions concerning the problems of the lake and lakeshore. It is out of this type of forum that the decisions are made to take collective action to do such things as control mosquitoes, clean trash and weeds from the beach and maintain the dam.

Methods used by the various associations to achieve the accomplishments listed in Table 10 were as numerous as the associations. Basically, chemical means were used to control mosquitoes. Insecticides were applied either by plane or truck during the summer months. In addition, one association was using what it called "Tossetts" which were placed in marsh areas near the lake prior to the first emergence of mosquitoes in the spring. The tossett would then slowly dissolve

releasing insecticide into the breeding areas. Fishermen in the area were objecting to this technique at the time of the interview, claiming that it was a contributing factor to the recent decline in the lake's fish population.

The associations that claimed maintenance of the quality of the community around the lake as their most important accomplishment achieved this objective by restricting land sales. In all cases, the associations were incorporated and members were required to obtain approval of the membership prior to sale of property. In one instance the corporation owned all the land and members merely leased the lots.

Maintenance of the natural beauty of the lake was usually accomplished by community "work bees", in which everyone would gather on a given day and spend it collecting trash, cutting dead trees, or other "housekeeping" type of jobs around the lake. Often this was done the morning of the annual association meeting and helped sharpen appetites for the chicken barbecue.

Installation of dams and water level maintenance was done only with the help of the state. The associations claimed credit for it as a major accomplishment only because they were the prime movers in getting the state to take action.

Item 40 was an open-end question concerning what the respondent considered the most pressing problem facing the association. The response to Item 40 was condensed down to eight problems and is reported in Table II.

Table II. Major problems of lake associations.

Problem	Percent or Total
Keeping lakeshore clean	42.7
Lack of zoning	12.1
Trailers	21.2
Speedboats	3.0
Feuding between neighbors	9.0
Mosquito control	3.0
Tax administration	9.0
Total	100.0
Total responses 33	

it is interesting to note that land use and strip development, along with sewage pollution and public access, which are among the most pressing problems on lakeshores today, are mentioned only indirectly in the responses to Item 40. This observation leads to the conclusion that considerable work needs to be done in the way of public education in this area in order to focus the attention of the people in the lake community on the top priority problems. It is the people who are living in the area who are in a position to take meaningful action.

Item 4i was simply an inquiry into the identity of the person or persons responsible for enforcing the controls on the lake, if any. The response for Item 4i is presented in Table 12.

Table 12. Placement of responsibility for enforcement of lake association controls.

Regulatory Body	Percent of Total
State police	18.7
Officers of association	40.7
Members of association	25.0
Nobody responsible	15.6
Total	100.0
Total responses 32	

It should be noted at this point that the regulations imposed by lake associations have no legal basis. They are, in fact, nothing more than "gentlemen's agreements" and could not withstand a challenge in the courts. Also, the State Police do not attempt to enforce any laws but those passed by the State Legislature. Item 42 was an inquiry into the legal action taken in support of, or challenging any of the controls administered by the associations. Of the 32 responses to the question, only two responded in the affirmative. One was a right-of-way dispute, and the other was an ownership lawsuit.

Item 44 inquired about the extent of development of a common beach completed by the association. The response to Item 44 is presented in Table 13.

Table 13. Length of beach improvement made by lake associations.

Length in Feet	Percent of Total Responses
0-50	34.3
51-100	15.6
101-200	25.2
201-300	3.1
301-1000	9.3
1001-2000	0
over 2000*	12.5

*This category does not indicate that the association actively maintains this much beach, only that the entire beach is open to all members.

Very little is done by lake associations in the way of maintenance of common beach and boat facilities, since most cottagers prefer to establish their own private beach. Only in cases where cliffs precluded or prevented access to large portions of the lakeshore was any attempt made to develop common facilities. It is believed that with proper encouragement, significant progress could be made toward establishment of combined semipublic beaches and boat facilities sponsored and maintained by the lake associations.

Items 45 through 52 indicate the natural materials found on the beaches of the entire lake. The responses to this group of items are reported in Table 14.¹

¹Columns in Tables 14, 15 and 16 do not add to 100 vertically, since more than one type of beach material, water system and sewage system was found on respective lakes.

Table 14. Types of beach surface present on entire shoreline.

Beach Material	Percent of Total	
	Yes	No
Sand	93.8	6.2
Gravel	93.8	6.2
Cobble stone	84.4	15.6
Mud	6.3	93.7
Grass	18.8	81.2
Clay	18.8	81.2
No beach, rocks	56.3	43.7
No beach, cliff	46.9	53.1
Total responses	32	

Items 53 through 59 requested of the respondent an estimate of the numbers of docks, rafts, summer cottages, and year around homes located on the lake in question. The objective of the question was not to arrive at total numbers of these items, but to determine the relationship between building numbers and individual docks and floats. In this section, 29 of the completed questionnaires contained usable data. The totals are shown below:

Total number of docks	2,446
Total number of floats	529
Total number of summer cottages	4,443
Total number of year around homes	519
Total number of dwellings, summer plus year around	4,962

From examining the above figures, it is clearly seen that out of a total of 4,962 dwelling units, located on the lakes under investigation, 50 percent had docks and 10 percent had floats which were intended for the private use of the occupants and their guests. At first glance, it would appear that the percentages should be higher than this, but the houses that do not front on the water very seldom have boat dockage space, thus lowering the above percentages.

Items 60 through 66 inquired into the different types of water supplies used by the property owners around the lake. This information is important, because as the development progresses, some of the water sources in use at the present will have to be replaced due to contamination. The response to this group of questions is given in Table 15.

Table 15. Types of water systems in use on lakeshore property.

Water Systems	Percent of Total	
	Yes	No
Individual pump from lake	81.9	18.1
Community pump from lake	37.5	62.5
individual well or spring	74.1	25.8
Community well or spring	20.0	80.0
Hauled in	58.0	41.9
City or town system	19.3	80.6
Plans for improvement?	6.4	93.5

Items 67 through 75 inquired into the sewage systems in use around the lake. The response to this group of items is given in Table 16.

Table 16. Types of sewage systems in use on lakeshore property.

Sewage System	Percent of Total	
	Yes	No
Outside privy	61.2	38.7
Individual septic tank	96.7	3.2
Community septic tank	6.4	93.5
Cesspool	67.7	32.2
Straight into lake	35.4	64.5
Lagoon	12.9	87.0
City or town system	9.6	90.3
Plans for improvement?	9.6	90.3
Total responses 31		

Item 76, which was the last question, asked the respondent to make an estimate of the percent of the sewage systems around the lake that were adequate and performing their function of keeping excess nutrients out of the lake. The 31 estimates ranged from 50 to 99 percent with a mean of 80.6 percent.

In summary, the lake associations are in an excellent position to compensate for the present lethargic deliberations of town government in the area of lakeshore development control, since they are the people who are most closely associated with the condition found on the waterfronts and will be most severely affected by a degradation of the property thereon.

The greatest value gleaned from the questionnaire was the accumulation of the hundreds of side comments made by the respondents in the process of answering the questions. These comments, in many cases, served to clarify the problems of lakeshore land use and are reflected in the text of this manuscript.

CHAPTER IV

MOVEMENT FROM PRESENT TO MODEL LAKE DEVELOPMENT

Introduction

The objective of this chapter is to examine the roles of individuals, lake associations,¹ town government,² county government, regional planning commissions and state government in guiding the development of the lakes and lakeshores of Vermont toward the model development as presented in Chapter II.

The Role of Various Units in Reaching the Model

Individual

The smallest and most easily controlled segment of society from the individual's point of view is the individual himself. There are many things an individual lakeshore property owner can do to help insure that the development of the lake does not deteriorate and to help guide it toward the model. He can make sure his own property is not contributing to the downgrading of the lake by: (1) periodically checking the efficiency of his septic tank tile field by flushing fluorescein dye into the tank and watching for a color fan in the water, (2) take steps to repair or prevent shoreline scars caused by excessive traffic up and down the banks, (3) construct buildings that blend with the environment and do not impair the natural beauty of

¹A lake association as used here is intended to include sportsmen's clubs, road associations and any other group of persons who are working together for the good of the lake community.

²Town government in Vermont is the same as township government in Michigan.

the lake, (4) protect the natural vegetation on the uplands or if natural vegetation is sparse or undesirable, consider reforestation (information on this type of program is available from the State Forest Service.), (5) if sale of excess lakeshore property is anticipated, consider including some appropriate restrictions in the deed to insure orderly development.

The following is a list of restrictions which various people around the state have included in the deed to land sold on lakeshore property:

1. All lavatories and toilets shall be built indoors and connected with outside septic tanks of adequate size, suitably located and constructed, and adequately maintained.
2. Cottage or building must be back 50 feet from lakeshore.
3. Unnecessary cutting or abuse of vegetation is prohibited.
4. No more than one, one-family dwelling shall be erected on any one lot.
5. No lot shall be subdivided and sold separately.
6. No unregistered motor vehicles shall be allowed to remain on any lot.
7. No dwelling shall be built with less than 576 square feet of floor space on the ground level excluding porch.
8. No building or addition shall be allowed to remain without some type of permanent wood or masonry exterior finish for a period of longer than 60 days.
9. No billboards, business, or commercial enterprise of any description shall be carried on upon the land herein granted.
10. No lumbering operation or cutting of timber for commercial purposes shall be permitted.
11. No outdoor fires except in properly built fireplaces provided with adequate spark arresters.
12. No hunting or discharge of fireworks or other explosive devices upon any part of the land herein granted.

It is certainly not suggested that all of the above restrictions be inserted in the deeds to land sold on lakeshores, only those for which the person selling the land can see a need.

Lake Association

The next larger governmental unit which has an interest in maintaining the quality of a lake is the lake association. Here too, there are many ways which groups of this nature, by working together can maintain the beauty and usefulness of their lake to make a more enjoyable recreational focal point for all concerned. Some of the activities which lake associations undertake are listed below:

1. Conduct annual sanitary inspections of sewage disposal facilities around the lake.
2. Submit periodic water samples to the Health Department for determination of potability and swimming safety.
3. Maintenance of a water control facility to maintain the water level of the lake at the desired point.
4. Maintain common boat and swimming facilities reducing the number of private docks and floats on the lake.
5. Maintain and place navigational aids such as buoys to warn boaters of hidden rocks and protect swimming areas from boats.
6. Maintenance of a community sanitary land fill in localities where town facilities are not available.
7. Encourage members to follow all suggestions made for individual action in this paper.
8. Unified support of proposed town ordinances such as zoning, building codes and platting regulations.
9. Sponsor weed removal and algae control in eutrophic lakes.
10. Sponsor boating and swimming safety classes.
11. Designate water activity areas to separate conflicting water uses such as water skiing, fishing and swimming.
12. Maintain public access points for fishing, swimming and camping.
13. Sponsorship of landscaping for needed areas around the lake.
14. Control of mosquitoes and flies during the summer months.
15. Maintenance of golf, tennis and other land based recreational facilities.
16. Maintain common roads.
17. Finance the stocking of fish.
18. Sponsorship of such social activities as sailboat races, concerts and chicken barbecues.
19. Maintenance of foot trails around the lake.

The above activities for lake associations are the obvious ones which anyone who is even remotely interested in this realm could compile.

However, the influence of a lake association with the firm backing of its membership could conceivably have far greater impact than is now felt by the towns and counties of Vermont.

With the exception of agriculture and a few new industries which have recently come to Vermont, the tourist and recreation business is the largest income producing activity in the state. The Vermont Development Department estimates that its total income from tourism for 1966 was \$164 million. William Wheaton, Statistical Analyst in the Development Department estimates that 25 percent of this would be a result of the attraction of bodies of water in the state.¹ In large numbers of towns, which have usable surface water, the dollars spent by the users of this resource provide up to two-thirds of the annual income of the town. According to a recent Bureau of Outdoor Recreation study in New England, the financial expenditures of the average vacation household are in accordance with Table 17.²

Table 17. Average vacation household weekly expenditures, August 1966.

Item	Average Expenditures
Food, groceries	\$34.57
Meals eaten out	4.67
Personal expense	2.67
Recreation	3.07
Clothing	5.27
Transportation	8.39
Other expenditures	2.73
Employee wages	5.49
Total	\$66.95

¹Letter dated February 19, 1968 from Dr. Frederic O. Sargent.

²Department of the Interior, Bureau of Outdoor Recreation, Northern New England Vacation Home Study, 1966, (Number O-274-299, Washington, D.C.: United States Government Printing Office, 1967), p. 10.

The figures in Table 17 do not include the large expenditures made for the initial construction of the cottage or other major expenses shown in Table 18.¹

Table 18. Estimate of regional expenditures.

Item	Average Vacation Home Expenditures
Annual estimate of expenditures* (local)	\$776.62
Local real estate taxes	192.55
Other maintenance expenditures	484.07
Major sport equipment	155.57
Major household equipment	124.55
Non-local regional expenditures	140.00
Purchase of lot and construction	17,324.00
Total	\$19,201.36

*Expansion of data given in Table 17.

Although much of the \$19,201.36 cited in Table 18 is spent only during the initial construction period, approximately \$1,800.00 of this amount is recurring annual expenditures which contribute massively to the economy of the small Vermont towns in the area. South Hero, the area with which the writer is most familiar, is an excellent example of this situation. The position, then, of such groups as lake associations is extremely advantageous. Given the proper leadership, these people could do a great deal to guide and protect not only the water resources but other resources as well.

¹ ibid., p. 12.

Assuming that the lake association is organized and ready to go to work, the question that then arises is: with whom or with what group or level of government should the association work in order to accomplish its objectives in the shortest period of time? There are two possibilities, the town governments, which have been established for a great many years, and regional planning commissions, which have not as yet been established but are under consideration at this time. The two possibilities will be discussed in the order mentioned above.

Town Government

The most universal complaint of those who are attempting to make progress in establishing guidelines on the development of Vermont is, "No matter what we do our hands are tied because the town's people refuse to support protective measures such as planning and zoning". The reason for this difficulty is: for years Vermont has not changed substantially, and the people who live there year around and hold the vote opinion see little need to impose what they consider unnecessary restrictions upon themselves. Their attitude is reflected very well in the following excerpt from the Green Mountain Post Boy:

"Vermont is changing. Of course, it has been changing for quite a while now, but as I get older I find myself going 'Tch-tch-tch!' at the changes more often than I used to. This could be due to the changes themselves or it could be the result of that slow-aging process which advertisers always hail as desirable but which in my own case I find to be an awful nuisance . . . I remember checking out possible building sites with an old neighbor, and discussing the fundamental requirement of good water. Several of the places we saw had springs, and old John pointed out that they would provide for all the needs of any family unless, he noted with a snort, you were one of those people who insisted on having a flush toilet, in which case you would have trouble finding any site where nature would indulge such an unreasonable caprice . . . I suppose Vermont has deteriorated. I know that old

neighbor John, before he died in his house which eventually had a driven well and indoor plumbing, used to insist that this was so. I remember him fulminating in 1937 or 1938 about some suntanner from New Jersey, a wild-eyed radical named Sam Ogden, who came up to the Legislature with a hare-brained scheme for state reforestation, which was promptly slapped down. Why where would the state be in thirty years or so, if they threw money around like that! Let alone forcing people to improve their land. Of course, my image of Vermont in the thirties is not the only one. I am sure that skiers see it differently. They recall a simple world of rope tows and wood-cutting and baths in home-made hot water from a wash-boiler on the kitchen stove. Nowadays an enclosed chair lift is a pretty luxurious thing, but it's as old-fashioned as buttoned shoes by comparison with heated outdoor swimming pools and refrigerated indoor skating rinks and individual sauna baths. Thirty years ago the phrase apres-ski would have required an interpreter, and even then it would have meant simply a jug from the state store and an impromptu quartet. Today it can mean a Broadway play or a group of Bavarian folksingers or a dimly-lighted honky-tonk named La Boutique de Booze. I hate to denounce this trend as an evil, because I am aware that my opinions are hardening along with my arteries, but I never expected to see the day when the Greenwich Village Voice would carry half a dozen ads for ski clubs in Vermont. Some people object to any change, and I still recall the attitude of a city friend who came to visit our place one summer after a lapse of some years, 'Isn't it a shame!' she sympathized. 'They've blacktopped your road. You must be furious!' . . .

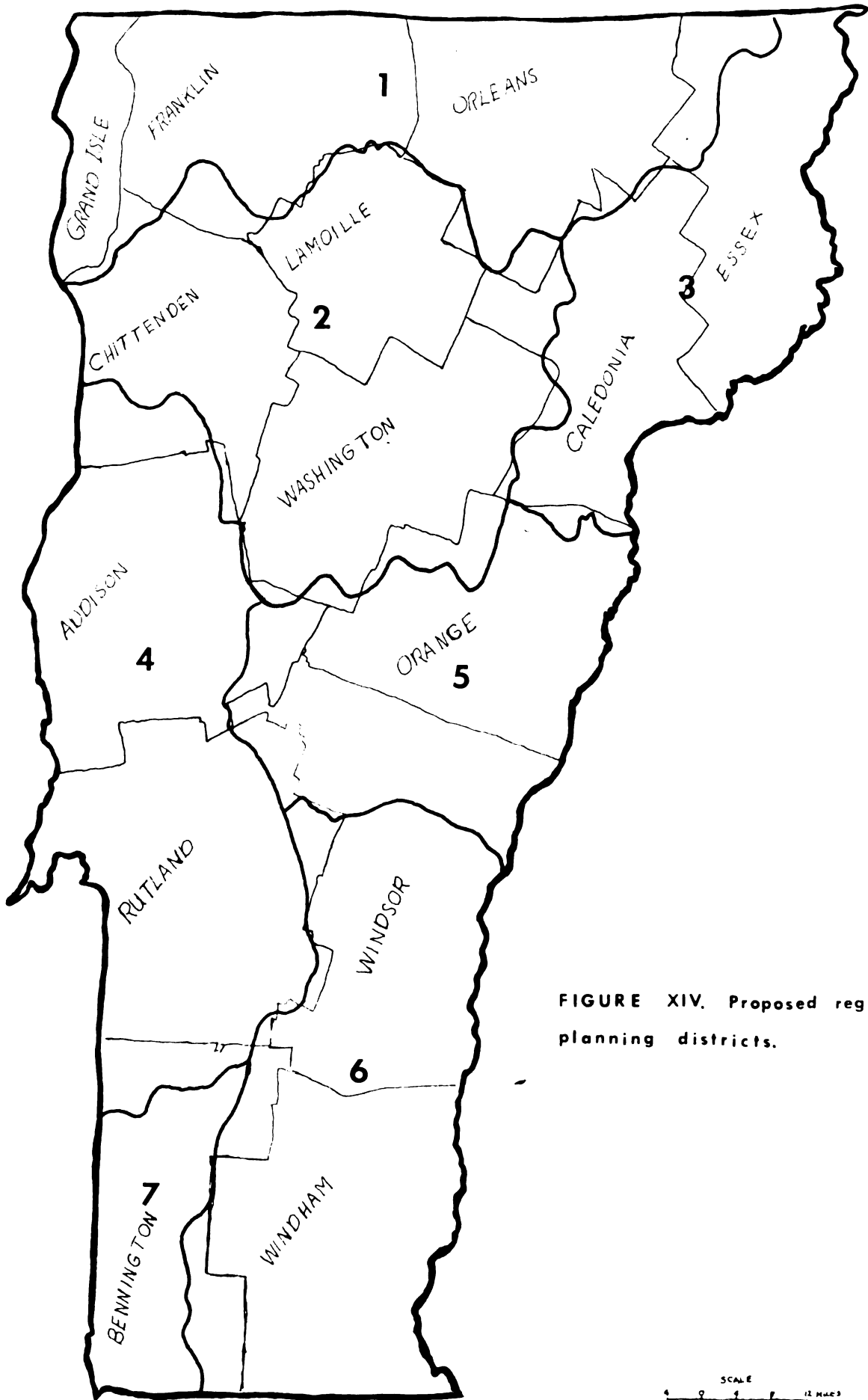
"Whenever I find myself moved to criticize some modern change in Vermont, I try to think how my own way of life--surely a reasonable and moderate standard--would appear to a certain sturdy pioneer, a contemporary of Peleg Sunderland and Ethan Allen. Tradition reports that this thorny old character was observed one day seated in front of his bark-roofed pitch, denouncing his uppity neighbor down the hollow. Do you know what that young fool was doing? He was actually building an outhouse; God's great outdoors wasn't good enough for him!"¹

¹Gerald Raftery, "I Don't Oppose Change, But--," Vermont Life, xxi, No. 3, (Spring 1967), p. 56.

The next ten years are going to be critical in the development of Vermont. The task of working through the town governments to get the needed ordinances to guide and protect the beauty of Vermont will be inexorably slow and in the end will fail. The town's people, however, cannot be completely bypassed in this process and indeed, they have a right to approve or disapprove of action taken in areas under their jurisdiction. The simple facts of the matter are that the people who have the power to act, simply do not realize the extent of the changes that are impending in Vermont. If, by some magical process, it were possible to take these people ten or fifteen years into the future and show them what their towns will look like without controls, there would be no opposition whatsoever to such measures. Efforts have already been made to show the local town's people lake areas similar to their areas which have developed in an undesirable manner, but most people just shrug and say "that is not Vermont; conditions are different here."

Regional Planning Commissions

The only hope is for groups such as lake associations, hunting clubs, and other individuals, who have had experience outside Vermont, to work with regional planning commissions to get the needed ordinances and zoning codes for critical areas. The legal structure of these regional planning commissions could be similar to that of the Lake George Park Commission. It is proposed that the boundary lines between the jurisdictional territory of each of the above commissions be drawn, not on political lines, but on the only logical dividing lines, those of drainage basins shown in Figure XIV, page 64.



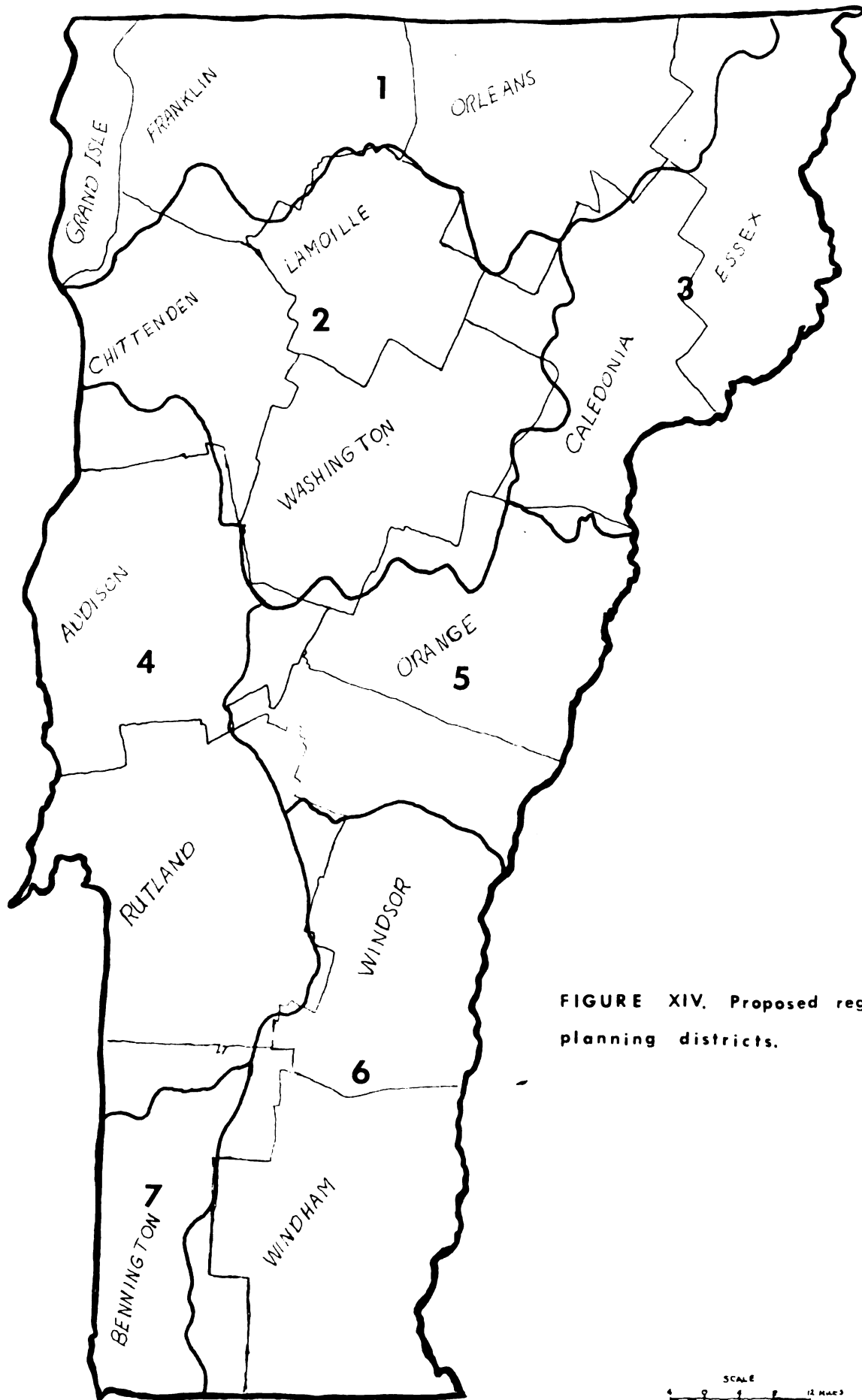


FIGURE XIV. Proposed regional planning districts.

Each of the seven Regional Planning Commission Districts could be administered under the central direction of the Vermont Development Department. Each regional planning commission could be staffed with personnel capable of assisting groups like lake associations in working out workable plans for development of their individual lakes and watersheds. It is conceivable that these commission areas could become natural resource districts combining the duties of (1) Soil and Water Conservation, (2) Agricultural Extension, (3) Soil Conservation Service, (4) State Forest Service, (5) Agricultural Stabilization Conservation Service, (6) Health Department Office, and many other offices into one central headquarters, thereby improving the efficiency of the operation and reducing the number of personnel required. The facet of reduction of personnel on the state government payroll is a much needed one in Vermont, since one out of every five persons in Vermont works for the state in some capacity or other. Using this method, the proposed state zoning plan could be implemented if it is accepted by the voters in the 1968 balloting.

Another approach to the problem of zoning or control of problem areas is the use of what is known in New York State as petition zoning. This procedure will be described in detail later in this chapter.

State Government

The role of the state government in control of lakeshore development is not one of direct control but one of, (1) encouragement of the local interests to take appropriate action, and (2) one of passage of workable water laws which enable solid, high-quality development to proceed.

With the possible exception of pollution abatement laws, the "Vermont water laws and practices are archaic, indeterminate, and tend to encourage encroachment on the public domains."¹

Water Law

As mentioned in the preceding paragraph, the water pollution laws of Vermont are adequate and up-to-date. However, there is one weakness in the law that should be corrected. Title 10, Chapter 33, Section 909 reads as follows:

"No person shall create, establish, cause or maintain any source of pollution not existing on or before June 1, 1949, or increase any source of pollution existing on or before such date except through petition to the board and upon receipt from the board of written authorization so to do provided, that after the classification of any Vermont water has been established in accordance with the provision of this chapter, the board may take action against any person who permits waste of such kind or quantity to enter such stream as by itself or in combination with wastes of other sources reduces the water below the classification set for it. However, it is not the intent of this chapter to prohibit the proper application of fertilizer to field or crops."²

The weakness in the above section stems from the fact that it states that pollution must be proven before any action can be taken by the board to stop it. If the opening sentence were changed to: "It shall be unlawful for any person directly or indirectly to discharge into the waters of the state any substance which is or may become injurious to the public health, safety, or welfare, or cause or maintain any source of pollution not existing on or before June 1, 1949 . . .". The key words "or may become" gives the Water Resources

¹Frederic O. Sargent, Principles of Regional Planning, (Burlington, Vermont: University of Vermont Press, 1967) p. 60.

²Vermont Statutes Annotated, Title 10, Chapter 33, Section 909.

Commission the power to act before the watercourse is degraded or damaged.

The remainder of the Vermont laws relating to water deal with sewage systems installation, the construction of dams, the Connecticut River Flood Control Compact and other specific areas of concern. No mention is made of such important areas of concern as: (1) lake bottom filling and dredging, (2) flood plain zoning, (3) lake level stabilization, (4) water rights, (5) public access, (6) lakeshore zoning, (7) boating control, (8) the legal status of lake associations, and (9) lakeshore platting. The resolution of conflicts arising in these areas is left to common law and the previous decisions of the courts. Schmid made this comment concerning this body of law.

"Common law has important implications for social science research into what kind of legal procedures and economic institution will further economic growth and reduce conflicts between competing users. Although there is no statutory law to cover a great many of the possible conflicting situations, there is a body of experience which has been built up in the day to day contact of people as they reach informal agreements and compromises which they are willing to live with in an attempt to carry out their water using activities. This body of experience can be utilized as the state begins to think about the need for formal legislation."¹

Vermont has reached the stage mentioned by Schmid and needs to begin to think about the need for formal legislation in the nine areas mentioned above. Each of the above areas will be briefly discussed in the following paragraphs.

Lake Bottom Filling and Dredging

At the present time the controlling agency in matters of dredging

¹A. Allan Schmid, Evolution of Michigan Water Laws, Response to Economic Development, Michigan State University Circular, Bulletin 227, (East Lansing, Michigan: Michigan State University, 1960), p. 32.

and filling is the Army Corps of Engineers whose only criteria is the effect the proposed fill will have upon the navigability of the watercourse. The law should be broadened to include such things as scenic beauty, recreational usefulness, and ecological soundness. Also, the administration of this area should be brought under the control of the state rather than the Federal Government. This will result in tighter control and perhaps prevent dangerous situations such as public health hazards, similar to the one shown in Figure XV.



Figure XV. The white building at the left of the picture is a public toilet intended for the use of the patrons of the trailer park soon to be established on the fill in the foreground. Grand Isle County, Vermont.

Flood Plain Zoning

It has been 40 years since the destructive flood of November 1927. The estimated damage during that year was 3.2 million dollars. If Vermont were to receive the identical amount of precipitation in 1968 as it did in 1927, the monetary losses would triple or even quadruple those of 1927. This situation persists despite the millions of dollars which were spent in the state by the Army Corps of Engineers for flood control structures. It seems the more that is spent for flood control structures, the greater the loss suffered each year from floods in the United States. This happens because with construction of flood control structures, the residents of the area increase their use of the "protected" areas. When a flood occurs which exceeds the capacity of the structure, losses are increased. The entire process is a vicious circle and there is growing conviction that owners of lands vulnerable to floods do not have a clear right to put these lands to dangerous use and then obtain protection and reimbursement at the public expense.

Vermont needs a program of zoning and development of flood plains with uses of this valuable land that is compatible with flooding, thereby yielding the maximum returns to society with a minimum of social costs. It will be recalled that the major forms of adjustment to floods which are common in the United States today are: (1) land elevation, (2) flood abatement, (3) flood protection, (4) emergency measures, (5) structural adjustments, (6) land use, (7) relief, and (8) insurance.¹

¹G. F. White, Human Adjustment to Floods--A Geographical Approach to the Flood Problem in the United States, (Chicago, Illinois: University of Chicago Press, 1945), p. 10.

Considering the nature of the terrain and the lack of extensive commercial development, Vermont's most economical course would be to follow one of land use adjustment. This would entail restriction of new use or replacement of damaged property within the flood plain to those such as recreation, agriculture, scenic corridors and the like. The proposed scenic development of the Winooski and Otter flood plains are good examples of this type of adjustment. If this route proves to be economically unfeasible, then building codes should be enacted and enforced requiring structures which could withstand periodic flooding with a minimum of damage. This alternative was followed in the "Golden Triangle" of Pittsburgh with a great deal of success.

The enactment of flood plain zoning laws would benefit the cause of lakeshore zoning in that it would establish the principal of special state-wide zones in the Vermont statutes and open the door for establishment of similar zones on lakeshore property.

Lake Level Stabilization

As previously noted, there are a large number of lakes in Vermont that have artificial controlling works which regulate the level of the water. Most of these lakes are used for recreational purposes. Many of them have large amounts of capital investments in the way of summer cottages, launching ramps, and public beaches. A drastic change either up or down of the level of the lake water could have catastrophic effects on this investment. In one instance a dam, which had been built 80 years previous by a lumber mill for hydro-electric power and subsequently abandoned, gave way leaving nothing but a mud hole behind. Since ownership of the structure could not be

determined, the dam was never reconstructed, and the property owners came up on the short end with no recourse to recoup their losses, except to rebuild the dam at their own expense which was economically unfeasible. If this type of occurrence is repeated, many people will think twice before investing in land in Vermont. This type of reaction can do nothing but hurt the recreational potential of Vermont.

A statute is needed that would require that the responsibility for all water control works in the state be legally established and that a legal water level be established to enhance the recreational potential of Vermont.

Water Rights

Since Vermont is in the "humid" eastern portion of the United States, it subscribes to the "riparian doctrine" of water rights. However, there is no mention of this concept in the statutes of the state, and as in many other areas, the courts are left to their own devices when considering cases concerning water rights.

Action should be taken by the legislature to establish a separate body of water laws dealing with the entire spectrum of water rights. The bill should: (1) clarify the ownership of submerged lands under the lakes and streams of the state, (2) define "reasonable use", (3) clarify the title and rights to ground water, (4) delineate the public and private waters of the state, (5) define navigable waters,

and (6) establish an administrative agency to enforce and administer the law.^{1,2}

The last item in the list above is the most important. The administrative agency is needed to take matters of this nature out of the hands of the judges, who are relatively inexperienced in the intricacies of water law, and into the jurisdiction of a group of professional mediators, who would perform the duties of the initial appellate agency in matters involving water rights.

Public Access

"Through lack of foresight and planning, the public is, to a large extent, cut off from the public water it owns."^{3,4} It is human nature for owners of lakeshore property to try to exclude the public from "their" lake in an effort to establish an area for the exclusive use of a privileged few. This practice is not, however, in the public interest, and it is the task of state and local governments to protect this interest with the needed statutes and actions. The statute should include, (1) requirements or guidelines for the establishment of a

¹The problem posed by the lack of classification of water law is illustrated by the case of the State of Vermont versus Cain and Burnett. Disputed in this case is the line of demarcation between private rights and public rights on the surface of the lake and the land under the water. This case has gone to the Supreme Court and has been returned to the lower courts for a retrial.

²Frederic O. Sargent, Multiple Use and Water Law, New England Council of Water Center Directors Proceedings Water Rights Law Conference, November 10, 1966, Boston, Massachusetts.

³Frederic O. Sargent, Principles of Regional Planning, (Burlington, Vermont: University of Vermont Press, 1967), p. 60.

⁴The issue public versus private surface water has not been considered by the Vermont courts. Navigability is the sole criteria for determination of public or private characteristics of a body of water.

minimum percentage of the shoreline or streambank which is open to the public, (2) provisions to insure that the public access is evenly distributed throughout the state, and the insurance that the public access, once established, cannot be closed.

Petition Zoning

In areas where the lakeshore has been developed prior to the application of controls, the only thing that can be done short of condemnation of the property is to prevent any further over-development. In this case the logical place to start is with the property owners around the lake. It should be pointed out that the property owners and the legal voters in a town are not necessarily the same individuals. In fact, more often than not, the majority of the landowners around a lake have no vote in the town in which the lake is located. In this situation the landowners often favor zoning but get little or no cooperation from the town's people in enacting an ordinance, simply because the law requires the entire town to be zoned, and in most cases the only area that needs the ordinance is that land around the lake. There is, therefore, a need for enabling legislation in Vermont for what is known in New York State as petition zoning. Petition zoning is a procedure that permits zoning only a portion of a town on the initiative of the property owners through a petition to the town board. This petition must be signed by at least 20 owners of taxable real property lying within the proposed area. The area can be no smaller than 40 acres and the signers must aggregate at least two-thirds of the assessed valuation of all the taxable real property in the area. The petition must also include two-thirds of the assessed valuation owned by resident owners.

The law further states that the petition should describe the boundaries of the proposed area in the manner used in deed conveyances. The petition must also contain a statement of the uses of real property which the petitioners wish to have excluded from the area. There are four types of zones suggested in the law, but these types may be modified to fit local conditions and are included merely for guidance.

The types of zones as prescribed in the Lake George law are:

1. R-1 or single family residential. The only accessory uses permitted are professional offices, private garages and parking areas.
2. C-1 or retail business and personal service which includes banks, eating and drinking establishments and public buildings.
3. R-3 or one and two family dwellings with the following permitted accessory uses:
 - a. farm buildings
 - b. roadside produce stands
 - c. funeral homes
 - d. private boat launching ramps and nonprofit storage facilities for no more than two boats.

Also included in R-3 zones are the following special permission uses:

- a. marinas
 - b. yacht clubs
 - c. golf courses
 - d. ski slopes
 - e. community buildings.
4. R-4 or commercial housing which includes motels, tourist homes and boarding houses.

Once the petition reaches the town board, the board must hold a properly announced hearing. In order to insure that all property owners are advised of the date and time of the hearing, a notice must

¹News item in the Lake George Mirror, July 21, 1967, p. 5.

be mailed to each by registered mail return receipt requested.

After the hearing, the board must decide, (1) whether the petition satisfies the conditions of the law, (2) whether any of the real property within the proposed area should be excluded from the zoning regulations, and (3) whether it is in the over-all public interest to grant the petition. If all three of these conditions are met, then the board may adopt an ordinance establishing the zoning district.

The law also provides a number of escape clauses to protect minority interests. (1) A property owner may attempt to persuade the board at open hearing to exclude his property from the ordinance. (2) The law provides for appeal to the courts. (3) The law provides for variances to be established by the board in cases where hardship would result. (4) The law provides for amendments to the zoning ordinances to take care of special cases.

This type of statute would be well received in Vermont due to the strong conservative strength in the state. Enactment of this law depends entirely upon local initiative, and there is ample provision made to protect the minority landowner.

Coupled with this petition zoning law, Vermont should pass some sort of incentive legislation to encourage the town to move in the areas of landscape beautification, development control of water frontage and sewage disposal.

Boating Control

With today's ever-increasing outboard motor size, there is a great danger to other users of surface water. A formula should be developed based upon, (1) the acreage of the lake, and (2) the complexity of

the shoreline. This formula could be used as a guideline for controlling boat size and displacement. When problems arise on the lake in question, the formula should be used, and the lake posted at all launching ramps. A possible formula which could be used is given below:

Using the basic rule of thumb of requiring 10 acres of water surface per permitted horsepower, a 100-acre lake would have a maximum motor size of 10 horsepower. Most formulas would stop here; however, shoreline complexity should be included as a determining factor in placing a limit on the size of outboard motors permitted on a lake. A quantitative expression describing the configuration of a shoreline is given by Reid, who applies the term shore development (SD) to this parameter.¹ This index is derived as the ratio of the shoreline length to the length of the circumference of a circle of the same area as the lake. Shore development may be calculated from the formula:

$$SD = \frac{S}{2 \sqrt{\pi A}}^2$$

S = length of the shore
A = area of lake

Increasing irregularity of the shoreline would yield SD values rising from 1 for a perfectly round lake to 5.5 for lakes with large numbers of embayments and projections.

¹George K. Reid, Ecology of Inland Waters and Estuaries, (New York: Reinhold Publishing Corporation, 1966), p. 34.

²The length of the shore and the area of the lake must be expressed in similar units such as meters and square meters or miles and square miles.

Assuming that as SD increases motor size should decrease, the following horsepower factor (HPF) is proposed:

$$HPF = \frac{A}{\sqrt{SD}}$$

A = area of the lake

The values derived from using this formula would be somewhat smaller than the acreage of the lake. It is this figure which is used with the rule of thumb of 10 acres per horsepower.

For example, given a lake with the following parameters:

$$\begin{array}{rcl} \text{Area} & = & 270\text{A} \\ \text{SD} & = & 2.5 \end{array}$$

$$HPF \quad \frac{270}{\sqrt{2.5}} \quad = \quad \frac{270}{1.58} \quad = \quad 170 \quad = \text{adjusted lake size}$$

Therefore maximum horsepower permitted on the lake would be 17.

This formula is usable on lakes up to 1,000 acres.

The Legal Status of Lake Associations

At present, lake associations can incorporate and be taxed as non-profit organizations. This, however, does not provide them with a legal base from which to attack the problems of lakeshore land use. What is needed is a statute setting up these associations on a sublocal government basis and possibly even the provision of state matching funds for projects which will improve the scenic beauty of the lake or protect it from encroachment.

Lakeshore Platting

Vermont, like many other areas in this country, has been subject to a great deal of piecemeal development around one of its most valuable resources, its inland lakes. The most common use of the land surrounding a lake is sale of such land for seasonal cottages. Naturally, the first land to be sold is that land frontage on the water. The individuals selling the land, desiring to make as much profit as possible from their property, lay out lots with as small a portion of water frontage as the market will accept. The result of this chain of events is clearly seen surrounding such lakes as Dunmore and Bomoseen. The land is developed in concentric circles around the lake starting at the waterfront and proceeding as far back as is economically feasible. There is need for a platting law which would apply to all waterfront area in the state, which would require a landowner contemplating the sale of three or more lots or owning a specified percentage of the waterfront land, to submit a plat with details as to the proposed sewage disposal system to be used and all other information normally required in a regular subdivision. An attempt should be made by the agency administering these plats to encourage cluster development and ensure that all buildings are placed back away from the shoreline in order to preserve the natural beauty of the lake. An attempt should also be made to encourage the development of common swimming and boating facilities.

Included in the plat law mentioned above, there must be safeguards spelled out to ensure that the open space preserved by the use of cluster development is left as such and not developed to the density found within the clusters of cottages or houses laid out in the

original plat. Provision should also be made to provide for financial assistance in areas of heavy development in order to ensure that proper sewage disposal facilities are constructed.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Leisure is the blessing and could be the curse of a progressive, successful civilization. Most Americans face the prospect of more leisure time in the future, and thus the challenge of using it for their enrichment. At its best, outdoor activity is essentially a renewing experience--a refreshing change from the work-a-day world. As long as the activity is freely chosen--because it is refreshing and interesting to do--then it serves the basic function of recreation--the task of recreating human vitality. Latent energy is tapped, unused powers of the body, mind and spirit are employed, the imagination works on fresh material, and when all these things occur, the individual returns to his work with a sense of renewal. All in all, being in the outdoors is a good wholesome and healthful use of leisure.¹

It has been the objective of this paper to carefully examine some of the complex and often frustrating problems of lakes and lakeshore use in Vermont and to attempt to suggest some reasonable and logical remedies or practices which will prevent or correct them. It is a foregone conclusion that there are no easy answers to any of the problems discussed here due to their deep economical and sociological cross currents.

The objective of this chapter will be to sum up the present situation taking note of the accomplishments already achieved and the major problems still ahead on Vermont lakeshores. Then, specific recommendations will be made for needed action, listed in order of priority for action by the various levels of government.

¹"Outdoor Recreation for America," The Report of the Outdoor Resources Review Commission to the President and Congress, Washington, D. C., 1962.

For the most part, Vermont lakes and lakeshores are still reasonably close to their original natural beauty. Serious inroads and encroachments have been made, however, in the most heavily populated areas of the state; more will be made as the recreation pressure grows in the state unless proper protective measures are taken. The next 15 to 20 years will be critical in the development of Vermont, since the completion of the Interstate Highway System will bring 53,000,000 people within a day's drive of Northern Vermont. The pressures and changes which these hordes will exert upon the resources of Vermont are staggering.

In order for Vermont to meet the challenge posed by this growing demand for recreation, the entire state must give its attention to the job of planning.

Vermont already has made considerable progress in the area of encroachment control. For example, it has been one of the leaders among the states in billboard control and fishing access acquisition and now has a state-wide zoning plan under consideration in the State Legislature. Vermont also has an excellent state park system. Many states, including Michigan, would benefit greatly from a close inspection of Vermont's approach to these areas of endeavor.

This is not to say that Vermont does not have problems. Nothing could be further from the truth. Despite the establishment of large numbers of fishing access points, the fishermen could possibly be crowded off some lakes by other recreational uses such as water skiing in the summer and skimobiles in the winter. Further, once the public gains access to the lake, the advantages gained thereby are greatly diminished if there is no place along the shore where a family can

stop and enjoy a picnic or pitch a tent for the night. Lake George has provided numerous islands designated specifically for these purposes.

The threat to the purity of Vermont's waters posed by excessive concentrations of seasonal homes and trailers equipped with inadequate sewage disposal facilities is another knotty problem with which Vermont governmental agencies must deal.

Assuming the state zoning plan is passed, there then will be the gargantuan task of implementing the plan and convincing the people to support and enforce its provisions and insure that the plan is applied to areas which need and require zoning, such as lakeshores and stream banks.

What then, is the priority of attack for the various governmental bodies of the state? Perhaps the first priority on all levels should be the task of public education to inform the populus of the need for quick and positive action in the areas mentioned.

Specifically, the state government should concentrate first on the enactment of workable and enforceable laws with respect to water and water rights. Second, it should establish an administrative agency to interpret the new water laws and mediate disputes thus relieving the courts of this intricate task. Third, the state government should take action to legitimize, encourage, and support lake associations of all kinds, because it is this type of organization that can make or break the entire planning and control effort on the lakeshores of Vermont. Fourth, state government should take action to set up regional planning areas with boundaries along natural divides rather than political lines, and staff the headquarters with competent resource people equipped to provide technical and legal assistance to towns and lake associations.

Regional planning commissions, in addition to the job outlined above, should first become thoroughly familiar with the natural resource problems that fall under their jurisdiction, take steps to call them to the attention of people concerned and then assist them in finding workable solutions. Second, the regional planning commissions should develop methods which could be used to prevent future problems such as strip development and uncontrolled commercial development from lowering the value of previously constructed improvements.

Town government has often been called the "stumbling block" of progress in Vermont. In many cases this is true. What is needed is for the leaders of each community to take an "objective" look at their town and try to imagine the worst possible chain of events that could happen, and then take steps to insure that they do not happen.

Lake associations, by working closely with towns, regional and state governments and agencies, are in an excellent position to protect and improve their lakes. Every lake is in one stage or another of development in each of the categories listed below. The categories are listed in descending order of desirability. What the lake associations should do is to determine where their lake stand on each of the "ladders" depicted below and then plan programs which will move the lake up the ladder, or if not up, keep it from descending any further.

1. Sewage disposal

- a. Connection with city or village system.
- b. Sewer system and treatment plant for lake.
- c. Community sewage lagoon.
- d. Spray irrigation of clarified effluent.
- e. Sealed septic tanks with weekly clean out.
- f. Septic tanks and tile field.
- g. Cesspools.
- h. Outdoor pit privies.

2. Land use
 - a. All land platted and developed in accordance with regional and local plans.
 - b. All future land use platted in accordance with regional and local plans.
 - c. Structures built in clusters leaving large amount of open space.
 - d. Structures built in narrow strip around the lake.
 - e. Most structures extending out over the water surface.
3. Public access
 - a. Entire shoreline open with trails and picnic areas maintained on upland.
 - b. Adequate public access with restricted picnic areas.
 - c. Fishing access only with remainder of shoreline closed.
 - d. No public access.
4. Boating facilities
 - a. One central marina.
 - b. Regional marinas for specified groups of cottages.
 - c. Control of number and size of private docks.
 - d. No controls.
5. Boat control
 - a. No motors permitted on lake.
 - b. Motor size limited by size and shape of lake.
 - c. Water surface zoned to separate conflicting uses.
 - d. No control.

In closing suffice to say that, if the people of Vermont do not make the decisions necessary to guide their state development, the decisions will be made by people outside the state, and Vermont will lose the charm that makes it unique.

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APPENDIX A

VERMONT RESOURCE RESEARCH CENTER
DEPARTMENT OF AGRICULTURAL ECONOMICS
(CONFIDENTIAL)

_____	_____	
Date	Respondent's Name	
_____	_____	
	Association's Name	
_____	_____	
	Town & State	
_____	_____	_____
(1-4) Office No.	Card No. (5)	(6-8) Interview No.

9. What type of organization is this?
1. Road association
 2. Sportsmen's club
 3. Boating club
 4. Lake association
 5. Mosquito control or other spec. commission
 6. Safety patrol (including lifeguard)
 7. _____
 8. _____
 9. _____

Membership Characteristics

10. What occupation group predominates in the membership?
1. Professional 2. Managerial 3. Farmers 4. Craftsman
 5. Laborers 6. Retired 7. Varied. 9. _____
11. What percent of the property owners on this shoreline are members of the association?
1. 0-15 2. 16-30 3. 31-45 4. 46-60 5. 61-75
 6. 76-90 7. 91-100 9. _____
12. _____ What are the restrictions on Membership?
- (Code)
- _____
- _____
13. What percent of the members are summer residents only?
1. 0-25 2. 26-50 3. 51-75 4. 76-100 9. _____
14. What percent of the members are year around residents?
1. 0-25 2. 26-50 3. 51-75 4. 76-100 9. _____

15. _____ What type of controls are used on this shoreline?
(Code)

Do you also have:

16. Petition zoning	1. Yes	2. No	3. DK	9.
17. Precinct zoning	1. Yes	2. No	3. DK	9.
18. Conventional zoning	1. Yes	2. No	3. DK	9.
19. Deed restrictions	1. Yes	2. No	3. DK	9.
20. Developer design	1. Yes	2. No	3. DK	9.
21. Water zoning	1. Yes	2. No	3. DK	9.
22. Owner restrictions	1. Yes	2. No	3. DK	9.
23. Fire Dist. controls	1. Yes	2. No	3. DK	9.
24. Building codes	1. Yes	2. No	3. DK	9.
25. Dumping restrictions	1. Yes	2. No	3. DK	9.
26. Pet restrictions	1. Yes	2. No	3. DK	9.
27. Leasing controls	1. Yes	2. No	3. DK	9.

What were the reasons for initiating lakeshore land use controls and how effective are they?

Control	1.V. Eff	2.Mod Eff	3.Eff W Some rest.	4. NA	9.
28. Trespassing	1.	2.	3.	4.	9.
29. Vandalism	1.	2.	3.	4.	9.
30. Speeding	1.	2.	3.	4.	9.
31. Pollution	1.	2.	3.	4.	9.
32. Land use	1.	2.	3.	4.	9.
33. Dumping	1.	2.	3.	4.	9.
34. Road Maint.	1.	2.	3.	4.	9.
35. Water supply	1.	2.	3.	4.	9.
36. Sewerage	1.	2.	3.	4.	9.
37. Water zoning	1.	2.	3.	4.	9.
38. Other _____ (Specify)					

(Code)

39. _____ What has been the most important accomplishment of
(Code)

the association? _____

40. _____ What is the main problem you have encountered in
(Code)

lakeshore control? _____

41. _____ Who is responsible for enforcing the controls? _____
(Code)

42. _____ What court or legal action, if any, has been taken to
 (Code)
 enforce regulations? _____

43. Are copies of the control instrument available? 1. Yes 2. No. 3. DK 9.

Nature of Development

44. Beach length: 1. 0-50 ft. 2. 51-100 ft. 3. 101-200 ft.
 4. 201-300 ft. 5. 300-1000 ft. 6. 1001-2000 ft. 7. Over
 2000 ft. 9.

Beach surface:

45. Sand	1. Yes	2. No	9.
46. Gravel	1. Yes	2. No	9.
47. Cobble stone	1. Yes	2. No	9.
48. Mud	1. Yes	2. No	9.
49. Grass	1. Yes	2. No	9.
50. Clay	1. Yes	2. No	9.
51. No beach	1. Yes	2. No	9.
52. No beach, cliff	1. Yes	2. No	9.

Number of docks:

53. 1.	2.	3.	4.	5.	6.	7.	8.	9.	0.
54. 1.	2.	3.	4.	5.	6.	7.	8.	9.	0.

Number of rafts:

55. 1.	2.	3.	4.	5.	6.	7.	8.	9.	0.
1.	2.	3.	4.	5.	6.	7.	8.	9.	0.

Number of summer cottages:

56. 1.	2.	3.	4.	5.	6.	7.	8.	9.	0.
57. 1.	2.	3.	4.	5.	6.	7.	8.	9.	0.

Number of year around homes:

58. 1.	2.	3.	4.	5.	6.	7.	8.	9.	0.
59. 1.	2.	3.	4.	5.	6.	7.	8.	9.	0.

Do you know of other lakeshore associations or clubs on this lake or
 on nearby lakes?

Type of Water System:

- | | | | |
|--------------------------------------|--------|-------|----|
| 60. Individual pump from lake | 1. Yes | 2. No | 9. |
| 61. Community pump from lake | 1. Yes | 2. No | 9. |
| 62. Individual wells | 1. Yes | 2. No | 9. |
| 63. Community well | 1. Yes | 2. No | 9. |
| 64. Hauled in | 1. Yes | 2. No | 9. |
| 65. City or town system | 1. Yes | 2. No | 9. |
| 66. Are there plans for improvement? | 1. Yes | 2. No | 9. |

Type of Sewage Disposal:

- | | | | |
|--------------------------------------|--------|-------|----|
| 67. Septic tanks, individual | 1. Yes | 2. No | 9. |
| 68. Septic tanks, community | 1. Yes | 2. No | 9. |
| 69. Cesspool | 1. Yes | 2. No | 9. |
| 70. Straight into lake | 1. Yes | 2. No | 9. |
| 71. Lagoon | 1. Yes | 2. No | 9. |
| 72. City or town system | 1. Yes | 2. No | 9. |
| 73. Are there plans for improvement? | 1. Yes | 2. No | 9. |

What percent of the disposal systems do you consider adequate?

- | |
|-----------------------------------|
| 74. 1. 2. 3. 4. 5. 6. 7. 8. 9. 0. |
| 75. 1. 2. 3. 4. 5. 6. 7. 8. 9. 0. |

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