

RECREATION  
POTENTIAL

of

Essex County  
Vermont

ON MICROFILM



UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

RECREATION POTENTIAL OF ESSEX COUNTY, VERMONT

PHASE I

Prepared by

NORTHEAST REGION

of the

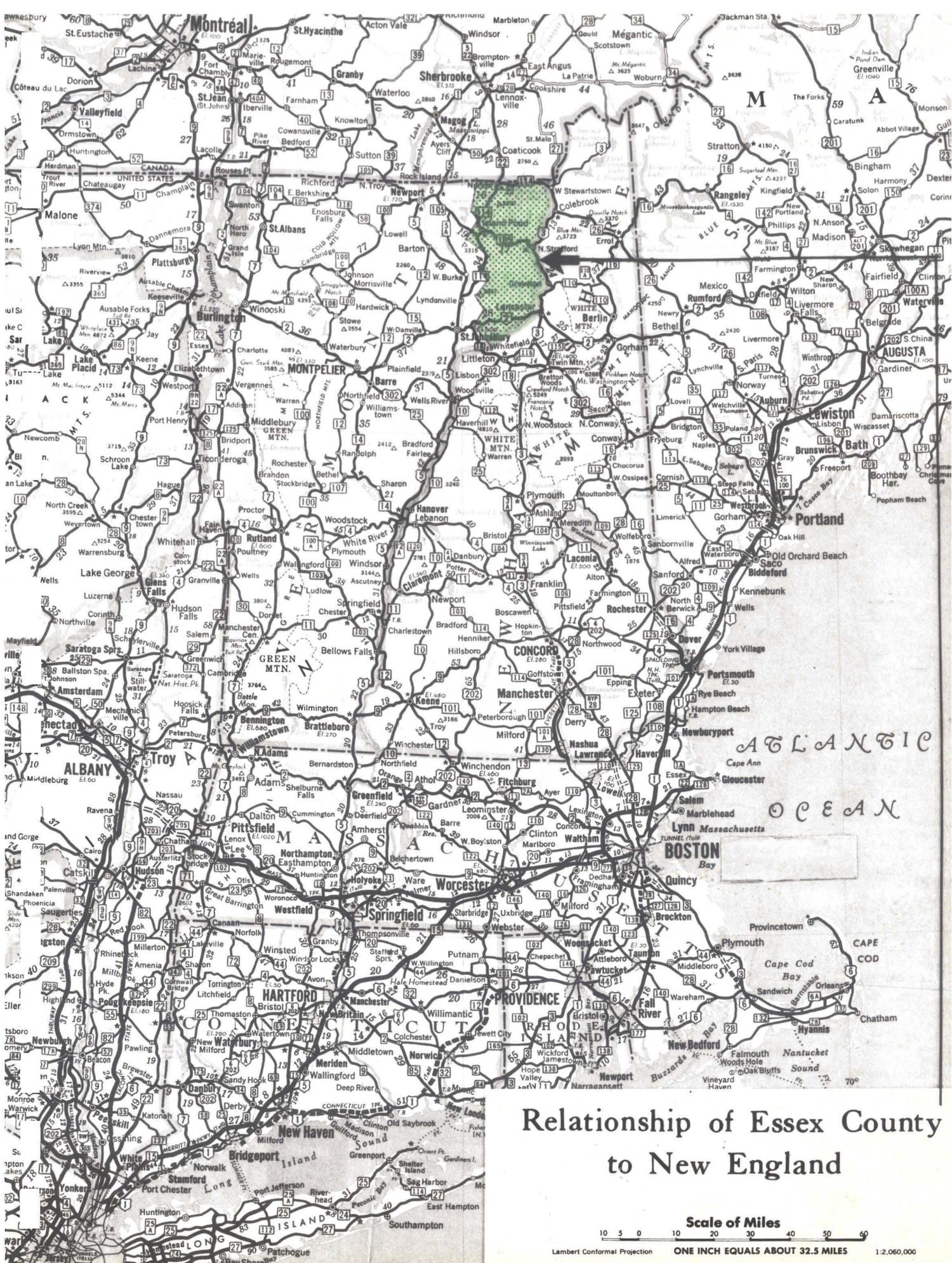
UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

AREA INVESTIGATION REPORT

by

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August, 1962



## Relationship of Essex County to New England

Scale of Miles

10 5 0 10 20 30 40 50 60

Lambert Conformal Projection ONE INCH EQUALS ABOUT 32.5 MILES 1:2,060,000

C O N T E N T S

	<u>PAGE</u>
INTRODUCTION . . . . .	1
SUMMARY EVALUATION . . . . .	2
GENERAL DESCRIPTION OF THE STUDY AREA . . . . .	3
Location and Boundaries . . . . .	3
Size . . . . .	3
Population . . . . .	4
Scenic Category . . . . .	4
Climate . . . . .	5
Geology . . . . .	5
Study Area Topography . . . . .	6
Water Resources . . . . .	7
Flora . . . . .	7
Fauna . . . . .	8
Present Land Uses . . . . .	9
THE EXISTING STATE RECREATION AREAS IN ESSEX COUNTY . . . . .	10
Maidstone State Forest . . . . .	10
Brighton State Park . . . . .	11
Need for Expansion of Existing Facilities and Areas . . . . .	11
Future Expansion of Maidstone State Forest . . . . .	12
Future Expansion of Brighton State Park . . . . .	13
Related Recreation Areas and Facilities . . . . .	14
PROPOSED RESERVOIRS IN ESSEX COUNTY . . . . .	16
Brown's Mill dam and Reservoir . . . . .	16
The Victory Reservoir . . . . .	17
GENERAL DESCRIPTION OF VICTORY RESERVOIR . . . . .	18
Reservoir Data . . . . .	18
Fluctuations of Water Elevations . . . . .	19
Flood Control Benefits . . . . .	20
Flora and Fauna . . . . .	20
ANALYSIS OF THE RECREATIONAL POTENTIAL OF THE VICTORY RESERVOIR AREA . . . . .	22
Types of Recreation Suitable at the Victory Reservoir . . . . .	22
Accessibility . . . . .	23
Region Served and Population . . . . .	24

RECOMMENDED RECREATIONAL DEVELOPMENT OF THE VICTORY RESERVOIR AREA	<u>Page</u>
	25
General Recommendations . . . . .	25
Recommended Purchase Area . . . . .	27
Land Status - Proposed Victory Reservoir Recreation Area. . . . .	28
Suggested Plan of Development . . . . .	28
Suggested Facilities . . . . .	29
Estimate of Annual Visitation . . . . .	30
Design Load . . . . .	31
Cost Estimate . . . . .	31
Annual Charges . . . . .	32
Annual Benefits . . . . .	32

MAPS, CHARTS AND PHOTOGRAPHS

<u>Maps</u>	<u>Page</u>
Relationship of Essex County to New England . . . . .	following cover page
Topographic Map of Essex County . . . . .	following page 6
Vegetative Cover . . . . .	" " 8
Recreational Facilities in Essex County . . . . .	" " 11
State Parks in Essex County . . . . .	" " 13
Public Recreation Areas Within	
50 miles of Essex County . . . . .	" " 15
Proposed Reservoirs in Essex County . . . . .	" " 17
Victory Dam Reservoir Map . . . . .	" " 18
Interstate Highway System in Vermont . . . . .	" " 24
Traffic Flow Map - Essex County . . . . .	" " 24
Possible Development Layout	
Victory Reservoir Recreation Area . . . . .	" " 27
Land Use Plan - Victory Reservoir Recreation Area . . . . .	" " 28

<u>Charts</u>	
Recreation Areas Within 50 miles	
of Essex County . . . . .	following page 15
Boat-Launching . . . . .	16
Estimated Cost of Facilities - Victory Reservoir	
Recreation Area . . . . .	following page 31

<u>Photographs</u>	
Natural Features of Essex County . . . . .	following page 9
Recreational Facilities in Essex County . . . . .	" " 12
Related Recreation Areas and Facilities . . . . .	" " 14
Proposed Victory Reservoir Recreation Area	
Views from summit of Burke Mountain . . . . .	" " 22
Views of Access Road and proposed Development	
Area . . . . .	following "Land Use Plan" map



## INTRODUCTION

In the fall of 1961, the National Park Service was requested by Congress to make an appraisal of the recreation potential of Essex County, Vermont.

The following report, Phase I of the Study, reviews the County's physiography, points out the recreation resources, and examines the adequacy of the existing facilities and their capacity to meet the present and future recreation demands. The report further deals with the expansion of existing public areas and facilities, and finally, with the development of an extensive public recreation area that could become one of the major attractions in the State.

Phase II of the Study has to do with the economic aspects of the County and its resources. This work was undertaken by the University of Vermont under contract with the National Park Service. The University's report, scheduled for completion in 1963, will cover the economic base study of the region and the economic impact of the recreation developments suggested by the National Park Service in its Phase I report.

## SUMMARY EVALUATION

1. Essex County's major asset from a recreation standpoint is its extensive and varied natural scenery. Being relatively remote from urban centers and free of distracting urban developments, the County's natural attractiveness lies mainly in the wild character of its forested and mountainous landscape and in its small hidden glades, trout streams and lakes.
2. These natural features of the County have not been developed extensively for recreation. There are a few small state parks and relatively small concentrations of summer cottages around several lakes. The visitation to these parks is relatively low compared to comparable sites in other parts of the state. Hunting and fishing opportunities are excellent but this use is again relatively minor.
3. The present public recreation facilities are of high quality and they were located in highly attractive scenic areas. There is an increasing demand for these facilities and they are being expanded by the State Parks Division.
4. Opportunity still exists to increase the area and facilities of Brighton State Park and Maidstone State Recreation Area while Norton Pond and Little Averill Lake, still undeveloped along their shorelines, provide the opportunity to establish new state parks.
5. The greatest potential, however, for a major public recreation facility would be the proposed Victory Reservoir in the scenic Caledonia Mountains,

a project authorized by the Congress and presently included in the Connecticut River Flood Control Compact.

6. If provision is made for a stable recreation pool at the Victory Reservoir during the recreation season, and if additional lands surrounding the impoundment are acquired for related recreational activities, the need for establishing additional water recreation areas of this kind in the region would not be necessary for the foreseeable future. The proposed reservoir would create a water surface larger than the combined acreages of the four largest lakes in the county. If properly planned, designed and administered, a recreation area of the size and scope visualized would satisfy the recreation needs of the area and attract people from a considerable section of New England.

#### GENERAL DESCRIPTION OF THE STUDY AREA

##### Location and Boundaries

Essex County and the adjoining parts of Caledonia County are located in extreme northeastern Vermont. The study area is bounded by the Canadian line on the north, the Connecticut River and New Hampshire on the east and south, and generally by Vermont Highway 114 on the west.

##### Size

The study area is 45 miles long from north to south and averages nearly 18 miles in width. It contains approximately 425,000 acres of mainly forested hills and small mountains.

### Population

The population of Essex County in 1960 was 6,083. This is a decrease of 407 from the 1940 census and 174 from 1950. Most of the population is concentrated in the several small towns and linear developments on the highways around the periphery of the area. Averys Gore and Warrens Gore Townships are without human inhabitants. Ferdinand and Averill Townships have a population of only 16 each.

### Scenic Category

According to Fenneman's Classification, Essex County lies in the White Mountain section of the New England Province of the Appalachian Highlands. This section includes northeastern Vermont, Northern New Hampshire and extends across western and central Maine to Mount Katahdin--an area of about 10,000 square miles. The section consists of ". . . subdued glaciated mountain masses of crystalline rock". The White Mountain section includes the White Mountains (maximum elevation 6,288 feet m.s.l.), Franconia Mountains, the Katahdin group (5,200 ft.) and the Caledonia Mountains. The latter are the mountains of Essex County. They reach a maximum elevation of 3,420 feet on East Mountain.

For the section as a whole, base elevations are at about 1,500 feet m.s.l. In Essex County elevations begin below 1,000 feet, and about 85% of the county lies between 1,000 to 2,500 feet. In the entire section ". . . most of the summits above 5,000 feet are in the Presidential Range, a rather limited portion of the White Mountains proper".

Although the mountains, valleys, streams, lakes and marshes of the area under consideration form an interesting and pleasing landscape, the

striking examples lie elsewhere in the above scenic category as well as other parts of Vermont.

### Climate

Essex County has a "humid continental" type of climate -- cold winters, pleasantly cool summers, and humid conditions throughout the year.

At Bloomfield during January, which is the coldest month, the average daily maximum temperature is 27°F and the average daily minimum is 3°F. July, the warmest month, has an average daily maximum of 80°F, and an average daily minimum of 53°F. These figures show that the difference in temperature during a given 24-hour period is quite great.

The county averages 39 inches of precipitation annually. There are no dry months; e.g., at Bloomfield, February with 2.16 inches has the lowest monthly average amount of precipitation.

Most of the precipitation during the cold winters is naturally in the form of snow. Essex County averages about 80 inches of snowfall annually. This large amount of snowfall, combined with favorable temperatures, provides generally excellent skiing conditions from November through March.

### Geology

The rocks of the section are primarily granite, gneiss and schist, greatly subdued by glaciation and relieved of a massive overburden during past erosion cycles. Glaciation has greatly subdued all the hills of the study area leaving characteristic low, rounded profiles with occasional steep slopes where plucking, quarrying or gouging by ice has been effective.

Glacial features are thus primarily erosional and evident mostly in the contour of the country and in the scattered occurrence of poorly drained bog areas.

#### Study Area Topography

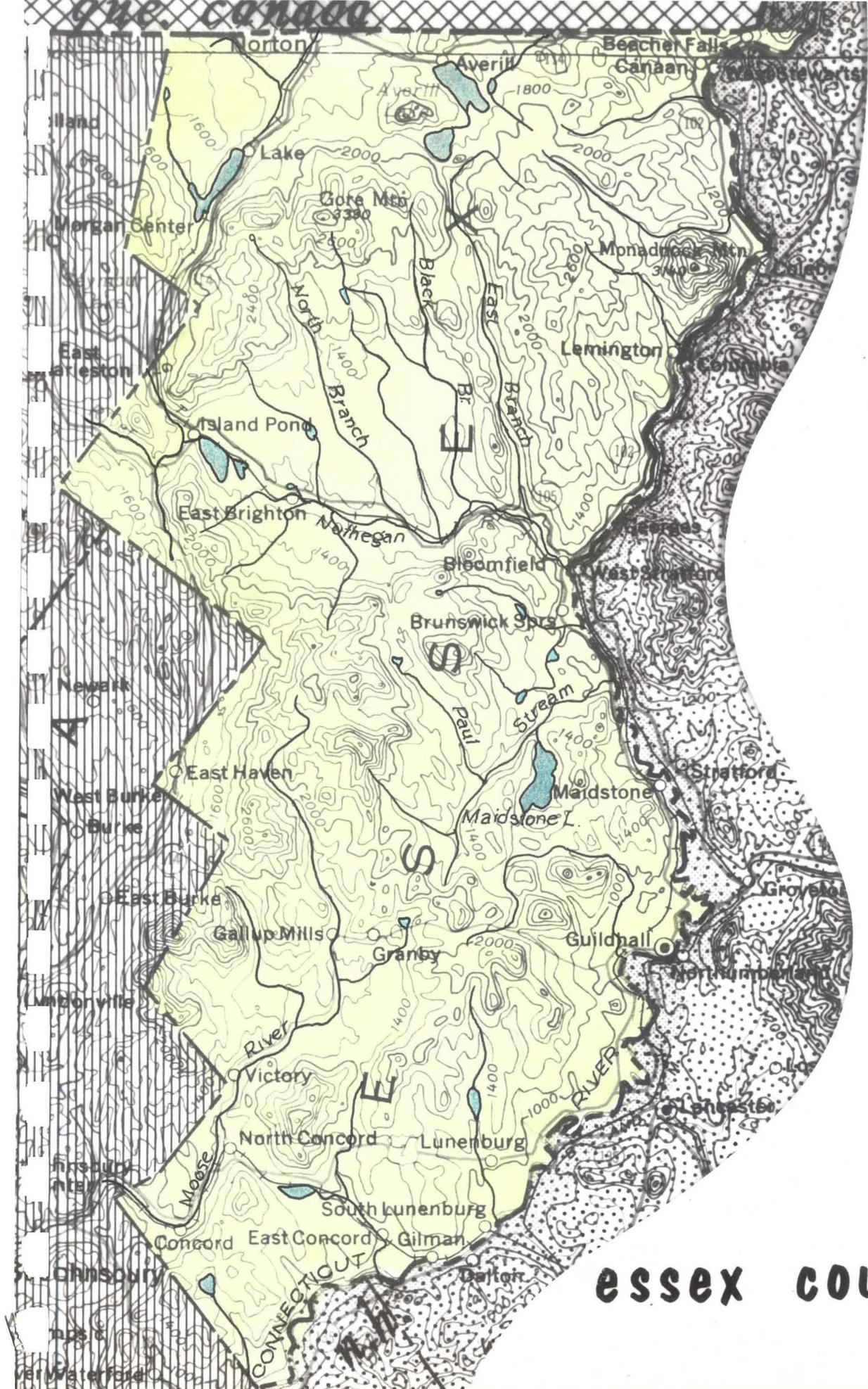
The study area consists of two related ranges of low mountains, two poorly drained basins, a range of low hills along the southeastern border and Monadnock Mountain in the northeast. The northernmost mountain or hill range begins at Island Pond on the west, arcs northward to Little Averill Lake and turns south as a broad swell to the junction of the Nulhegan and Connecticut Rivers. (See map on next page). Monadnock Mountain is perhaps an isolated outlier of this range, or, and this is more probable, related to the high rugged range of mountains running south along the Connecticut River in New Hampshire. These mountains reach their apex in Sugarloaf at 3,701 feet m.s.l.

The south range begins southwest of Island Pond, arcs south-southeast to Seneca Mountain and then continues south-southwest to the vicinity of Concord, Vermont. Elevations of over 3,000 feet occur on Monadnock, Gore, Seneca, East, East Haven, Umpire and Burke Mountains.

The two ranges with their various outliers virtually surround the Island Pond Basin. The basin is drained almost entirely south and east via the various tributaries of the Nulhegan River. However, some drainage occurs to the west at Island Pond. The elevation of the basin is almost entirely from 1,000 to 1,400 feet. The topography consists of poorly developed and broken interstream ridges interspersed with bogs.

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**essex county**

In the south a second basin occurs along the Moose River. This basin is about a fourth as large as the Island Pond Basin, and not as well defined. It is drained entirely by the south-flowing Moose River. Beginning south of the Moose River basin at Miles Mountain and continuing northeasterly to the Connecticut River is a poorly defined line of hills with maximum elevations mostly below 2,500 feet.

### Water Resources

The water resource is in the form of relatively small lakes and ponds and a number of streams. Disregarding the Connecticut River which forms the east boundary of the study area, the principal streams are the Moose and Nulhegan Rivers. Both are small streams of little recreational value other than for fishing.

The lakes and ponds number forty five and are mostly small. Only six lakes are over a mile in length. Considerable land is boggy, particularly in the Island Pond Basin.

### Flora

Except for water areas, some few rock exposures, and scattered farmland along the periphery, the study area is completely forested. (See map following p.8 ). It lies in the New England section of the Northern Appalachian Highland division of hemlock-white pine-northern hardwoods forest region. In deep, well drained soils, hardwoods predominate with sugar maple and yellow birch as the principal species. Other deciduous species are white birch, red maple and American beech.

Balsam fir and red spruce are intermixed with the hardwoods. On rocky mountain slopes stunted fir and spruce form almost pure stands. In boggy areas, tamarack, black spruce, red maple, black ash and cedar occur. White pine occurs sporadically as does hemlock.

### Fauna

The most important big game species is the white-tailed deer which is common throughout the county. The deer population has been increasing in recent years, probably due to the reversion of farmland. This is reflected in part by the increased number of deer killed by hunters in Essex County -- 222 in 1954 and 339 in 1960.

Moose occur sporadically along water areas and bogs. Black bear, bobcats, raccoon, mink and otter are the principal carnivores. Lynx, although rare, are still present and an occasional marten may be seen. The state has increased the number of fishers as a control for porcupines. Up to 1961, nearly 40 of these animals have been released in Vermont.

Besides porcupine, other large gnawing mammals include beaver, muskrat and snowshoe hare. Beaver are found in all the streams of the county. Muskrats, not as numerous as beaver, are found in marsh areas. Snowshoe hare, common throughout the county, is the most popular small-game species during the winter months.

Nesting birds of Essex County represent two general groups: those that breed generally throughout the Eastern United States and those with northern affinities. It is largely this second group that gives a special flavor to the area.



Some characteristic northern birds are the ring-necked duck, the goldeneye, and the hooded merganser among the waterfowl. The saw-whet owl, tree swallows, thrushes and kinglets are other examples. A number of northern warblers characterize the hardwood, the spruce-fir and the bog environments. In the finch family, the rose-breasted and pine grosbeak are northern birds as are the crossbills, the slate-colored junco, and the white-throated sparrow. All told, perhaps 140 species nest within the county.

#### Present Land Uses

Nearly all the land is forested and in private ownership. Consequently, the primary use of the region is for logging and cutting of pulpwood.

Evidence of this is shown by the fact that almost all of the timbered areas one can see from the various roads have been cutover rather heavily. Also, there are only five manufacturing establishments with 20 or more employees in the county -- and these five all produce either wood, furniture, paper or pulp products.

Approximately 15 percent of Essex County is in dairy farmland. However, most of the farmland is concentrated along the Connecticut River and along the valleys of the larger streams. Farming has been decreasing in importance; e.g. there were 136 fewer farms in 1959 than in 1954 -- a much greater rate of decrease than the state as a whole.

Hunting and fishing are both important uses. Approximately 4,300 fishing and hunting licenses were sold in Essex County during the 1959-1960 season; nearly 40 percent of this total were issued to non-residents.



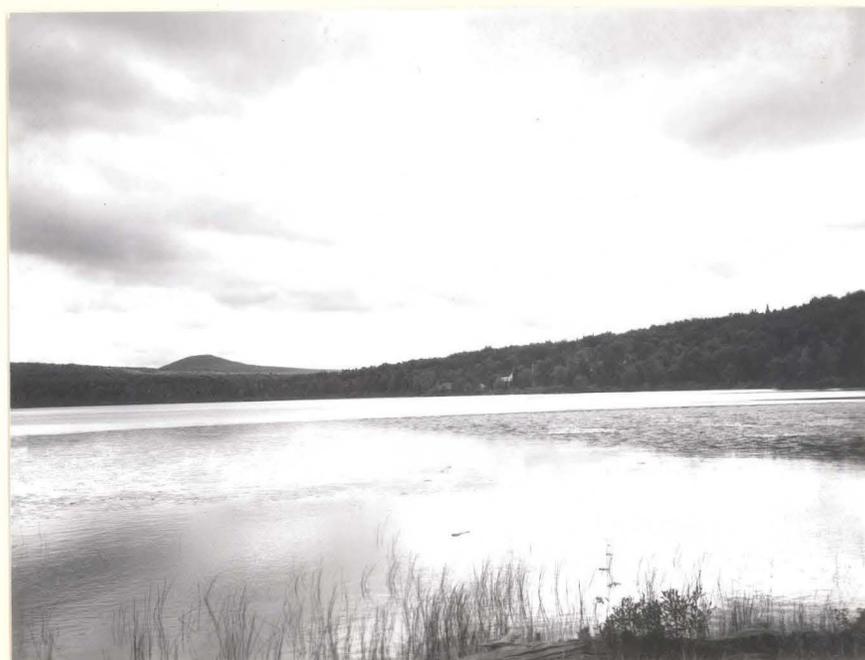
The 31-mile long Moose River (above), Paul Stream, and the Nulhegan River are the principal streams of Essex County. All three streams originate within the county and empty into the Connecticut River.



Except for some peripheral farmland, Essex County is completely forested with northern hardwoods and scattered spruce and fir on the mountain crests.



Bogs and swamps comprise approximately six percent of the total land area of Essex County. The bog shown above would be flooded by the proposed Victory Reservoir.



Essex County contains 45 lakes and ponds, four of which each exceed 500 acres.

In Vermont, Essex County is famous for its salmon and trout fishing. The deep, cold lakes, such as Great Averill and Little Averill, offer excellent fishing for lake trout, landlocked salmon and rainbow trout. In addition, the upper parts of the small streams offer outstanding fishing for brook trout. As already mentioned, the white-tailed deer is probably the most important game species in Essex County. A total of 341 deer were legally killed in Essex County during 1961 (10th rank among Vermont's counties). Of this total, 75 deer were taken by out-of-state hunters. Also popular with hunters are such forest game species as ruffed grouse, snowshoe hare, woodcock, and black bear.

Privately owned summer cottages have been built on all the larger lakes with the heaviest development on Maidstone and Great Averill lakes. Also, cottages for rent with fishing, swimming, and boating facilities are available on Great Averill Lake, Forest Lake, Lake Wallis and Shadow Lake.

The Air Force operates the 911 RAYDRON radar installation on East Mountain, which is the highest mountain in the county.

#### THE EXISTING STATE RECREATION AREAS IN ESSEX COUNTY

##### Maidstone State Forest

The demand for outdoor recreation facilities in the state parks and forests of Essex County and environs is reflected in the increasing visitor use and overcrowding. People were turned away last year at Darling State Park and Maidstone State Recreation Area during the peak camping season.

Maidstone State Recreation Area is part of Maidstone State Forest, a wooded

area of 469 acres located on the southeastern shore of Maidstone Lake in east-central Essex County. (See map on next page). The recreation area is composed of two separate areas, one of which has an excellent bathing beach and picnic area, the other a campground of about 60 sites with Vermont lean-tos and tent platforms.

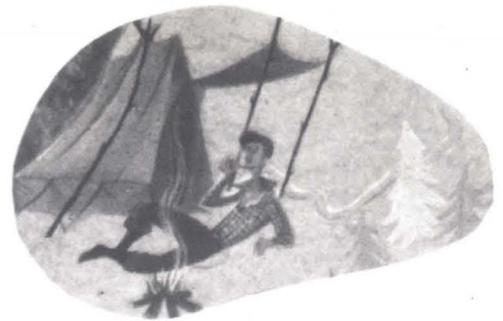
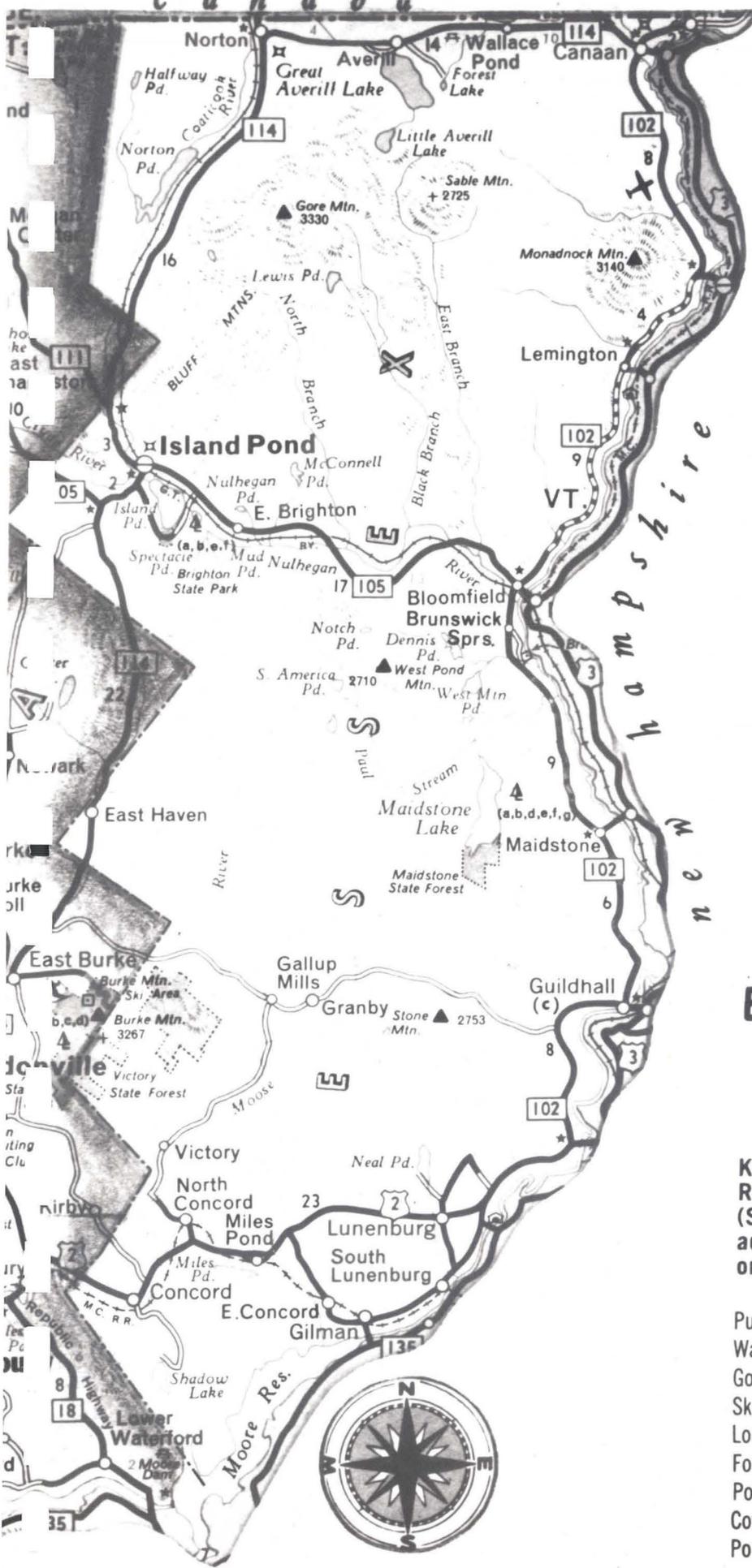
#### Brighton State Park

The Vermont Department of Forests and Parks has embarked on an expansion program of the facilities at Brighton State Park, which is the only other State Park in this county. This State Park is located on the south shore of Island Pond and has a natural white sand beach which offers fine bathing. A campground is now under construction on the adjacent Spectacle Pond and is being provided with necessary loop roads, parking spurs, graded sites, utilities, comfort stations, fire places and tables for 55 sites. Some of these sites will be available during the 1962 season. Shelters and tent platforms will be constructed in the future as the demand justifies their need and the monies are made available.

Now that it has both swimming and camping facilities, Brighton State Park is a more complete unit of the State Park System and appears adequate for its location and present demand.

#### Need for Expansion of Existing Facilities and Areas

The demand for these parks and additional recreational facilities in Essex County is expected to increase with the future construction of Interstate Highways 91 and 93 which will join west of St. Johnsbury, making Essex County



map/recreational facilities

# ESSEX COUNTY vermont legend

Key to facilities at  
Recreational Areas.  
(See code letters  
adjacent to Areas  
on Map)

- a-Caretaker
- b-Picnicking
- c-Tenting
- d-Lean-tos
- e-Swimming
- f-Bath houses
- g-Boating

- Public Recreation Areas .....
- Wayside Rest Areas .....
- Golf Courses .....
- Ski Areas .....
- Long Trail Camps .....
- Forest Fire Lookouts .....
- Points of Interest .....
- Covered Bridges (public) .....
- Ports of Entry (U.S.—Can.) .....



more accessible from the east, north and south. It is important, therefore, for the state to institute a long range plan for recreation taking into consideration these interstate roads and their potential effect on the recreation resources in Essex County. In this way, the state can continue to provide opportunities for recreation of its citizens and those in adjoining states.

The plan for recreation development of Essex County must provide and give priority to the orderly and rapid development of the existing units of the State Park System, Maidstone and Brighton, as well as the utilization of other areas.

The existing summer cottages and the rapid build-up of new dwellings on the lakes and ponds have already limited the choice of expanding established areas or the selection of new areas for water-oriented recreation.

#### Future Expansion of Maidstone State Forest

Although the campground at Maidstone State Recreation Area has recently been expanded, the number of campsites is still not adequate during the peak camping season. However, only about one-fifth of the State Forest is designated for recreation use; the remainder is in forest on which the state allows selective cutting on a very restrictive basis. Consequently, there is ample acreage for the expansion of existing facilities.

The unused shoreline adjacent to the campground is ideal for future development. Expansion can continue southward along this shoreline on land already owned by the state.



Brighton State Park, one of the two state parks located in Essex County, provides facilities for swimming, boating, and camping.



This Vermont Lean-To, located in Maidstone State Forest in Essex County, is typical of the camping facilities provided by the Vermont Department of Forests and state parks.

The small swimming and picnic area in Maidstone State Recreation Area is located one mile north of the campground. Private cottage development north and south of this area will prevent any further expansion of the swimming beach. The picnic area is limited, but the bathhouse appears adequate to handle large crowds.

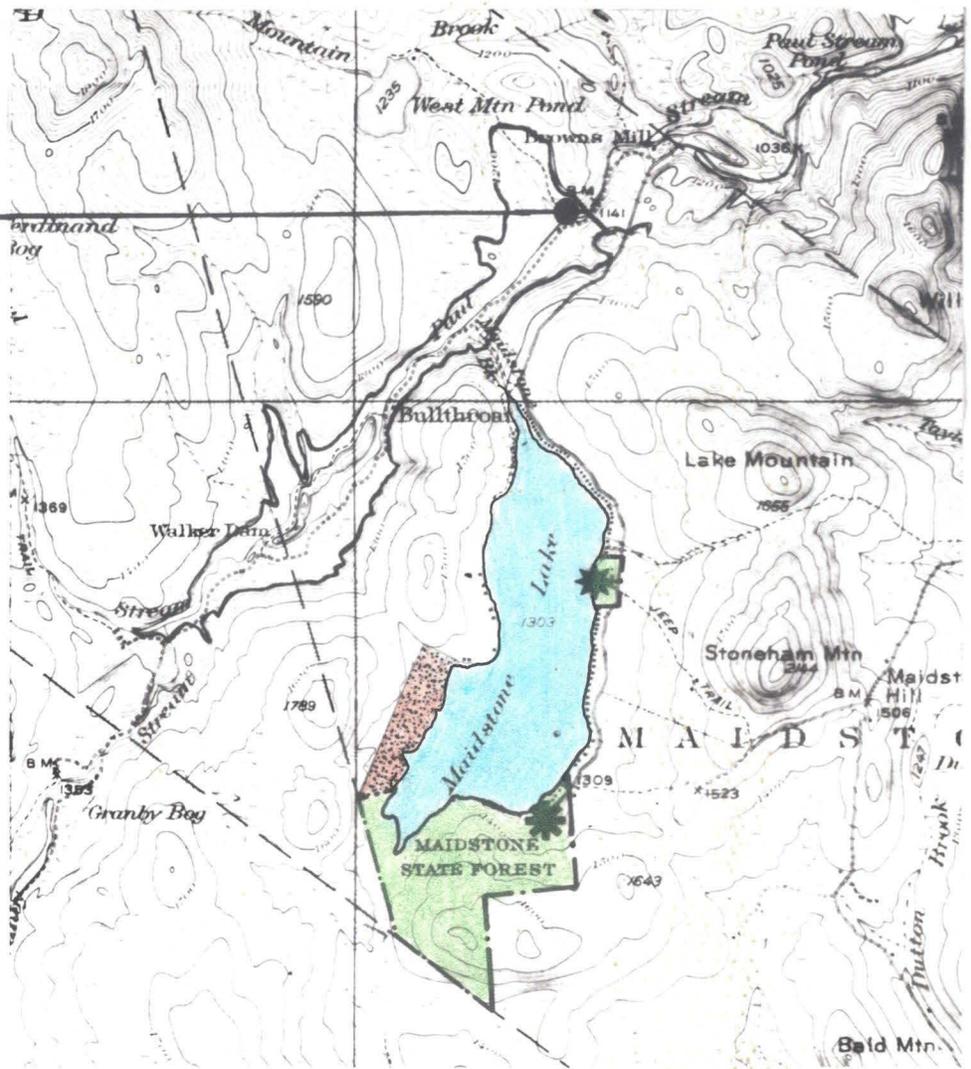
Most of the west shore of Maidstone Lake is undeveloped at the present time. However, if this shore becomes developed as the east shore is now (with small summer cottages on small waterfront lots), the value of Maidstone State Recreation Area as a water-oriented camping area will be seriously impaired.

To prevent this possible development, a portion of the southwest shore of Maidstone Lake adjoining the present northwest boundary of the Recreation Area could be acquired under purchase. (See map following p.13). This area could extend 1000 feet back from the shoreline and one mile north of the present boundary. Besides preventing further cottage development on a more significant section of the lake, this suggested addition would provide adequate acreage for the foreseeable future.

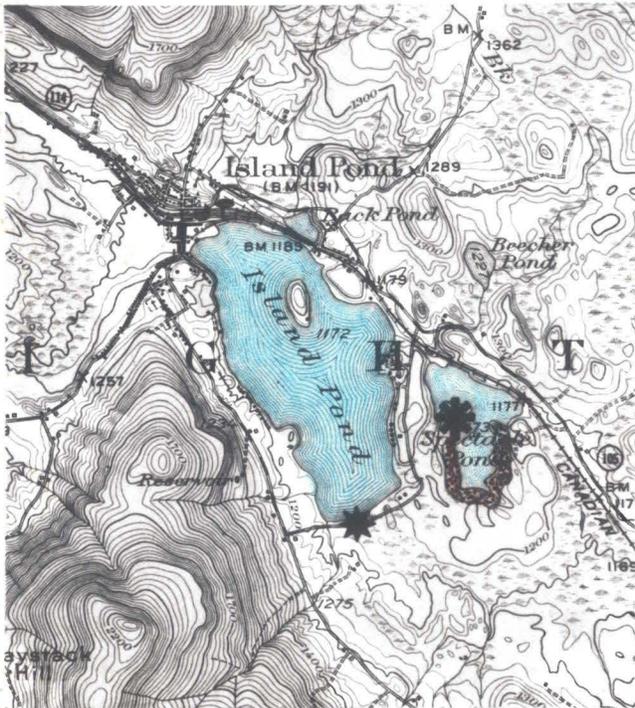
#### Future Expansion of Brighton State Park

Brighton State Park, recently expanded to include 55 campsites on Spectacle Pond, appears to be adequately designed in its total facilities for present demands. The current construction program calls for the building of roads, parking spurs, graded sites, utilities, comfort stations, fire places and a boat-launching area. Visitor use and popularity of the campground will

site of proposed  
Browns Mill Dam



Maidstone State Forest  
(469 acres)



Brighton State Park  
(87 acres)

Legend

- Beach & picnic area.....\*
- Campground.....\*
- Park boundary.....
- Suggested expansion.....

Scale: 1 inch = 1 mile

State Parks in  
Essex County

be the criteria by which the state will determine the need for further expansion of facilities. It is presently planned by the Department of Forests and Parks to provide lean-tos and tent platforms as money becomes available and the use and popularity of the campground justifies their need.

An opportunity exists, however, to develop additional campsites on Spectacle Pond. There are at present less than 100 acres in Brighton State Park, very little of which involves the more desirable shoreline. It is conceivable that the present number of campsites might be doubled without causing the over-use of the water area, but the preservation of Spectacle Pond and surrounding forest depends on the further acquisition of land adjacent to the shoreline. Spectacle Pond is small in comparison to Island Pond; to prevent the inevitable cottage development along its shoreline and to provide for the future expansion of the present facilities, an area 300-400 feet deep along its entire shoreline could be the minimum purchase area that should be considered for this park.

#### Related Recreation Areas and Facilities

The State provides other recreation areas and facilities in Essex County besides those at Brighton State Park and Maidstone State Forest. These include boat-launching sites, highway rest areas, and game lands.

The Vermont Fish and Game Department has built seven boat-launching sites on seven lakes in the county. The Department of Highways maintains 2 highway rest areas and 11 turnouts along the county's roads. Part of the Holland Game Lands occupies a  $7\frac{1}{2}$ -square mile area in the townships of Norton, Warners Grant, and Warrens Gore (the state controls or owns 30 of these game lands throughout Vermont).



Crystal Lake State Park, an area of only fifteen acres in adjoining Orleans County, provided swimming and picnicking facilities for 27,000 people in 1960.



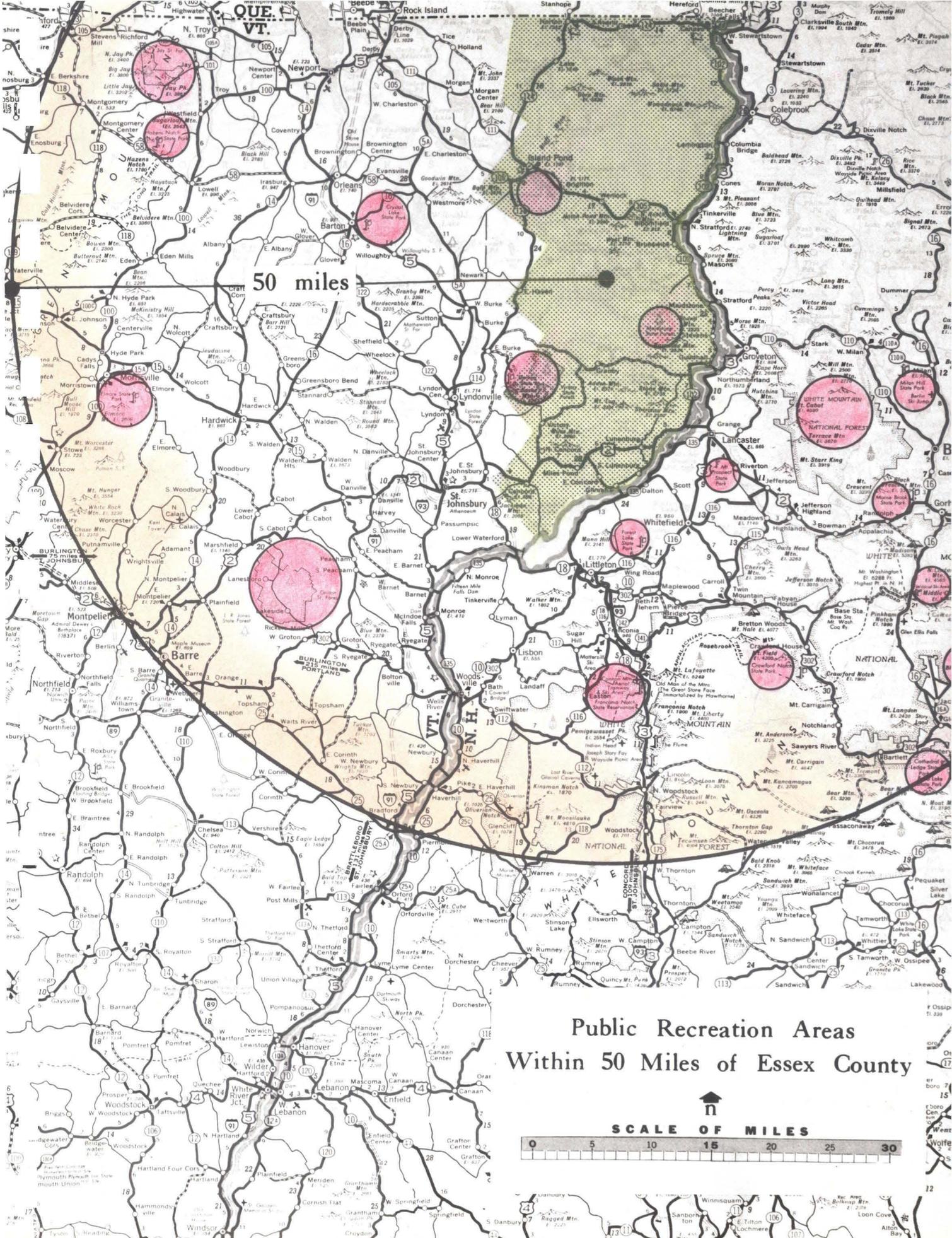
Moore Reservoir, in the southeast corner of Essex County, provided recreation for 40,000 people in 1961.

There are 19 public recreation areas within 50 miles of Essex County, including 15 state parks and forests ( 3 of which are in Essex County), 1 National Forest, and 1 water control reservoir. (See map and chart following page 15).

Further expansion of these areas to permit increase in use is limited by such factors as suitable terrain for facility development and limited size of existing water bodies. Within the 50-mile zone there are no known proposals for additional public parks for recreation.

These recreation areas now available to the public within 50 miles of the Essex County receive heavy use and facilities are rapidly becoming inadequate to meet the demands of visitors. Many of the areas have already reached their maximum capacity and, although 55 campsites have recently been added at Brighton State Park, it is expected that these will reach a saturation point in the near future.

Overcrowding and inadequate facilities, which are the principal deterrents to greater recreation enjoyment, are the biggest problems. Camping, swimming, and boating opportunities are significantly lacking on state areas in this 50-mile zone.



## Public Recreation Areas Within 50 Miles of Essex County



RECREATION AREAS WITHIN 50 MILES OF ESSEX COUNTY

<u>VERMONT</u>				1960 attendance
Name	County	Acreage	Facilities*	Visits
Brighton State Park	Essex	87	a,b,c,e,g	5,137
Crystal Lake St. Pk.	Orleans	15	a,c,e,g	26,905
Darling State Park	Caledonia-Essex	1,726	b,c,d,f	22,583
Elmore State Park	Lamoille	427	a,c,e,g	19,728
Groton St. Forest	Caledonia- Washington	15,607	--	--
** (Groton St. Recreation Area)	Caledonia- Washington	(300)	a,b,c,d,e,g	40,497
Hazen's Notch St. Pk.	Orleans	140	None	Not avail
Jay Peak St. Forest	Orleans	1,710	--	--
(Jay Peak St. Rec. Area)	Orleans	(500)	f	24,751
Maidstone State Forest	Essex	469	--	--
(Maidstone St. Rec. Area)	Essex	(100)	a,b,c,e,g	14,689

<u>NEW HAMPSHIRE</u>				1961 attendance visits
Crawford Notch St. Pk.	Carroll	5,950	b,c,d,g	280,663
Forest Lake St. Pk.	Coos	420	a,c,e,g	18,120
Franconia Notch St. Pk.	Grafton	6,552	a,b,c,d,e,f,g	968,855
Milan Hill St. Pk.	Coos	127	b,c	2,248
Moose Brook St. Pk.	Coos	755	b,c,d,e,g	17,128
Mt. Prospect St. Pk.	Coos	430	c	Not. avail
*** White Mts. Nat'l Forest	Coos, Grafton & Carroll	677,533	b,c,d,e,f,g	2,972,200

\* Facilities: (a) boating, (b) camping, (c) picnicking, (d) hiking  
(e) swimming, (f) snow skiing, (g) fishing.

\*\* In Vermont the portion of a State Forest set aside for recreation  
is called a State Recreation Area.

\*\*\* There are 21 separate areas designed for recreation within the White  
Mountains National Forest; these include campgrounds, primitive-type  
camps, picnic areas, skiing areas, and "scenic areas".

BOAT-LAUNCHING SITES IN ESSEX COUNTY  
(Maintained by the Vermont Fish and Game Dept.)

<u>NAME</u>	<u>LOCATION</u>	<u>ACRES</u>	<u>STATUS</u>
Miles Pond	Concord	0.401	Completed
Neals Pond	Lunenburg	15.65	Completed
Norton Pond	Warren's Gore	2.31	Completed
Spectacle Pond	Brighton	0.57	Completed
Wallis Pond	Canaan	1.58	Completed
Island Pond	Brighton	0.30	Will be completed in 1962
Maidstone Lake	Maidstone	0.5	Will be completed in 1962
Shadow Lake	Concord	2.03	Owms site; no work yet.

PROPOSED RESERVOIRS IN ESSEX COUNTY

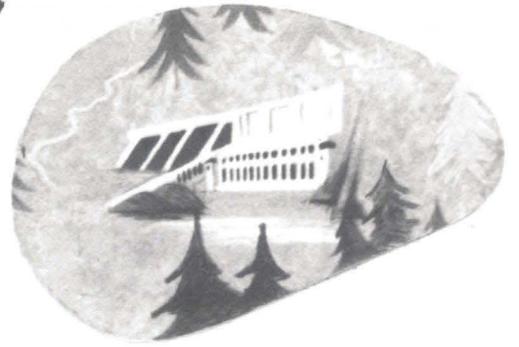
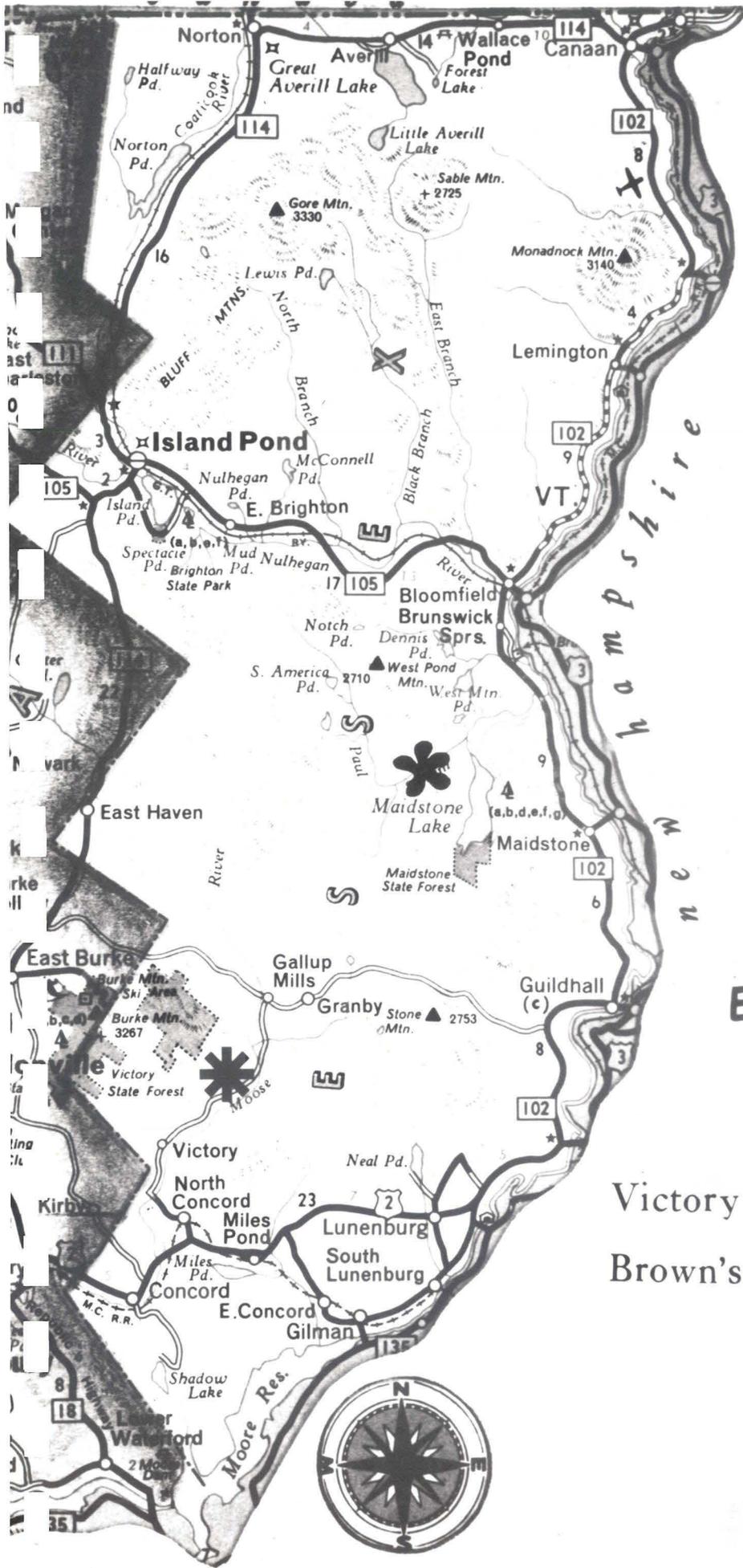
Brown's Mill Dam and Reservoir is one of the two projects for Essex County included in the Power Inventory Plan in the report of the New England-New York Inter-Agency Committee. The project site is located one mile northeast of Maidstone Lake on Paul Stream which enters the Connecticut River about four miles downstream of North Stratford, New Hampshire. "Paul Stream, considered by many anglers as one of the best trout streams in this section of the state, flows through relatively primitive forest land. The project would inundate approximately four to five miles of heavily fished trout stream. Another three miles of stream could be seriously damaged below the dam if an adequate minimum flow is not provided in the segment to be bypassed by the 11,000-foot power penstock; so it will be important that this segment of the stream not be dewatered at any time. Anticipated fluctuations within the proposed reservoir would place limitations on fish productivity within

this body of water. Flooding would also remove wildlife habitat important to such species as deer, grouse, and varying hare. Overall, this project would have serious effects on the fish and wildlife resources with no apparent opportunities for mitigation of losses within the reservoir area".<sup>1</sup>

The development of the site would consist of an earth-fill dam with an overall length of 3,600 feet and a maximum height of 85 feet above the stream bed. The Brown's Mill Dam would necessitate great fluctuation in water level; therefore, the site is totally lacking in potential as a park or recreation area.

The Victory Reservoir - The construction of Victory Dam has been authorized by the Congress of the United States and the project is included in the Connecticut River Flood Control Compact. "This site, with a drainage area of 75 square miles, is on the Moose River in the township of Victory, about 17.4 miles above its confluence with the Passumpsic River, and 12 miles northeast of St. Johnsbury. (See map on next page). It is located in a sparsely populated semi-wilderness area. The land is poorly adapted to agricultural use and only a few small farms are to be found within the drainage area or for a number of miles beyond its boundaries. An extensive hardwood cutting operation was carried on in the upper basin some thirty years ago and within the past ten years pulpwood and softwood timber within and adjacent to the project area has been removed".<sup>2</sup> More than 250,000 acres of semi-wilderness lie in a continuous belt to the north and east of the Victory dam site.

1 & 2. New England New York Inter-Agency Committee, The Resources of the New England-New York Region, Part Two, Chapter XXI, Connecticut River Basin, Volume 1, Section IX, p. 54.



map / proposed reservoirs

**ESSEX COUNTY**  
 vermont  
 legend

- Victory Reservoir ..... \*
- Brown's Mill Reservoir... \*

The physical features of the Victory area are a combination of mountains, forests, streams and bogs. Only one pond (southeast of Umpire Mountain) exists in this vicinity. The mountains form the visual and physical boundary of the region. Elevations in the area range from 1,100 feet in the basin, which is drained entirely by the south-flowing Moose River, to 3,267 at Burke Mountain on the west, to 2,740 at Kirby Mountain; to 2,690 at Miles Mountain on the southeast and to 2,300 at Temple Mountain on the east.

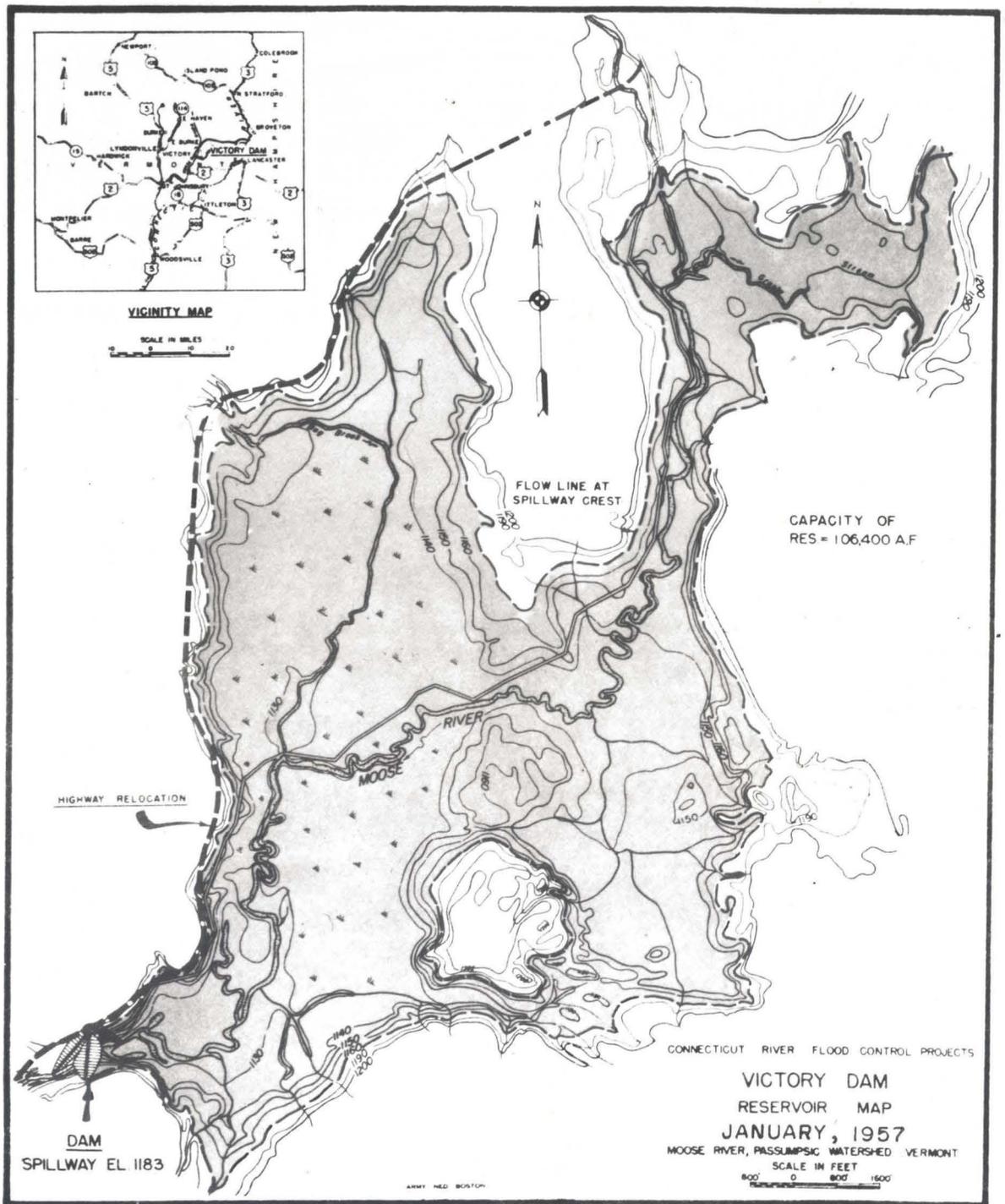
#### GENERAL DESCRIPTION OF THE VICTORY RESERVOIR

##### Reservoir Data (See Map on next page)

The project would provide for the construction of an earth-fill dam about 1,000 feet long with a maximum height of 85 feet. "Flood control storage of 24,000 acre-feet, equivalent to six inches of run-off from the 75 square-mile drainage area, would be provided between a full reservoir elevation of 1,183 feet, m.s.l. and an elevation of 1,175 feet, m.s.l." At elevation 1,175 the reservoir will have a surface area of (2,700) acres. Lower storage of 71,900 acre-feet, available for low-flow regulation and downstream power production, "would be provided between elevations 1,175 and 1,142 m.s.l. Storage of 10,500 acre-feet, below an elevation of 1,142 feet m.s.l., would be retained in the reservoir at all times in the interest of fish, wildlife, and recreation." 3

The Victory Reservoir at elevation 1,175 will extend  $4\frac{1}{2}$  miles up the Moose River and average approximately 1 mile in width ( $2\frac{1}{2}$  miles at its widest point). At this elevation there would be approximately  $16\frac{1}{2}$  miles of shoreline.

3. Ibid. Section VII, p. 15.



The proposed dam site is located on the Moose River, 17.4 miles above its junction with the Passumpsic River, and is 1 mile northeast of the village of Victory, Vermont, and 11 miles northeast of St. Johnsbury, Vermont. The area of the reservoir would be about 2,830 acres with the pool at spillway crest elevation.

The project was authorized by the Flood Control Act of June 22, 1936 (Public No. 738, 74th Congress), as amended (Public No. 111, 75th Congress) May 25, 1937 and (Public No. 761, 75th Congress) approved June 28, 1938.

The Victory Dam project, in conjunction with other units in the comprehensive plan for flood control in the Connecticut River Basin, would provide partial flood protection for downstream damage centers in Vermont, New Hampshire, Massachusetts and Connecticut.

The general outline of the reservoir would be interesting because of the many bays, peninsulas, and the island that would be created by the impoundment. This island would have a shoreline of  $2\frac{1}{2}$  miles and be approximately  $\frac{1}{2}$  mile in diameter.

The reservoir will replace 17 miles of streams with a lake of fluctuating size. It will flood approximately 2,800 acres during late spring, summer and early fall. "During these portions of the year about 2000 acres of the total acreage would lie inundated to a depth varying from 28 to 45 feet having an average depth of 35 feet. The area of this pool would never be less than (1,200) acres, with the most severe drawdown. Tests over a three-year period of the water in the river below the site show it to be alkaline." <sup>4</sup>

Fluctuations of Water Elevations - As currently proposed, the plan of operation as it pertains to water elevations and as suggested by the Army Corps of Engineers in the WATER RESOURCES DEVELOPMENT, 1961, may have an adverse effect on the recreational values of the reservoir.

The fluctuation of the water level between the permanent pool at 1,142 elevation and the full conservation pool at 1,175 elevation is 33 feet. Even a smaller vertical fluctuation would affect an extensive horizontal area. For example, a drop of only 10 feet from elevation 1,170 to 1,160 would affect a prime recreational area on the northeastern portion of the reservoir for a horizontal distance of 1,600 feet. This is graphically shown on the Victory Reservoir Map (preceding page).

4. Ibid. Section IX, p. 55.

### Flood Control Benefits

The project would control flood flows on the Moose and Passumpsic Rivers and reduce flood stages at Concord, St. Johnsbury, Waterford, and Barnet, Vermont. In conjunction with other reservoirs it would reduce flood stages along the Connecticut River in Vermont, New Hampshire, Massachusetts and Connecticut. With recurrence of the March 1936 basin flood of record, the project would prevent \$610,000 in damages. In addition, the conservation storage would increase low-flow regulation and power production along the Passumpsic and Connecticut Rivers.

The basin states have agreed in an interstate Compact to cooperate in solving their flood control problems. The Connecticut River Flood Control Compact was approved by the United States Congress in 1953. Without this compact, construction of the comprehensive reservoir system would have been seriously impeded. Few towns in which flood control reservoirs are located receive sufficient flood control benefits to compensate for tax and economic losses. Under the Compact the downstream states benefitting from flood protection have agreed to pay the affected state equitable portions of the tax and economic loss.

### Flora and Fauna

For the most part the Victory Area is completely forested. It lies in the New England portion of the Northern Appalachian Highland division of the hemlock-white pine-northern hardwoods forest region. In deep, well-drained soils, hardwoods predominate with sugar maple and yellow birch as the prin-

ciple species. Other deciduous species are white birch, red maple and American beech. Balsam fir and red spruce, red maple, black ash and white cedar occur, while pine and hemlock are found sporadically. In general, good forest cover extends to the horizon on either side of the project site.

This area provides suitable to excellent habitat for game animals and fur bearers among which are deer, bear, fox, raccoon, snowshoe hare, beaver, mink, otter, grouse, and woodcock. "The project area of about 3,000 acres is excellent habitat for most of these. The 17 miles of streams in the area to be flooded provide habitat for beaver, mink, and otter. There would remain some 70 miles of streams in the area above the flowline. Most of this mileage offers suitable to good habitat for these animals".

"All of the streams above the dam site are brook trout waters. The 17 miles of streams within the flowline are popular with anglers, but access to some portions of the streams is difficult and utilization of the fishery is at moderate intensity. It is believed that with proper clearing and burning of the cleared material in the reservoir area when the project is constructed and with the depths that would be maintained during the warm weather periods, the impoundment would furnish a suitable and greatly expanded brook trout fishery. The impoundment might prove attractive to migratory waterfowl although the meager data on flight patterns on the Connecticut River flyway are not sufficient to provide a basis for estimating how many migrating birds might find and use the area".<sup>5</sup>

5. Ibid. p.55.

## ANALYSIS OF THE RECREATIONAL POTENTIAL OF THE VICTORY RESERVOIR AREA

### Types of Recreation Suitable at the Victory Reservoir

The proposed Victory Reservoir is the best potential site for recreational development in Essex County. If properly planned, developed and administered, it could become one of the most outstanding recreation areas in Vermont.

This scenic natural area could provide a variety of recreational activities. Bathing, boating and fishing would be available on the reservoir. Campers would enjoy a northwoods atmosphere in combination with a cool summer climate. The suggested large campgrounds near the shore of the reservoir should contain both individual campsites and areas for organized group camping. The surrounding forest and mountains would attract people interested in hiking, nature study and photography. Hiking trails could be designed to create a sympathetic awareness of the important natural features; these trails could originate from a wilderness-type campground located centrally to the trail system. Finally, one of the most rewarding things that a visitor should develop here is a sense of aesthetic appreciation.

Nearby Darling State Park, if included in the proposed Victory area, would extend the season of use to include all the winter months. Burke Mountain, in Darling State Park, is one of the outstanding ski areas in the state and has been provided with a state ski shelter and parking area, rope tow and ski trails and a new poma lift. Also, visitors enjoy outstanding views, especially of the Lake Willoughby area, from Burke Mountain's scenic summit. Picnic areas, two campgrounds and foot trails exist and are the summer attractions.



From Burke Mountain looking east. At the left foreground is Umpire Mountain, behind which lies the area to be flooded by the proposed Victory Reservoir.



Scenic vista from the summit of Burke Mountain in Darling State Park; looking northwest to the Lake Willoughby area (notch in the distance).

The outlying parts of the proposed recreation area could be zoned for timber management, and hunting could be permitted in that zone.

### Accessibility

Two well graded unpaved roads provide access to the reservoir site at present. One road from Guildhall on the Connecticut River travels due west to Gallup Mills passing through the extreme northern section of the proposed area and meets Route 114 north of East Burke. Few if any changes in road alignment and site distance are required on this east-west access road within the project area. Drainage structures and improved surface carry-off are deemed necessary at various locations and a paved surface should be considered as a future possibility.

Another road originating on U. S. Route 2 west of Miles Pond passes north through North Concord and Victory and terminates at Gallup Mills. This road would be inundated through much of its length within the purchase area by the proposed impoundment. In planning a relocation for this route, consideration should be given to the alignment of this road on the ground directly to the west, well removed from the shoreline, taking advantage of the scenic ridge.

Two interstate highways that are planned for the northeast section of Vermont will have a great influence on visitor access to the proposed recreation area. Interstate 93, a north-south road from New Hampshire, will cross the Connecticut River near the southern border of Essex County; it will then by-pass St. Johnsbury on the south before terminating

at Interstate 91 just west of St. Johnsbury. Interstate 91 will be a north-south route from Canada to southern New England. (See map on next page). Owing to the location of these interstates, it is assumed that the majority of visitors will enter the Victory area from East Burke on the west and North Concord on the south.

#### Region Served and Population

It is extremely difficult to estimate accurately the distance people would journey to make use of a recreation area in Essex County, Vermont. The visitation at the Moore Reservoir, which borders southeastern Essex County on the Connecticut River, and nearby Darling State Park may give some indication.

Over 40,000 visits were recorded in 1961 by the private company administering Moore Reservoir. Although this reservoir has a surface area approximately 27% greater than the proposed Victory impoundment, its only facilities are picnic and boat-launching areas. The Victory Reservoir Recreation area would have a bathing beach, three separate campgrounds, and hiking trails in addition to picnic and boat-launching areas.

Darling State Park is included in the suggested boundary of Victory Reservoir Recreation area. In 1960, this State Park recorded 7,865 visits and 1,912 camper days during the summer, and 14,718 visits (skiing) during the winter.

The region most directly affected by the proposed recreation area is assumed to be within a 50-mile radius of the site. This is believed to be the maximum distance people would travel for day-use. Approximately 200,000 people live within this 50-mile zone.



**INTERSTATE HIGHWAY SYSTEM  
IN VERMONT  
324 MILES**

- INTERSTATE LEGEND**
-  APPROXIMATE LOCATION
  -  UNDER CONSTRUCTION
  -  COMPLETED HIGHWAY

STATE OF VERMONT  
DEPARTMENT OF HIGHWAYS  
HIGHWAY PLANNING DIVISION

DECEMBER 31, 1961





On the other hand, thirteen million Americans and Canadians live within a 200-mile radius of Essex County, which is believed to be the distance people would travel for a weekend or vacation. Three major Federal highways (U.S. 2,3 and 5) and two proposed interstate highways will enable these people to reach Essex County. The radius of influence for week-enders and vacationers could conceivably extend beyond the 200-mile radius when the interstates are completed and the county highways improved.

The population (United States and Canada) within a 200-mile radius of Essex County is listed:

A. Canada (1956 census)

(a)	Greater Montreal	1,620,758
(b)	Ottawa	222,129
(c)	Quebec	170,703
(d)	Sherbrooke	58,668
	Large City Total	<u>2,072,258</u>

B. United States (1960 Census)

(a)	Vermont	389,881
(b)	New Hampshire	606,921
(c)	Portions of Maine	920,000
(d)	Portions of New York	1,216,414
(e)	Most of Massachusetts	4,796,960
(f)	Portions of Rhode Island	568,778
(g)	Part of Connecticut	137,309
	Total United States	<u>8,636,263</u>

RECOMMENDED RECREATIONAL DEVELOPMENT OF THE VICTORY RESERVOIR AREA

General Recommendations

1. It is recommended that recreation be one of the primary purposes of the Victory project.
2. The agency responsible for the construction of the project re-study the

water fluctuation to provide for a stable recreation pool during the recreation season, June to September. It is believed that the benefits received from outdoor recreation merit the additional investment required to provide more stable pool levels.

3. The State of Vermont participates in the recreational planning for the reservoir, and that the reservoir be considered as a unit of the State Park System.

4. Darling State Park, and the Umpire Mountain and Victory Hill blocks of Victory State Forest be included in the proposed recreation area.

5. Private lands needed for recreation use, development, and protection of the general setting be acquired by purchase.

6. Approximately 22,000 acres of land surrounding the reservoir be acquired for protection of the public recreation interest (by preventing adverse developments and conflicting uses).

7. The lands within the suggested purchase area be zoned to include both forestry and recreation.

8. Public use take precedence over all other activities within the suggested recreation zone.

9. The area shown on the Land Use Plan as "forest area, zoned for selective cutting", be managed like the Victory State Forest. (See map following page 28).

10. An overall, coordinated master plan be prepared to insure the orderly development of the entire area. The plan should include policies concerning the operation and management of both the recreation and forestry zones.

11. Towns and farms within the purchase area could remain in their present state for a prolonged period.
12. The vegetation be cleared from the summer pool flowage area, including tributary arms, in order to minimize navigational and swimming hazards. Stumps should be cut as near flush with the ground as practical and entirely removed from swimming areas.

#### Recommended Purchase Area

It will be important to include the present state land and sufficient adjacent forested lands within the proposed Victory Reservoir Recreation Area. Only then can the area accommodate the expected visitor load, contain adequate space for the necessary and desirable facilities, and retain its recreational worth.

Generally, the mountains that surround the basin to be flooded formed the basis for the Purchase Area Boundary. Burke, Kirby, Miles, Temple, and Little Round Top Mountains and the Hobart Ridge are included; together they form an almost natural boundary, with the Victory Reservoir and Burke Mountain as the principal focal points (See map on next page).

The recreation area would bring about an increase of commercial activities locally to service and accommodate the visitors. For this reason, Gallup Mills was excluded from the Suggested Purchase Area. It is believed that motels, a restaurant, stores, and possibly a gasoline station could be developed in this town by private enterprise. The recreation area itself would have a considerable payroll for the resident staff and would provide occasional construction and maintenance projects that would be financially important to the local community.



Land Status - Proposed Victory Reservoir Recreation Area

The Victory Reservoir Recreation Area would include three areas already in state ownership -- the Darling State Park, and the Umpire Mountain Block and Victory Hill Block of the Victory State Forest. This state land accounts for one-fifth of the suggested purchase area. The remainder is owned by various paper companies, power companies and individuals. The acreage breakdown includes:

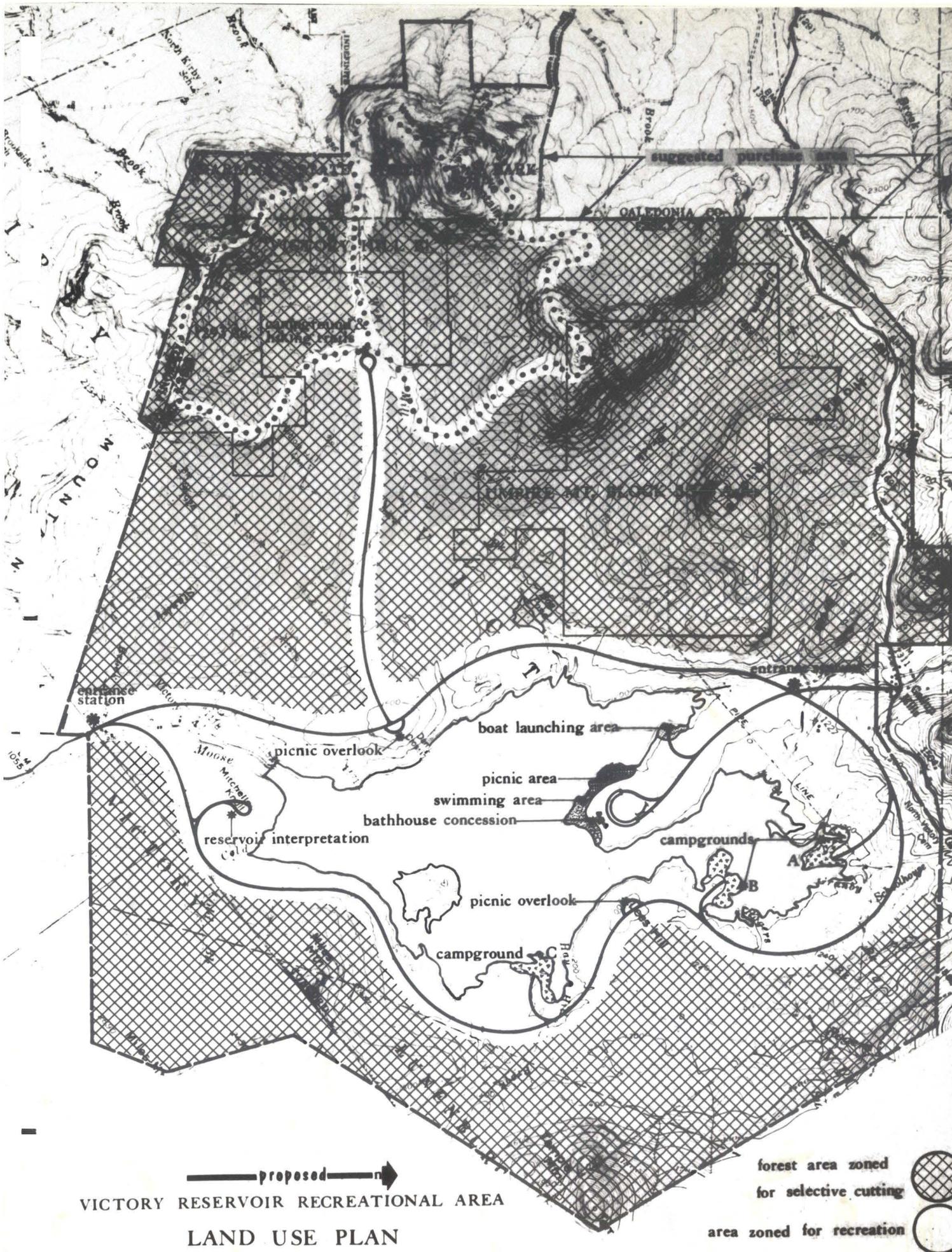
Darling State Park	1,726	Acres
Victory State Forest	4,636	"
Proposed Victory Reservoir		
Water Area	2,800	"
Balance of Private Forested		
Land Suggested	<u>21,845</u>	"
TOTAL	31,010	Acres

These areas are approximate and were derived from U.S. Geological Survey topographic maps and from information obtained by the State Parks Division.

Suggested Plan of Development

When sufficient land has been acquired, development would begin with the construction of the dam and the subsequent flooding of the impoundment. Utilizing the east-west road from East Burke to Guildhall, development on the peninsula could then take place with the construction of the bathhouse, beach facility, picnic and boat-launching areas. Together with this, the first of the three suggested campgrounds could be developed. (See map on preceeding page).

Prior to building campgrounds B & C, an access road from the south could be constructed. It would bypass the Town of Victory and follow the ridge



VICTORY RESERVOIR RECREATIONAL AREA  
 LAND USE PLAN

forest area zoned  
 for selective cutting  
 area zoned for recreation



This gravel road, which passes through Gallup Mills (in center of photo), would provide east-west access to the proposed Victory Reservoir Recreation Area.



General vicinity of the suggested intensive day-use area, located on the peninsula which would be created by the impoundment.



along the west side of the reservoir to a connection with the main entrance road south of Gallup Mills. A road to a wilderness-type campground, centrally located for the hiking trails, could then be constructed from the south access road.

After constructing campgrounds B & C, a scenic road could connect campground C with a reservoir interpretive stop on a hill east of the dam. Extending this road from the reservoir interpretive stop to the south access road would be optional. It would necessitate maintaining two checking stations, but would create a scenic loop road around the reservoir.

Besides the main swimming area, consideration could be given to another beach area primarily for the use of people in the large campgrounds.

Picnic areas are suggested for the higher elevations along the scenic loop road and on additional sites as the need for them arises. The selection and location of these picnic areas, together with the other developed areas, requires more detailed planning and are only suggested.

#### Suggested Facilities

Facilities proposed for development at the project were planned according to the following design criteria, which were altered to fit the types of use anticipated.

1. Picnicking facilities are provided for 40% of the design load.\*\* One picnic unit has a capacity of 20 visitors and consists of four tables, trash can, fire place, and site preparation.
2. Swimming facilities are furnished for 55% of total design load and include the preparation of 50 square feet of beach per visitor.

\*\* See definition of Design load on page 31 .

3. Boating facilities for access to the water surface are provided at the rate of 15% of the design load. One access unit contains a boat-launching ramp, a boat dock, and a parking area for 40 cars.
4. Parking facilities are required for 80% of the design load at the rate of four visitors per car.
5. Sanitation facilities are provided for 100% of the design load at the rate of one unit for 320 visitors; one unit contains five water closets and one urinal, flush type.
6. Drinking water facilities are provided for 100% of design load at the rate of one faucet or pump per 75 visitors.
7. Camping facilities are provided for 40% of the design load with one unit for every five visitors. A unit consists of a tent platform or Vermont Lean-to, picnic table, fireplace, trash can, site preparation, parking space, and a proportionate share of water, sanitation, circulatory roads, planting, signs and markers.
8. Administrative unit, where indicated, includes residences, maintenance garage, and miscellaneous out buildings.
9. Road requirements were determined by preliminary map study.

#### Estimate of Annual Visitation

The estimate of annual visitation to the proposed Victory Reservoir Recreation Area is 164,000. This estimate was derived from studies made at similar sites throughout the region and was based on (1) the general attractiveness and capacity of the proposed impoundment and adjacent lands for recreation development; (2) the population within a 50-mile radius of

the proposed reservoir; (3) the visitation at existing state parks and recreation areas within a 50-mile radius of the proposed reservoir; (4) the analysis of trends in existing state park attendance and facilities; (5) the sphere of influence from which the visitors would be drawn; (6) highway accessibility; (7) nature of the population; (8) and the extent of interest in outdoor recreation.

Visitation estimates are the number of visitors expected five years after completion of the project and based upon the assumption that adequate land suitable for development and facilities will be provided.

#### Design Load

Design load is the number of visitors, for whom facilities would have to be provided, expected to use an area at any one time on a normal summer Sunday. This takes into consideration a turn-over of 1.5 during the course of the day. The design load for the proposed Victory Reservoir Recreation Area was calculated to be approximately 3,650 visitors.

After the design load of the area was determined, the kind, quantity and cost of facilities to be provided were obtained from established design criteria. Cost of facilities is based on the cost of developing similar installations at existing state parks and recreation areas. These costs are based on 1958 values.

#### Cost Estimate

Estimates of cost listed in the following table are for facilities necessary to provide for the expected visitation. The cost of acquiring the land necessary for recreation purposes is not included in the following table

Estimated Cost of Facilities

<u>Facility</u>	<u>Dev. Units</u>	<u>Costs</u>
Picnic Units	72	\$28,800
Picnic Shelters	3	15,000
Beach Development	100,250 sq.ft.	25,060
Boat-Launching Ramp and Dock	1 each	36,000
Parking	730 cars	54,750
Sanitary System	11	82,500
Water Supply	48	48,000
Tent Camping - Vermont lean-tos	150 each	525,000
Roads	23 miles	460,000
Administrative Units	1	50,000
Walks and Trails	13 miles	34,320
Signs and Markers	\$.25/DL visitor	900
Miscellaneous Landscaping, preparation or development	\$1.50/DL visitor	5,400
Bathhouse Concession	1	60,000
	SUBTOTAL	<u>1,425,730</u>
Planning Overhead and Contingencies		<u>356,430</u>
	TOTAL	<u>1,782,160</u>

Annual Charges

The total annual equivalent charges for the Victory Reservoir Recreation Area are as follows:

Operation and Maintenance (3% of total development plus \$0.10 per visitor based on estimated annual visitation) . . . . \$69,865

Annual Equivalent of Construction Cost  
(Total construction cost amortized at 2 5/8% for 25 years . . . . . \$98,110

TOTAL ANNUAL CHARGES . . . \$167,975

Annual Benefits

Total annual benefits are computed at \$256,000. Benefits are based on a monetary value of \$1.60 per visitor day, the value currently being used by the National Park Service to determine recreation benefits. This is a weighted figure which expresses the value derived by the visiting public from a given recreation development.