

ENVIRONMENTAL SETTING

IV. ENVIRONMENTAL SETTING

This section contains a description of the areas most likely to be affected by implementation of a Point Au Roche Master Plan. Since the impacts of park development and operation will be regional and site specific, the environmental setting has been divided into two major portions - The Region and The Park. The purpose of this section is to provide a basis for comparison of impacts with and without plan adoption and implementation. Only those elements of the region and park which relate to expected impacts (identified in part through the scoping process) are described.

In addition to physical resources, the environmental setting includes socio-economic characteristics and recreation supply in the area.

A. THE REGION

Region can be defined in different ways. For example Point Au Roche State Park is within the Thousand Islands State Park Region. The region can also be defined according to a predetermined radius from Point Au Roche. Montreal and portions of Vermont and the Adirondack Mountains are within an 80 mile radius of the park. For the purpose of this report, however, the term region will primarily refer to the Plattsburgh/Clinton County area, since it is most likely to be affected by development and operation of a state park at Point Au Roche.

1. LOCATION

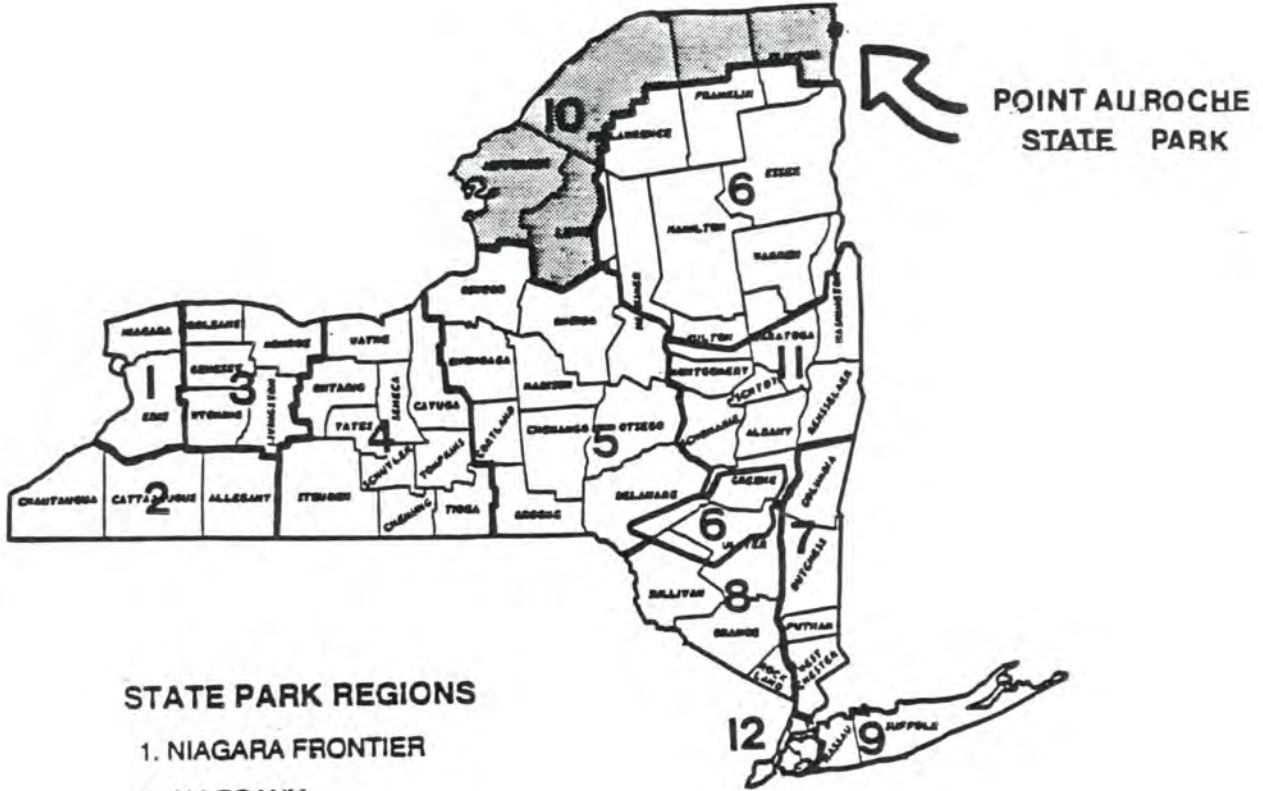
Point Au Roche State Park is part of the Thousand Islands Region, one of eleven OPRHP regions (Figure 2). The park is located in eastern Clinton County along the shore of Lake Champlain in the Town of Beekmantown (Figure 3). Point Au Roche is approximately 7 miles north of the City of Plattsburgh, 18 miles south of the Canadian border, 55 miles south of Montreal and 160 miles north of Albany.

2. PHYSICAL CHARACTERISTICS

Point Au Roche is located in the Champlain Lake Plain. This plain consists of low, relatively flat land which runs north and south along the lake. To the immediate west of this plain lie the St. Lawrence Hills and further west are the Adirondack Mountains. The "Blue Line" or boundary of the Adirondack Park runs through western Clinton County.

FIGURE 2

STATE PARK REGIONS



STATE PARK REGIONS

- 1. NIAGARA FRONTIER
- 2. ALLEGANY
- 3. GENESEE
- 4. FINGER LAKES
- 5. CENTRAL NEW YORK
- 6. ADIRONDACK AND CATSKILL PARKS
- 7. TACONIC
- 8. PALISADES
- 9. LONG ISLAND
- 10. THOUSAND ISLANDS
- 11. SARATOGA-CAPITAL DISTRICT
- 12. CITY OF NEW YORK

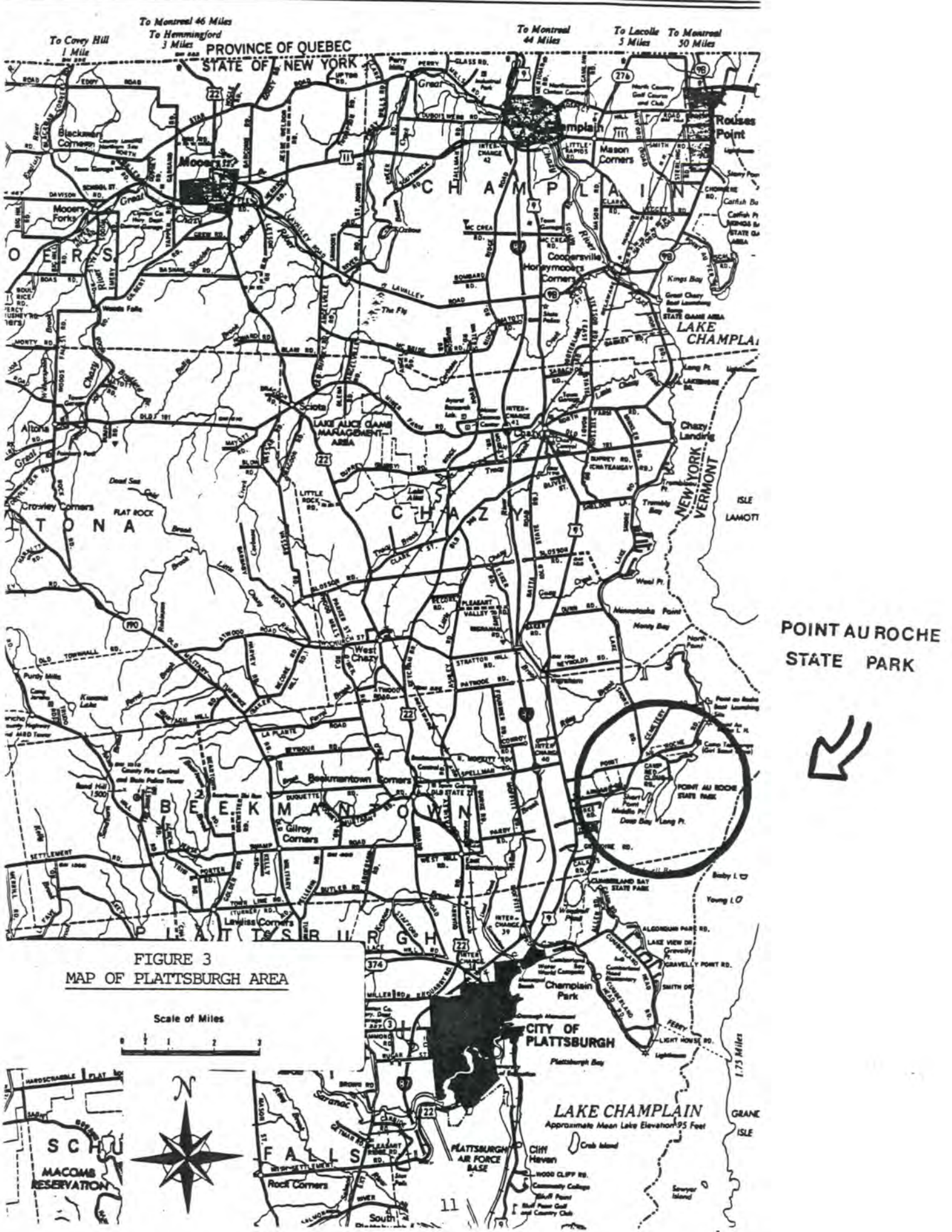


FIGURE 3
MAP OF PLATTSBURGH AREA

Scale of Miles



POINT AU ROCHE
STATE PARK



3. ACCESS

a. Roads

The Champlain lowland together with the Hudson River Valley form a major north/south corridor between New York City and Canada's St. Lawrence Valley. A major north-south roadway is the Northway (Route 87) which begins at Albany and extends north to the Canadian border. Another major transportation route is Route 9 which roughly parallels the Northway along its eastern side. Route 3 is an east/west route which connects Saranac Lake with Plattsburgh, a major urban community on the west bank of Lake Champlain. Point Au Roche State Park is located east of Route 9, just north of Plattsburgh. Point Au Roche Road connects the park to Rte. 9.

b. Public Transportation

The Clinton Area Rural Transportation System (CART) services the entire county. The system presently consists of three ten-passenger vans which provide daily commuter and service routes to the county. Passenger fares for this service range from \$.75 to \$1.50.

At present, CART vans service (4 times each week) the intersection of Point Au Roche Road with Route 9, which is approximately 2 miles from the proposed park entrance. Should there be sufficient interest and demand, any proposals to extend service directly to the park for county residents would be considered by the CART committee.

4. SOCIO-ECONOMIC CHARACTERISTICS

a. Population

According to the 1980 census, Clinton County has a population of 80,750. This represented a 10.7 percent increase from 1970, compared to only 0.3 percent change between 1960 to 1970. Recent population projections by the New York State Department of Commerce show significant population gains for the area over the next three decades; 9.4 percent during the eighties, 10 percent during the nineties and 5 percent during the first decade of the next century. Based on these projections, Clinton County will have a population of 102,015 in 2010, an increase of 21,165 or 26.3 percent. This is in contrast to the state's population which is expected to continue to decrease an estimated 14.6 percent in the next twenty years.

Clinton County is a growing community with approximately two thirds of the population under age 34. Even in the year 2010 most of the population is projected to be under 50 years of age.

Housing ownership patterns indicate a strong interest in investment in the community of Clinton County. The total number of housing units in Clinton County in 1980 was 28,092, of which 56.1 percent were owner occupied. Seasonal units totaled 5.5 percent. Statewide, owner occupied housing accounted for 45 percent of the total units, while 2.4 percent were seasonal.

b. Employment

In 1982, Clinton County had a substantially higher rate of unemployment (11.1%) than the state average (8.6%). Also, estimates of income for county residents were considerably less than statewide figures. Per capita income for county residents was \$6,706 vs \$10,252 on a statewide basis.

There are four significant industrial groups in Clinton County: Government, (38.6%); Manufacturing, (19.4%); Wholesale and Retail Trade, (13.2%); and Services, (13.0%). The government sector's 38.6% is more than double in the statewide figure.

In addition to the 4% state sales tax, Clinton County collects another 3% on the same transactions. For the fiscal year ending March 31, 1983, \$8,788,938 of local sales tax collected by the state were distributed back to Clinton County.

5. RECREATION

a. Deficiencies

The Thousand Island State Park Region is comprised of all of Jefferson County and portions of St. Lawrence, Franklin, Lewis and Clinton Counties. The 1983 Statewide Comprehensive Recreation Plan (SCRCP) identifies recreational deficiencies for the following activities by county for the year 2000:

Jefferson - camping, downhill skiing, field games, hiking, snowmobiling

St. Lawrence - field games, picnicking, snowmobiling, winter sports

Franklin - field games, snowmobiling, tennis

Lewis - court games, snowmobiling, tennis

Clinton - camping, court games, golfing, snowmobiling, tennis, winter sports

Obviously, a single park cannot provide all the recreational needs of a region. Among the perceived deficiencies, Point Au Roche is best suited for camping, picnicking and winter sports. Also, due to its location on Lake Champlain, swimming and boating are appropriate activities to be included in the park Master Plan.

b. Supply in Clinton County

Recreational facilities within Clinton County were evaluated, particularly beach swimming, boat launching, and camping facilities, which are the major activities proposed at Point Au Roche. The number of public and private facilities offering swimming, boat launching and/or camping, within 5, 10, 20, and 30 miles of Point Au Roche (Table 1) were derived from the OPRHP Recreation Facilities Inventory.

c. Demand

OPRHP's 1978 Park Visitor Survey of the Thousand Islands State Park Region and Cumberland Bay State Park, the nearest state park to Point Au Roche, offers some interesting insights into the expected use of Point Au Roche when developed and operational. The largest percentage of the visitors to parks in the Thousand Islands Region (34.5%) traveled one to two hours to reach the park of their choice. For Cumberland Bay, the one to two hour category is also the largest, comprising 63.9% of all respondents. (Table 2.) Montreal, one of the largest urban centers in North America, is located approximately 65 miles north of Cumberland Bay, and would fall into that travel time category. Therefore, it seems reasonable to assume that this urban center is supplying a significant portion of the park visitation.

This assumption is further supported by the response to another visitor survey question - where do you live? (Table 3.) Some 63.5% of all respondents to the Cumberland Bay survey resided outside of the United States. For the Thousand Islands Region this percentage was 16.8%. The 1983 Park Visitor and Camper surveys reinforced the findings of the 1978 survey. Some 65.3% of campers at Cumberland Bay were from another country, i.e. Canada. The percentage of park visitors or day users residing outside of the U.S. was even greater.

The high percentage of park users apparently from the Montreal area coupled with the high attendance (described later) at Cumberland Bay State Park indicate that a strong demand for access to Point Au Roche exists. Point Au Roche is closer to Montreal and possesses a more diverse environmental setting than Cumberland Bay State Park.

Table 1. Number of Recreation Facilities Within
5, 10, 20 and 30 Miles of Pt. Au Roche State Park

Recreation Facilities	5	10	20	30
Swimming				
Public	2	3	10	13
Private	4	7	15	22
Boating				
Public	1	1	5	6
Private	4	5	15	20
Camping				
Public	1	1	4	5
Private	3	7	16	24

Table 2. Patron Travel Time to Cumberland Bay State Park
and Other Thousand Islands Region Parks

	<u>CUMBERLAND BAY</u> <u>STATE PARK</u>	<u>T.I. REGION</u>
1-19 minutes	23.6%	21.0%
20-39 "	4.2	11.4
40-59 "	-	5.5
1-2 hours	63.9	34.5
2+ "	8.3	27.6

TABLE 3. ORIGIN POINT FOR PATRONS VISITING
CUMBERLAND BAY STATE PARK and
OTHER THOUSAND ISLAND REGION PARKS (%)

	<u>CUMBERLAND BAY</u> <u>STATE PARK</u>	<u>THOUSAND ISLAND REGION</u>
Saratoga/Capital	1.4	1.2
Long Island	1.4	.8
Genesee	1.4	9.4
Niagara	1.4	4.3
Palisades	-	.1
Finger Lakes	-	2.7
Allegany	-	-
Central	-	19.3
Taconic	-	1.0
Thousand Islands	21.6	33.1
New York City	-	1.0
Catskills	-	-
Adirondack	6.8	2.0
Other States	1.4	6.6
Other Countries	63.5	16.8
Unknown	1.4	1.7

To establish development priorities the analysis of demand and supply is translated into a measure of facility needs. The translation factor used is the "design day". The different facility needs are then evaluated in terms of service to be expected during their seasonal utilization.

Facilities should not be planned to accommodate peak use, nor should they be planned in complete disregard for fluctuations in use. Different activities have different degrees of peaking in use. Some of the most popular activities are tied to high peaks and short seasons, while other activities reflect fairly constant use levels. Both swimming and picnicking are high peaking activities. Peaking is greatest for those activities tied most closely to family related occasions, which correspond to weekends and holidays. For the same reason, a number of activities peak during the school vacation season, especially camping, swimming and boating. Unless or until leisure use patterns change, capacity expansion will have to reflect peaking if it is to respond to excess demand pressures. Design day capacity utilization (DDCU) indicates the degree to which average demand approaches or will exceed daily capacity on the given number of highest use days.

The DDCU figures for Clinton County in the year 2000 as detailed in the 1983 SCRP are understated due to the large number of foreign visitors. 85% or larger DDCU for an activity represents a supply deficiency (or possible overcrowding) for that activity. The DDCU figures for Clinton County for boating, camping, swimming, and picnicking in the year 2000 are 82, 89, 58 and 56 respectively. Thus despite the understatement of visitation demand, camping and boating will be approaching capacity by the year 2000. Although SCRP does not identify a deficiency for the other two major activities proposed for Point Au Roche, once again heavy use pressure from visitors originating outside of the U.S. clearly makes up for the lack of major New York State population centers nearby. This is best seen through current use figures for Cumberland Bay State Park (1982-83, 56,000 campers) which is the nearest comparable facility. During the 100 day camping season, the campsite was 100% full on 33 days, and 90% full on 35 days. Demand at Cumberland remains high despite the fact that it is extremely crowded with 197 campsites on only 22 acres.

Development of camping at Point Au Roche is appropriate given the heavy demand at Cumberland Bay and the need to relieve the pressure on that park. Additionally, Point Au Roche is very attractive and can offer a unique recreational experience of water-related camping. Camping at Point Au Roche can thus be justified by the attraction of the resource itself. Moreover, camping will attract more visitors from downstate urban centers. Without camping, use of the facility will probably be limited to the Plattsburgh market and the nearby Canadian population centers.

While the state's demand projections for camping and current use pressures on nearby state facilities indicate that there is and will be a market for additional camping opportunities, the private campground industry has indicated that it is capable of providing for camping demand and that state provision of camping at prices

below cost only serves to create a hardship on private operators. The primary purpose for proposing camping at Point Au Roche however, is not to satisfy overall camping demand but to make this unique resource and the camping opportunity it would provide available to the general public. The resource offers a magnificent setting for camping, and camping would make the resource more accessible to distant population centers.

As previously noted, Point Au Roche is classified as a Scenic Park and development within such parks is directed toward accomodating visitors who seek nature-oriented activities and scenic attractions. Commencing in mid-July 1984, a nature interpretation program will be offered at the Headlands Building in the park. Both the classification and program are consistent with the strong interest in environmental interpretive opportunities at the park by various groups and educational institutions.

The NYS Department of Environmental Conservation (DEC) is committed to a program of salmonid stocking in Lake Champlain. Already record fish are being taken from the lake. The demand for fishing access to Lake Champlain will continue to increase. Provision of a boat launch facility at the park for use by day users and campers will help meet this increased demand.

The need for a mooring program and a pump out facility for Deep Bay is well documented. Records of the number of deep draft boats using Deep Bay for mooring shows a doubling of boats since 1980 (i.e. 1200 to 2500 per season).

As Point Au Roche will be a four season park, winter recreation is an important feature. Ice fishing will be one winter activity and the nature interpretive program will be year round. The real growth element among the winter activities is the cross-country skiing. The growth rate in this sport is extremely high although the actual numbers of users is still somewhat small. Many of the park's trails will lend themselves quite well for cross-country skiing.

B. THE PARK

1. EARLY HISTORY

Lake Champlain was discovered in 1609 by Samuel de Champlain, although Point Au Roche and the surrounding lands had been previously inhabited by Indians for centuries. Point Au Roche served as a strategic location for both native Americans and early settlers because of its close proximity to the center of Lake Champlain's navigable channel.

Settlers first landed at or passed by Point Au Roche sometime during the mid-1600s. At that time the lake was a battle area for the French, British and Indians in their competition for possession of the lands in Northern New York and Vermont.

During the Revolutionary War Benedict Arnold anchored his fleet offshore from the park while waiting for the British troops from the north led by General Burgoyne. At this time, the bay area south of the park was named the Bay of St. Amon.

In the period following the War, the Point Au Roche area was the focus of an attempted farm settlement in the Beekmantown Patent of 1769. It was the intention of Mozes Hazen and his agent, Benjamin Mooers, to develop the Point Au Roche site as a farm base settlement. Benjamin Mooers built a log cabin on the property in 1783 and is considered the first white man to set up residence at what is now the park. A later resident of the park, Judge Nathaniel Treadwell had his home pillaged by the British troops during the War of 1812. Also during that war, American troops landing at Point Au Roche were attacked by Indians and eight men lost their lives. The park was also used as a military encampment for cadets between the years 1917 and 1919.

2. RECENT HISTORY

The area that presently comprises Point Au Roche State Park was used for a variety of purposes prior to acquisition by the State of New York. The majority of the land was used for agriculture either as pasture or cropland. In addition, a theme park named Fantasy Kingdom was operated in the vicinity of the beach area. In the northeastern section of the park a proposal was made in the late sixties to develop a recreational/residential subdivision. This development was never completed but roads, water and wastewater lines for this subdivision are still present today.

The area known as Long Point was used for nearly 50 years as a private scouting/camping area called Camp Red Cloud.

St. Armand's beach was once operated by the Town of Beekmantown as a bathing beach for local residents. Construction of an access road behind St. Armand's beach significantly changed the environmental character of the beach/dune systems along the shoreline. Discontinued use of the road has allowed for some regeneration of this natural system.

3. ACQUISITION

During the 1950s and '60s an upsurge in interest in New York's water resources brought about a recognition of the regional economic benefits of water resource development. During this period a proposal was made for the state to develop and operate the section of shoreline known as St. Armand's Beach which was then owned by the Town of Beekmantown. At the time of this proposal, guidelines governing the development of new state parks stated that the area of a proposed park should be 400 acres or greater, thus making the St. Armand's beach area too small for consideration. Moreover, existing fiscal constraints prevented the state from purchasing large tracts of land.

This acute need for funds to purchase additional open space joined forces with a growing environmental movement and resulted in the drafting of the Environmental Quality Bond Act of 1972 (EQBA). Survey information on Point Au Roche was finalized and acquisition by the state was contingent on passage of the EQBA. After enactment of the EQBA, title transfer of the area went forward despite opposition by a few former owners of the property.

The purchase of the property added to the state's reserve of valuable scenic and natural areas. The Lake Champlain Committee and the Audubon Society were among the groups strongly backing the acquisition. The potential for development of the site was specifically addressed in the Statewide Comprehensive Outdoor Recreation Plan (SCORP) of 1972.

Other marketing studies reinforced the Point Au Roche action. An analysis of park operations within Clinton County documented a lack of camping and day use water-based recreation opportunities such as boating, fishing, and swimming at that time. Acquisition and proposed development were also consistent with a report produced by the New York State Office of Planning Coordination which recommended low intensity recreation and preservation of open space for the area. Two other items of information supportive of acquisition were the facts that (1) although tourism provides over 30 percent of the region's economic base, a first-class, multi-purpose recreational site was lacking and (2) development of Point Au Roche as a park would act as a deterrent to high intensity strip development of the shoreline.

In 1973 the Commissioner of the Office of Parks and Recreation, Alexander Aldrich, and the Commissioner of the Thousand Islands Park Region, Harold Evans, conducted an inspection and tour of the site and authorized the acquisition proceedings and the preliminary Master Plan for development of the parcel. By December of 1974, the title to the lands had been vested with the State of New York at a cost of \$773,000.

Although fiscal constraints have prevented OPRHP from developing the park, a substantial amount of rehabilitative work was done in the park in 1978 by CETA (Comprehensive Employment Training Act) and YCC (Youth Conservation Corps) groups paid through federal and local funding sources. (OPR, 1977) This work included:

- removal of a road and utility poles along the western portion of St.Armand's beach;
- trail rehabilitation on Long Point;
- removal of amusement park (Fantasy Kingdom) ruins;
- modification of an existing building for subsequent service as a temporary maintenance facility;
- removal of a short stretch (one-fourth mile) of the Camp Red Cloud road.

4. PARK BOUNDARIES AND ADJACENT LAND USE

Point Au Roche State Park is located along the southern portion of an area of land known locally as "Ram's Head", which juts out into Lake Champlain. Approximately six miles of Lake Champlain shoreline make up the park's southern and eastern boundaries. Treadwell Bay is between the Ram's Head and Cumberland Head to the south. A smaller bay known as Conner Bay is situated along the park's eastern shoreline.

The northern boundary of the park is approximately 2.5 miles long and its westernmost boundary is .5 miles in length. According to the Clinton County Land Use Plan (Clinton County Planning Board, 1979) there are two primary land use types bordering the park (Figure 4). The western side of the park is bordered mainly by prime agricultural land although the southwestern boundary borders a small portion of rural/suburban land. Approximately two-thirds of the northern side of the park is also bordered by primary agricultural land, with the remaining third classified as rural/suburban land. The only other land use type in the vicinity of the park is a large area designated as a water resource which is located along the northern shoreline of the Ram's Head. This area is a large wetland at the mouth of Riley Brook.

The Clinton County Land Use Plan defines the land areas designated as prime agricultural land as having a better than average chance of remaining in agriculture for another generation. Indeed, most of these same areas around the park are designated agricultural districts as shown in Figure 5, from the Clinton County Agricultural District Map (Clinton County Planning Office, 1984). Agricultural District classification provides certain incentives/disincentives relating to the protection of prime farmland.

The land designated as rural/suburban land is defined in the Clinton County Land Use Plan as predominantly rural land surrounding an urban or developed area which is usually interspersed with active agricultural land. The plan further states that these areas are deserving of planning and management so that the growth and development pressure from the urbanized center does not preclude properly designed and appropriately located individual homes and subdivisions.

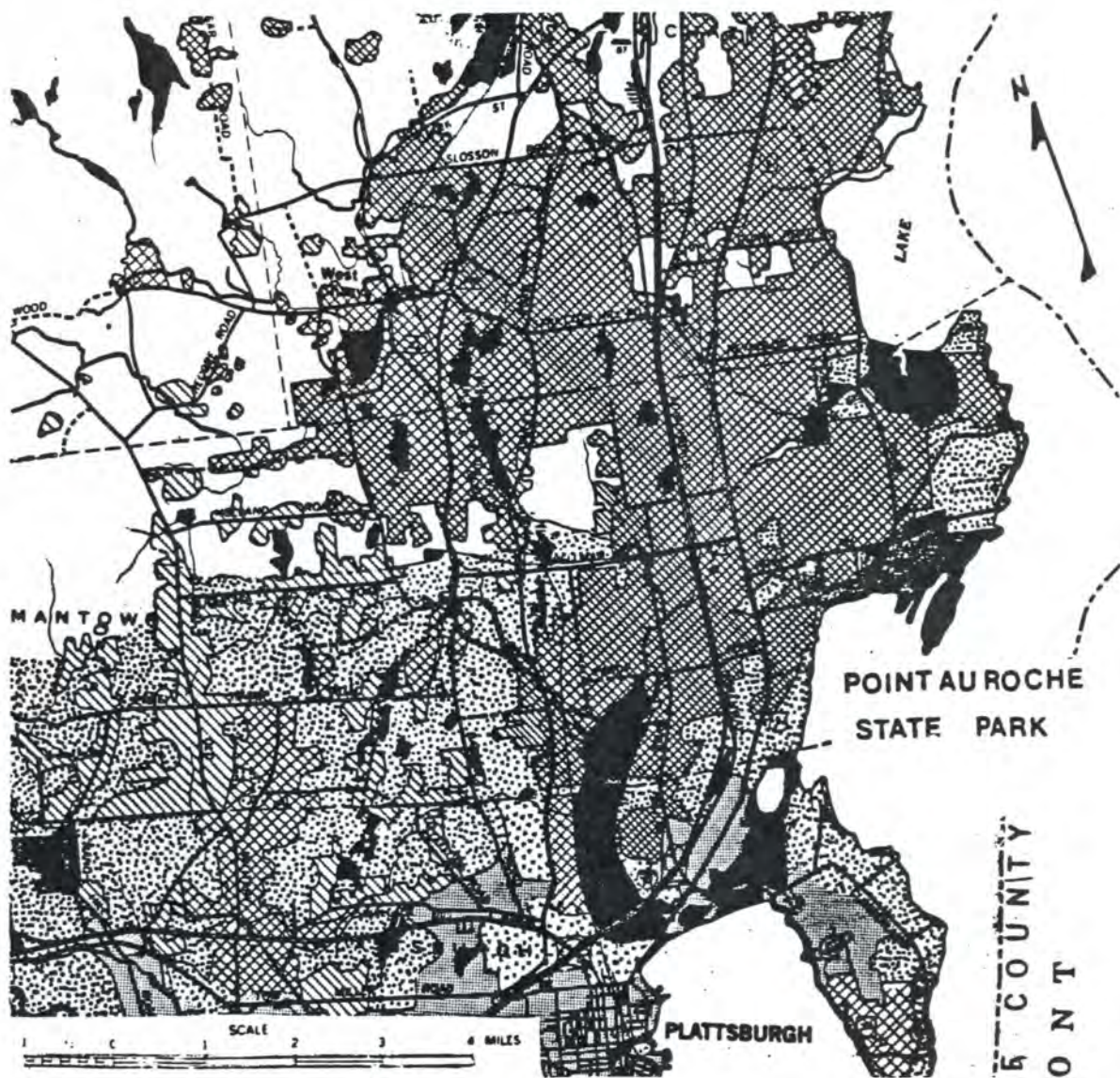
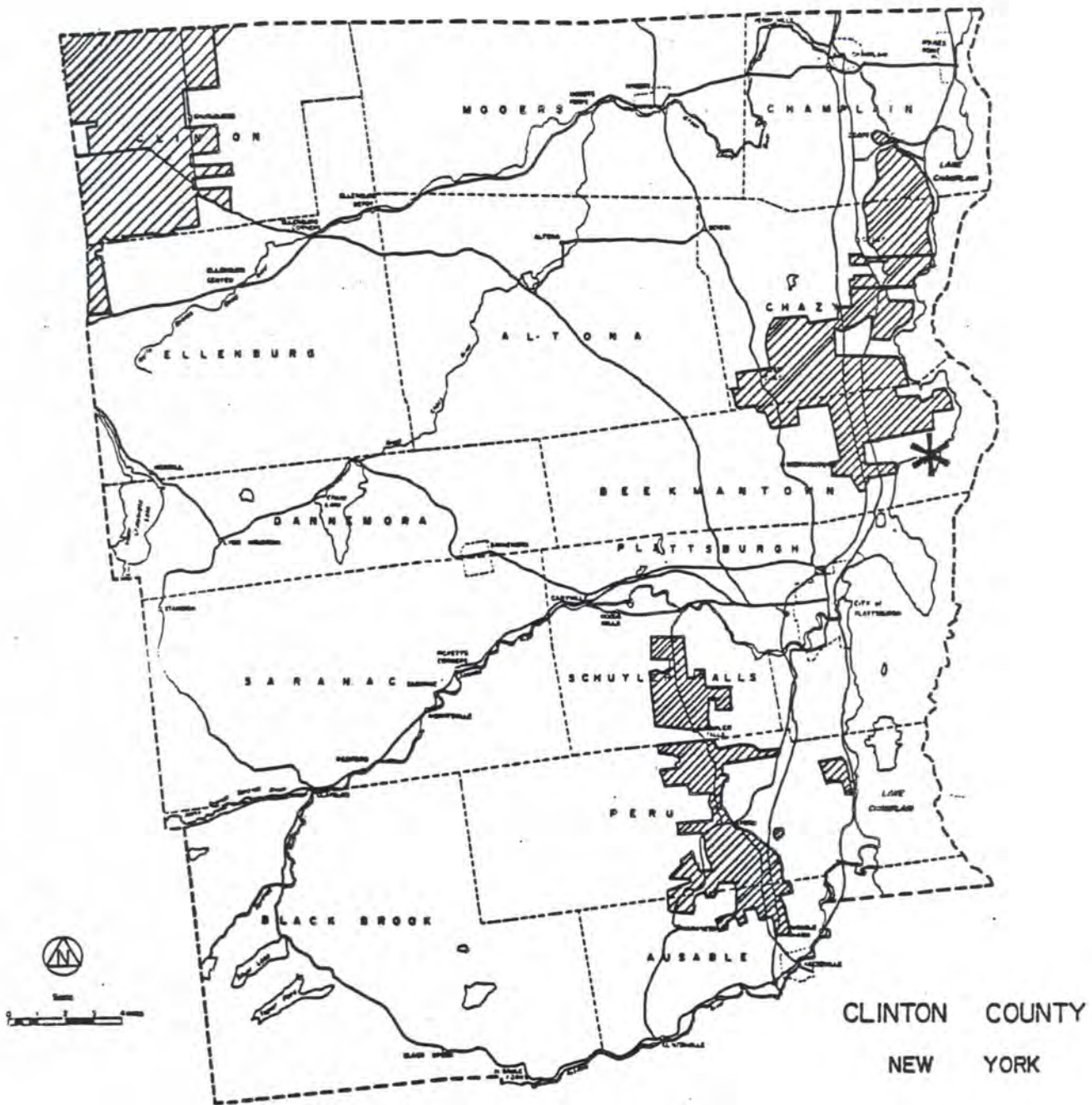




FIGURE 4
LAND USE CLASSIFICATION
IN PLATTSBURGH AREA





 AGRICULTURAL DISTRICT AREAS

 - Point Au Roche State Park

PREPARED BY:
CLINTON COUNTY PLANNING OFFICE

FIGURE 5

AGRICULTURAL DISTRICTS IN VICINITY OF POINT AU ROCHE STATE PARK

5. PHYSICAL CHARACTERISTICS

a. Geology and Topography

The soil, bedrock and topographic features of Point Au Roche State Park are characteristic of the Lake Champlain Valley in general. The Champlain Valley's geologic history began nearly two billion years ago and consisted of a series of sediment buildup, burial and consolidation. These processes combined with intrusion from igneous rocks such as granite and anorthosite created the bedrock characteristic of this area. The predominant bedrock of Point Au Roche consists of several calciferous rock formations (Figure 6) such as dolostone, limestone, sandstone and shale (Clinton County Planning Dept, 1979). Specifically the type of bedrock underlying almost the entire area of the park is Cumberland Head Argillite, a very dense and impervious sedimentary rock, with characteristics like limestone and dolostone (Lapping *et. al.* 1974).

Many of the geologic characteristics of the Point Au Roche area, as in New York State in general, are a result of the glaciers which covered the state during the various ice ages, the most recent of which was the Wisconsin glacier. The earth's surface rose as the glaciers receded. This uplifting resulted in fractures or faults along weak areas of the bedrock. Figure 7 shows the two faults which occur in the vicinity of the park. Just north of Point Au Roche Road a thrust fault runs in an east-west direction out into Lake Champlain. In addition, a normal fault runs near the shoreline of Long Point and Conner Bay in a north-south direction.

In general, the park's topography is varied, from level areas to vertical cliffs. The extreme western portion of the park can be described as level and gently sloping toward the lake. In contrast, the eastern portion of the park tends to be more varied with numerous hills and hollows. The hills are primarily protruding bedrock with minimal soil cover while the hollows between the hills are filled with both lake and glacial deposits, and have a fairly thick soil covering over the bedrock. Many of these depressions contain wet areas which are described in a later section.

Based on a slope analysis map (Figure 8), most of the park has little or slight slope while the remainder (30 percent) is equally divided between the moderate and severe slope categories.

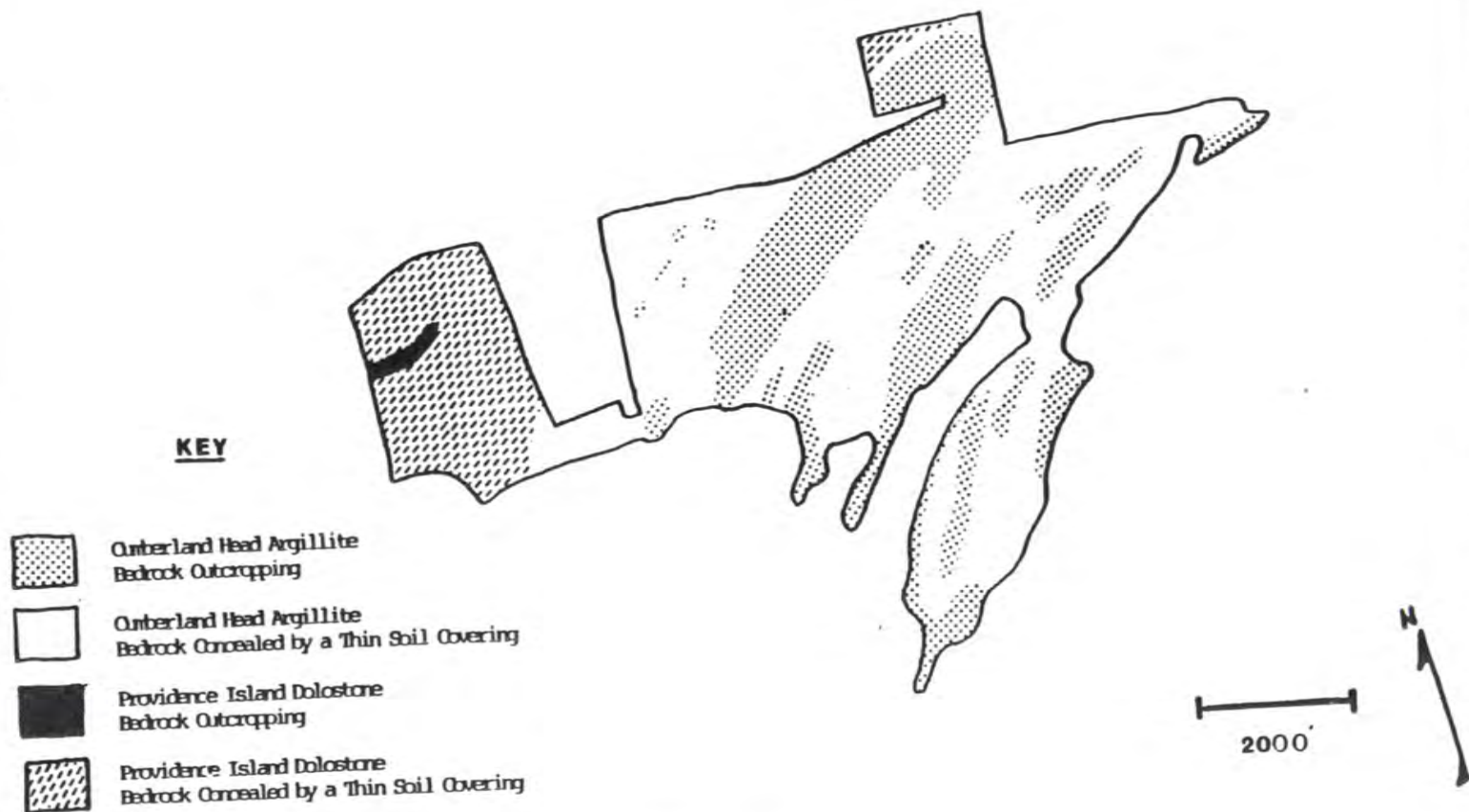
b. Soils

As they moved over the landscape, scraping and mixing the underlying soils and bedrock, the glaciers produced glacial till or unconsolidated material. The primary type of glacial till in Point Au Roche is ground moraine but sand and gravel are also present on the western side of the park (Clinton County Planning Office, 1979).





The Clinton County Soil and Water Conservation Service District Office provided soil survey information for Point Au Roche State Park. The soils map (Figure 9) is drawn at a moderate scale

FIGURE 6

BEDROCK GEOLOGY OF
POINT AU ROCHE STATE PARK



KEY

-  Cumberland Head Argillite
Bedrock Outcropping
-  Cumberland Head Argillite
Bedrock Concealed by a Thin Soil Covering
-  Providence Island Dolostone
Bedrock Outcropping
-  Providence Island Dolostone
Bedrock Concealed by a Thin Soil Covering

From Fisher, 1968

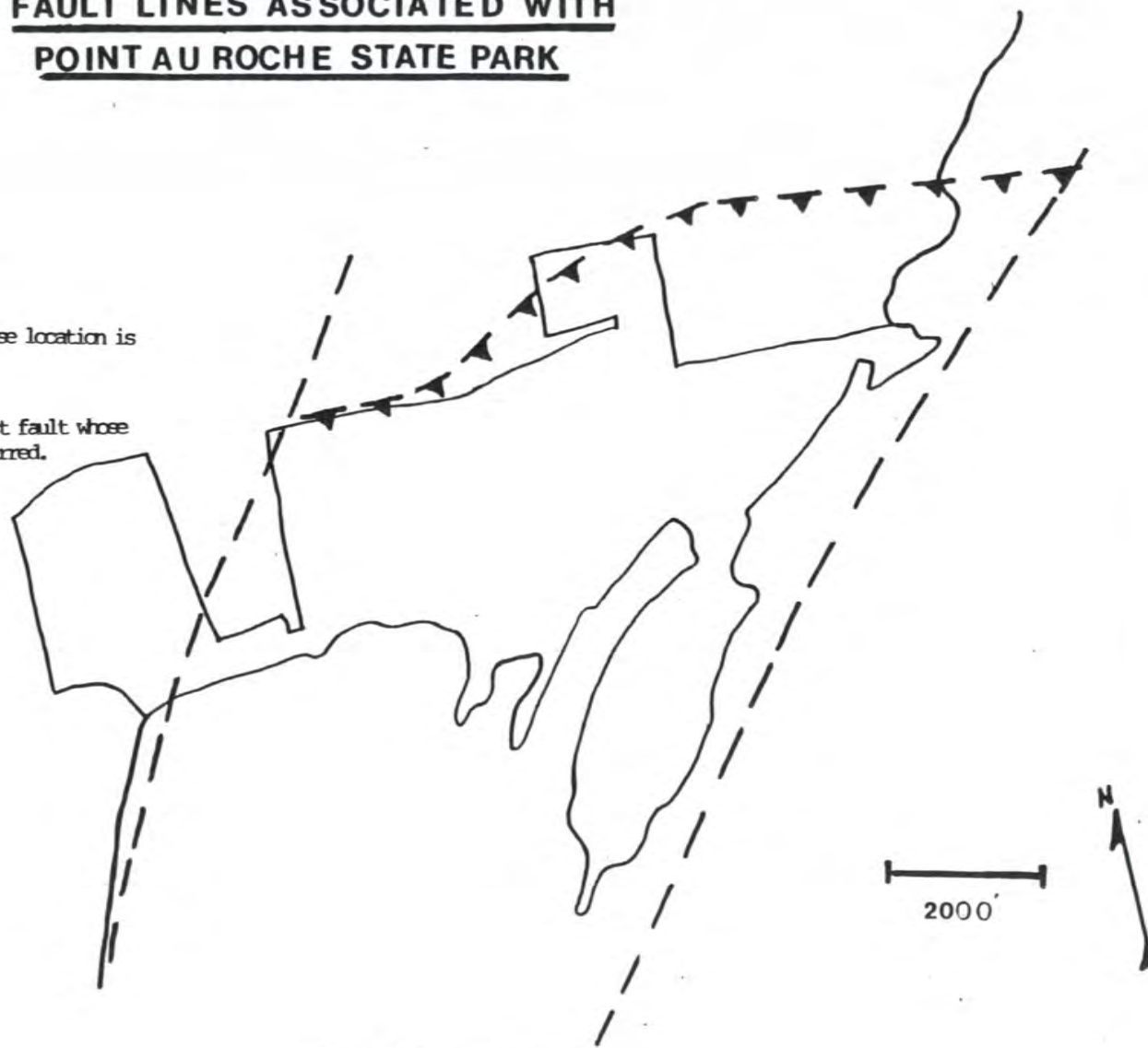
FIGURE 7

FAULT LINES ASSOCIATED WITH
POINT AU ROCHE STATE PARK

KEY

----- Normal fault whose location is inferred.

▼▼▼▼ Reverse or thrust fault whose location is inferred.

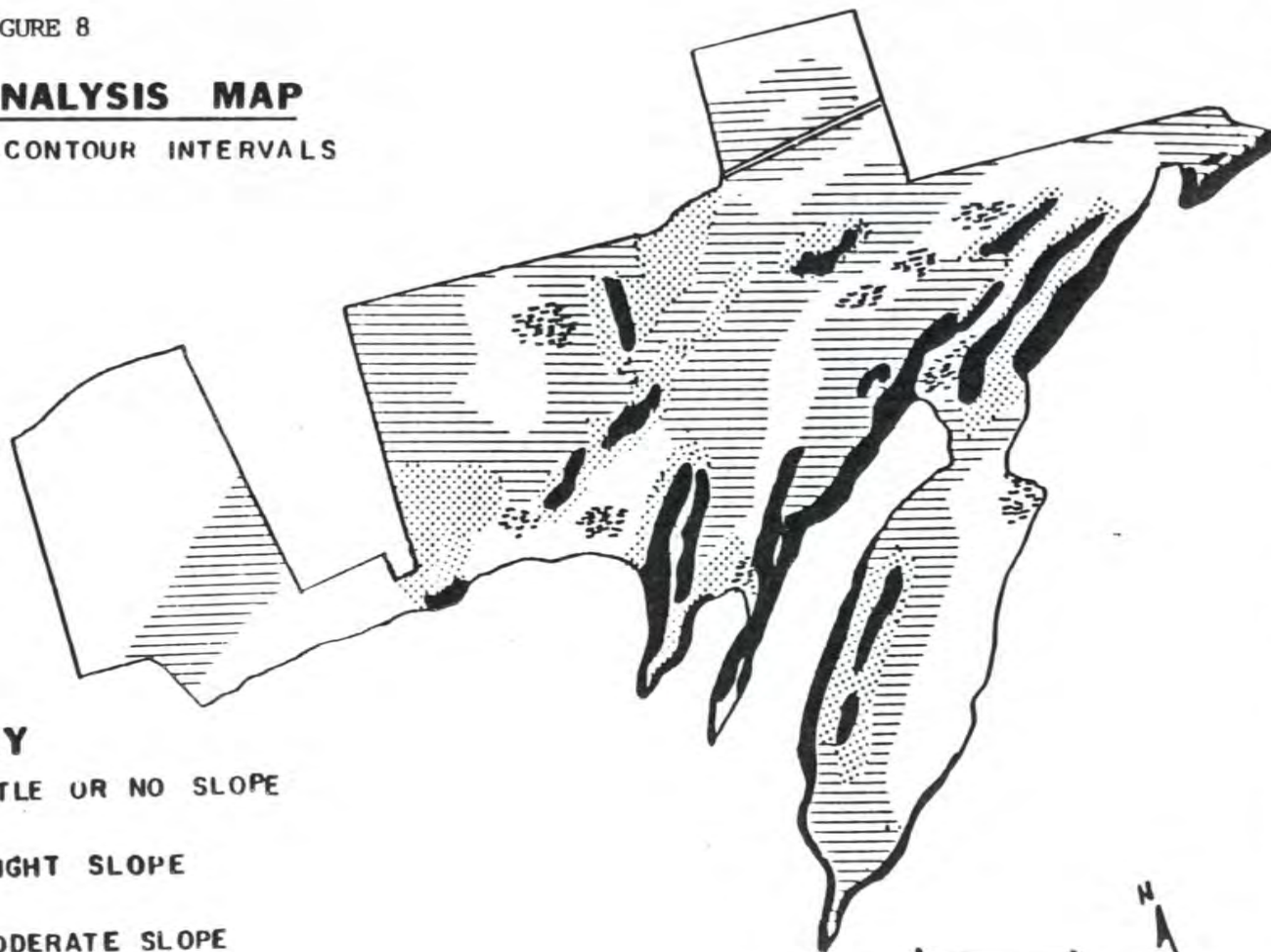


From Fisher, 1968






FIGURE 8

SLOPE ANALYSIS MAP

BASED ON 10' CONTOUR INTERVALS



KEY

-  0-4 % LITTLE OR NO SLOPE
-  5-10% SLIGHT SLOPE
-  11-20% MODERATE SLOPE
-  20+ % SEVERE SLOPE
-  WET AREAS

1500'



(units less than 3-4 acres were not delineated), and indicates that the most common soil unit is in the Benson-Galway complex. This soil type covers roughly 42% of the park property (Table 4). The Benson Soil Series consists of shallow excessively drained silt loam soils formed from glacial till. Within this soil type, bedrock is at a depth of 10-20 inches and slopes range from 0 to 35 percent. The Galway series consists of moderately deep, moderately well drained soils on upland areas. This soil series formed in relatively thin glacial till over limestone bedrock. The layers of this series are composed of silt and gravelly loam. Gray limestone bedrock is 20-40 inches of depth and slopes generally range between 0-35 percent.

The next most prevalent soil type is Swanton Fine Sandy Loam which occupies about 10 percent of the park area. This series consists of deep, somewhat poorly drained soils. They formed in a loamy mantle over clayey sediments. This soil consists of 18-40 inches of fine sandy loam over silty clay loam and silty clay. Slopes of this series range from 0 to 8 percent. The remaining 48% of the park contains 17 different soil and slope types of various textures all over 40 inches deep, including the beach sand and gravel.

The Soil Conservation Service also provided information on the use limitations for the soil units within the park (Appendix B). Soils limitations will be discussed in more detail in the analysis portion of the plan.

c. Water Resources

i. Ground Water

In the Beekmantown Natural Resource Inventory (Clinton County Planning Office, 1979) the groundwater in the eastern half of Beekmantown (in which Point Au Roche is located) is described as plentiful, and of good quality. Some hardness exists, however, due to the carbonate deposits of limestone and dolostone which underlie the area.

The following discussion on the park's hydrology is based on a report by Lapping *et. al.* (1974). The hydrology of Point Au Roche is closely related to its bedrock configuration and topography. The permeability of the Cumberland Argillite bedrock, in general, is dependent upon the degree to which it is fractured, weathered and compressed. In the western section of the park where the land gradually slopes toward the lake, the groundwater flows uniformly towards St. Armand's beach, eventually intersecting with Lake Champlain.

In the eastern half of the park where the bedrock is more folded, as reflected in the hilly topography of this area, the hydrology differs substantially. These folds affect both the permeability of the bedrock and the lateral movement of the groundwater. Generally the permeability of the bedrock layer is greater in ridge areas than it is in the hollows because the process of folding tended to separate the strata on the upfolds and

TABLE 4

Soils at Point Au Roche

<u>Soil Code #</u>	<u>Soil Name</u>	<u>Slope</u>	<u>% of Park Covered</u>
95BC	Benson-Galway Complex	0-15%	22
95DE	Benson Galway Complex	15-35	20
48A	Swanton Fine Sandy Loam	0-3	9
44A	Minoa Fine Sandy Loam	0-3	6
49	Whately Fine Sandy Loam	0-3	5
41	Panton Silty Clay Loam	3-8	5
42	Covington Silty Clay Loam	0-3	4
62B	Massena Cobbly Loam	3-8	4
62A	Massena Cobbly Loam	0-3	3
46	Granby Loamy Fine Sand Beach	0-3	3
44B	Minoa Fine Sandy Loam	3-8	2
43	Livingston Mucky Silty Clay Loam	0-3	2
50B	Munson Very Fine Sandy Loam	3-8	2
61B	Amenia Cobbly Loam	3-8	2
69A	Coveytown Cobbly Loamy Sand	0-3	2
63AB	Massena Stony Loam, lithic Variant	0-3	2
68B	Fahey Cobbly Loamy Fine Sand	3-8	1
50A	Munson Very Fine Sandy Loam	0-3	1
41A	Panton Silty Clay Loam	0-3	1
48B	Swanton Fine Sandy Loam	3-8	1

compress it in the downfolds. While the groundwater tends to flow freely through the ridges it is often trapped in the more compressed hollow areas, preventing any lateral flow. In these areas the groundwater tends to stagnate.

Lapping et.al. also points out that various pockets of clay material also tend to trap groundwater on the park property. Such lenses of clay can result in perched water tables that can hold water above the actual groundwater level.

The report's hydrologic survey detected groundwater depths varying from 3 to 5 feet throughout the park. A map from that report shown in Figure 10 illustrates the location of the test sites and respective depth to groundwater depths.

ii. Surface Water

All surface water in Point Au Roche State Park eventually drains into Lake Champlain. There are several separate watersheds or drainage patterns within the park (Figure 11). Two of these routes drain small ponds which usually contain open water year-round (Figure 12). The pond area furthest to the west has no identifiable inlet or outlet and is probably an exposed portion of the water table. The other pond flows via an intermittent stream into Middle Bay. It has an intermittent inlet stream and may also be partially spring fed. This pond has been referred to as Duck Pond and does serve as a resting and/or breeding place for waterfowl. Results from a field survey done on this pond in June 1977 revealed Chara, an aquatic plant, to be abundant (Appendix C). Since this genus is often found in hard or semi-hard water, it is likely that Duck Pond contains relatively high levels of calcium. Dissolved oxygen measured 15 parts per million. This super-saturated level resulted from the high productivity of the pond's primary producers. Plankton was relatively low in total biomass, but high in terms of diversity.

In addition, there are several wetland areas within the park whose water levels fluctuate seasonally. Because these areas are under 12.4 acres, they are not classified or regulated by DEC. They may provide important wildlife habitat, however, and consideration will be given for their protection.

Lake Champlain is the only other surface water connected with Point Au Roche State Park. The park has approximately 6 miles of shoreline along the lake. The beach areas of Treadwell Bay are sandy with a very gradual slope out into the bay. (Figure 13).

Middle Bay and Deep Bay provide refuge for boaters from rough conditions on the open lake. Because of their configurations they may have poor circulation. Testing done in 1977, however, indicated a well oxygenated condition (i.e. Middle Bay - 11.0 ppm; Deep Bay - 11.4 ppm).

Results from a preliminary baseline survey of the bays also demonstrate a high level of water quality. Sampling and field analysis were conducted on August 15 and 16, 1984, by OPRHP staff

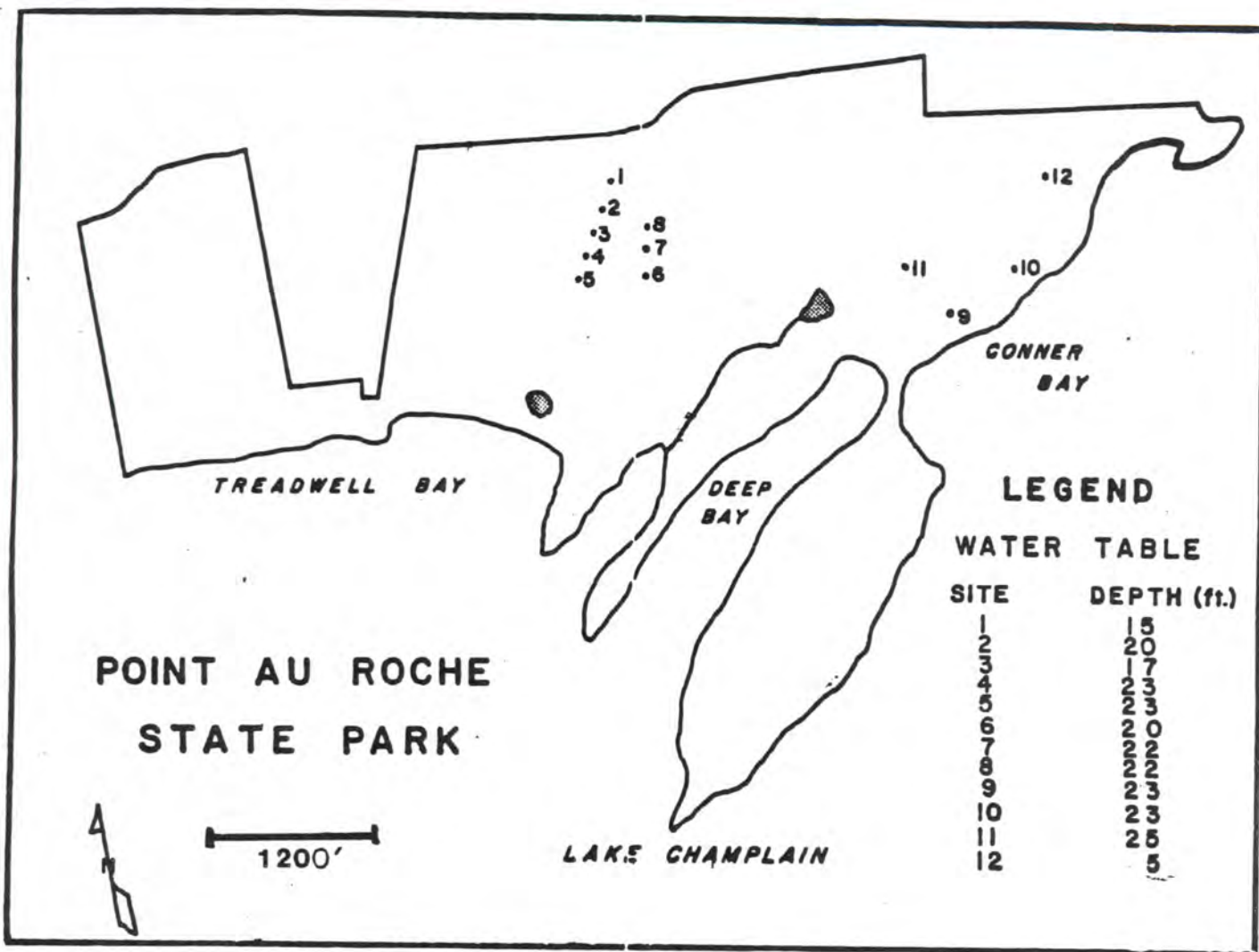
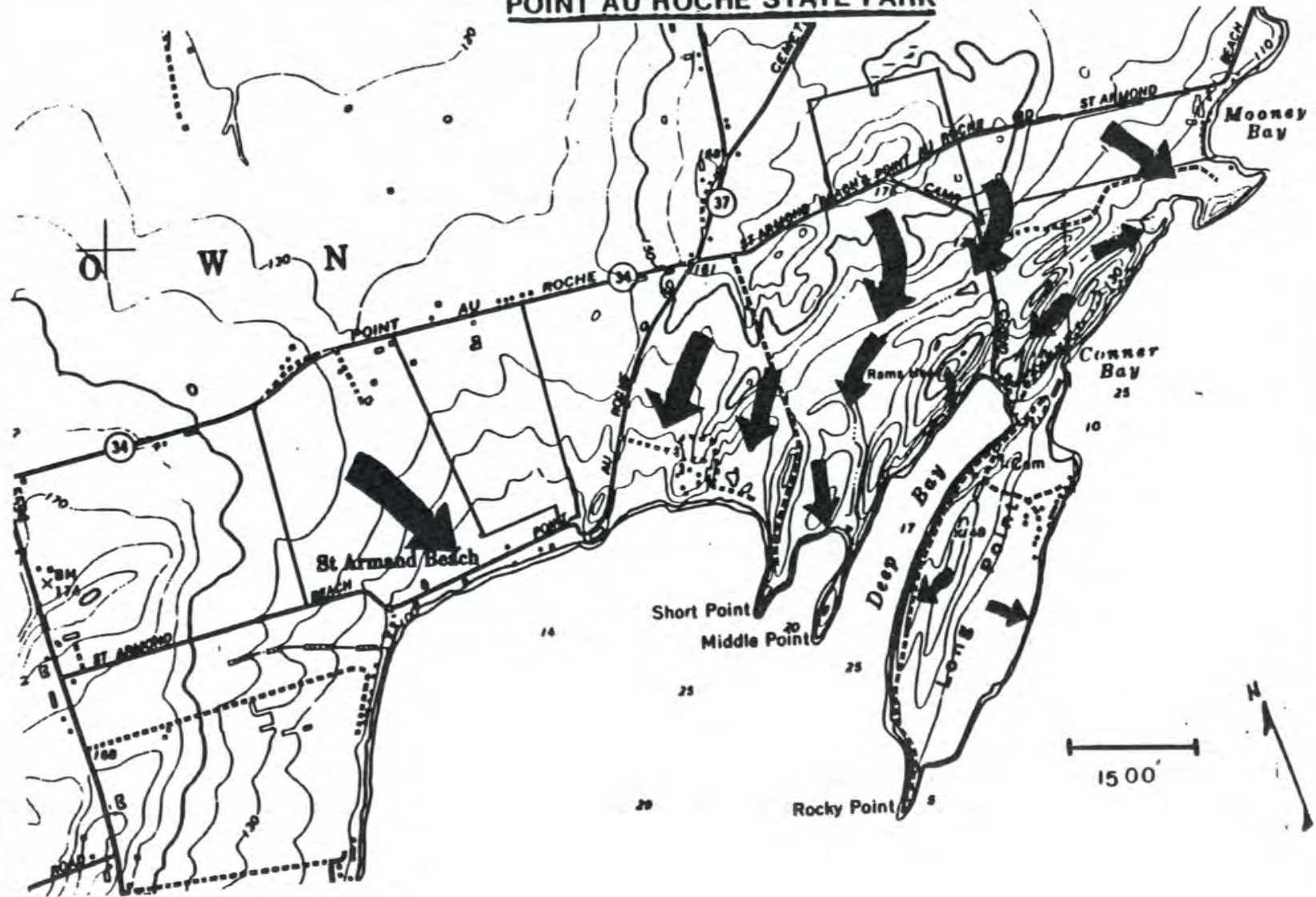


FIGURE 10

Depth to Groundwater at Various Sites (Lapping et. al., 1977)

FIGURE 11

DRAINAGE PATTERNS WITHIN
POINT AU ROCHE STATE PARK



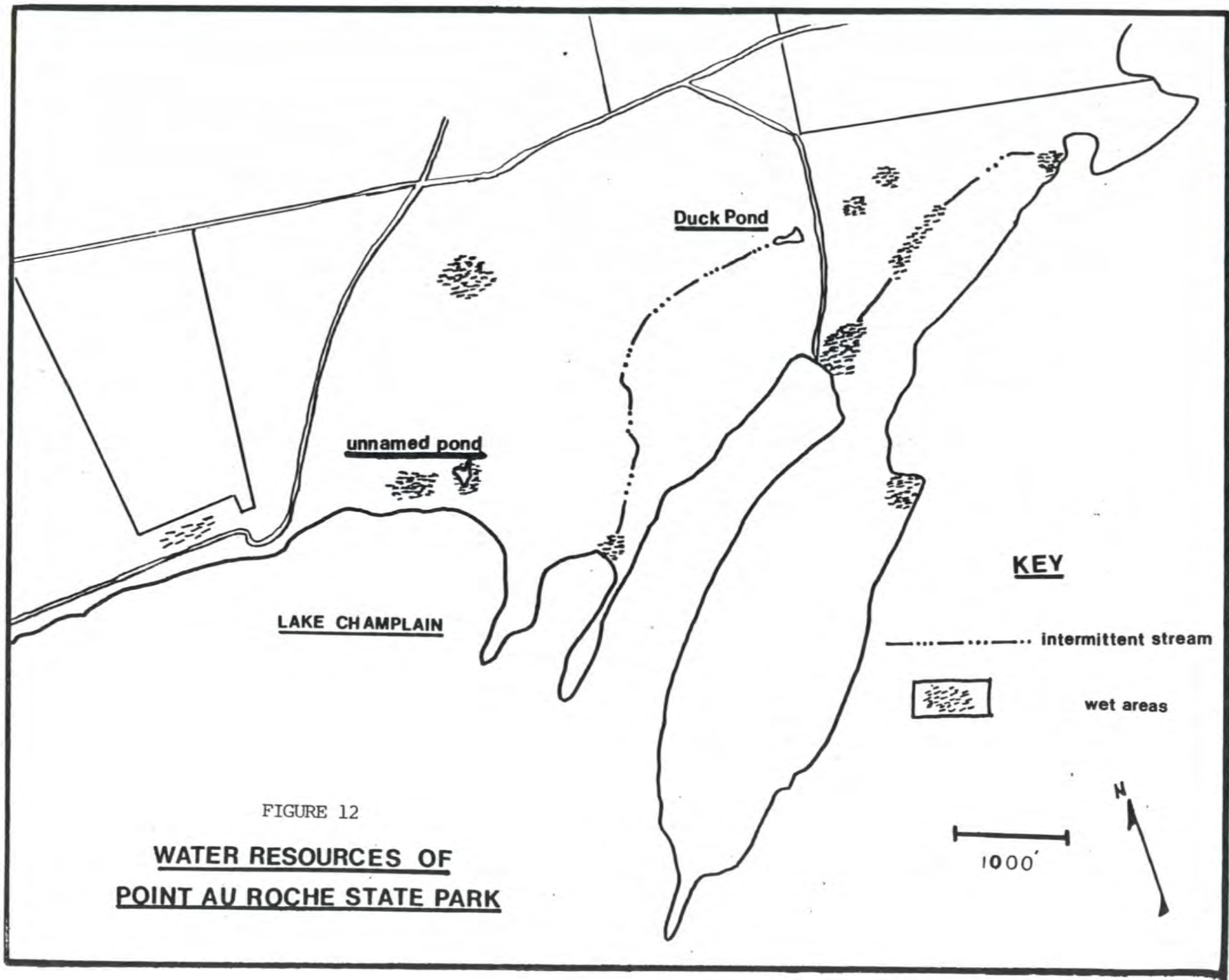


FIGURE 12
WATER RESOURCES OF
POINT AU ROCHE STATE PARK

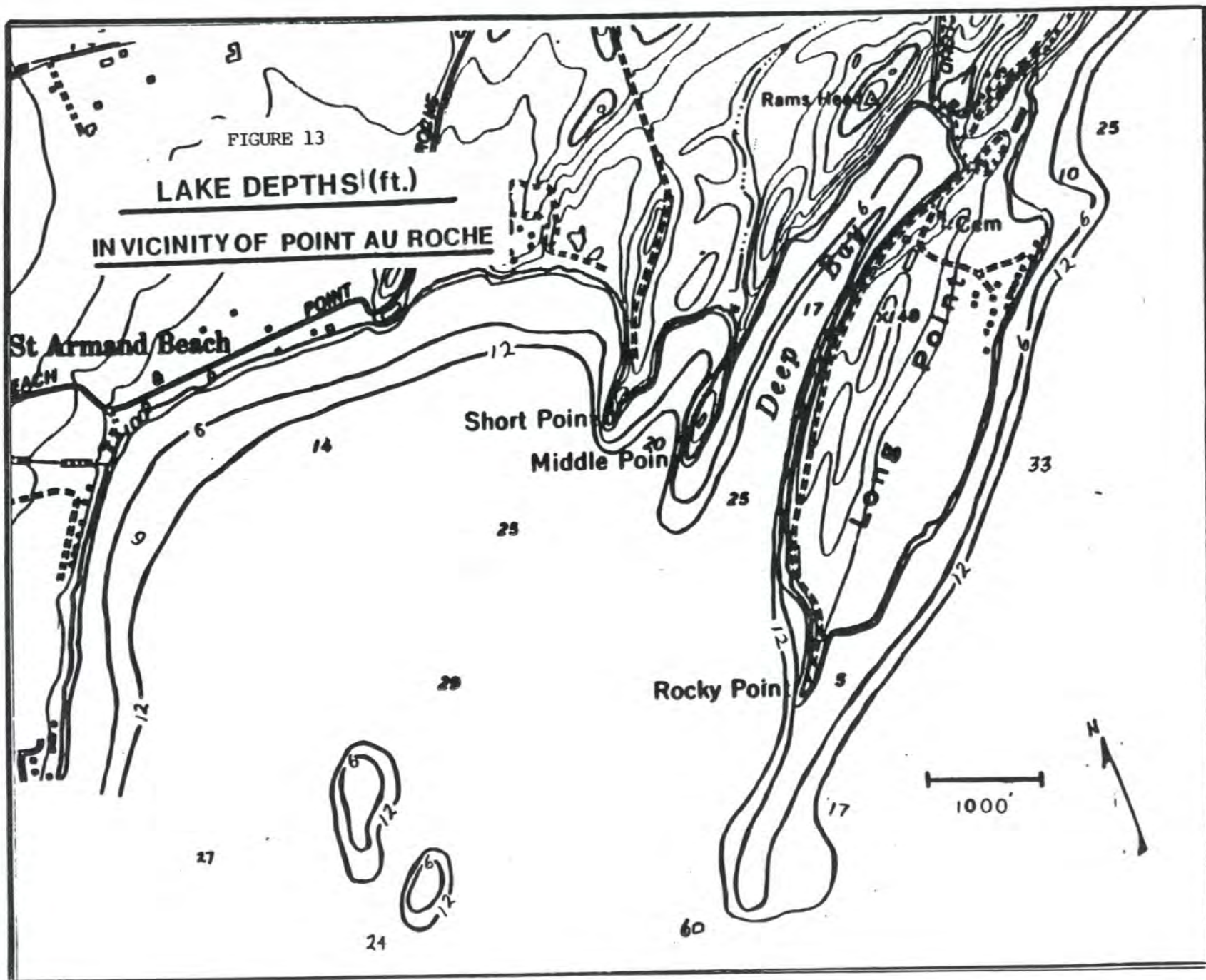
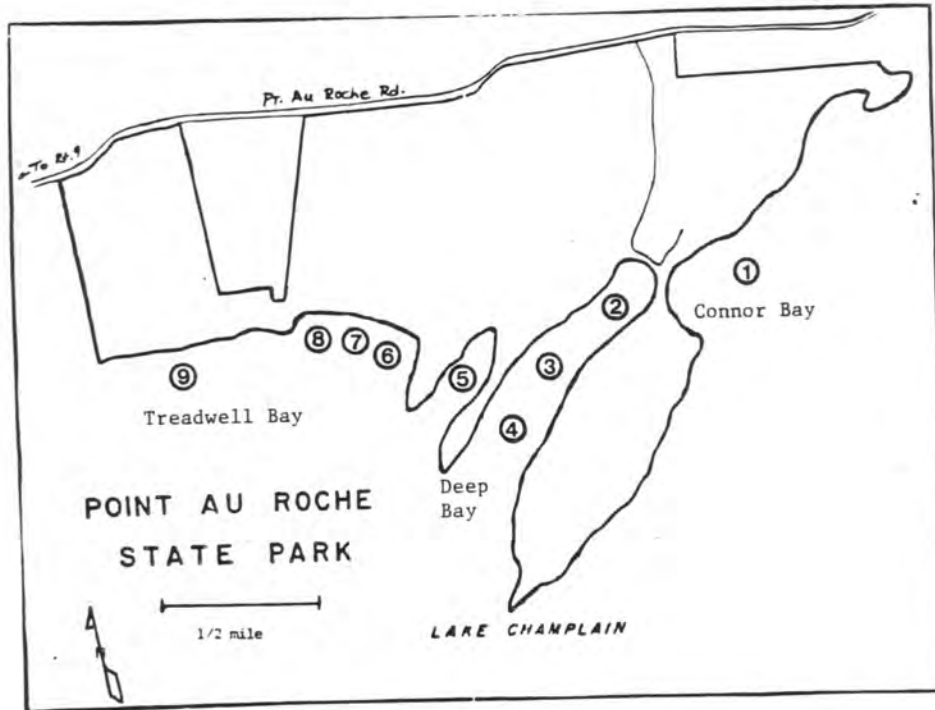


Table 4a. Total and Fecal Coliform Concentrations (#/100 ml)
 Pt. Au Roche Bay Areas, August 16, 1984
 (Adirondack Laboratories, 1984)



<u>Station #</u>	<u>Total Coliform</u>	<u>Fecal Coliform</u>
1	21	LT 1
2	59	LT 1
3	10	LT 1
4	11	LT 1
5	6	2
6	25	3
7	63	6
8	23	1
9	10	3

LT = Less Than

While more detailed water quality studies are planned for the Treadwell, Middle and Deep Bay areas, existing information indicates that the lake's water quality is generally good in the vicinity of the park. In the Lake Champlain Atlas: Water Quality and Shoreland Use (NERBC, 1978), the areas of the lake around Point Au Roche were classified according to their trophic status. This classification represents known relationships between water clarity (as measured by a Secchi disc), nutrient levels (phosphorus) and algae biomass. This trophic classification index ranges from 0-100. The higher the number, the greater the degree of eutrophication or organic production. In terms of contact recreation, high eutrophication is undesirable because it is generally associated with aquatic weeds and/or turbidity. The section of Lake Champlain around Point Au Roche has a trophic index between 35 and 39, indicating water quality suitable for contact recreation.

DEC has classified waters according to their "best use" in an effort to maintain the quality of water bodies throughout the state. Any action (e.g. discharge) which may affect these designations requires a permit from DEC. Under this system, Treadwell and Conner Bays were classified as A and Deep Bay as C. These letters which represent the "best use" are explained in the following key:

AA - Source of Water Supply

A - Source of Water Supply (filtration and chlorination required)

B - Primary contact recreation (swimming) and any other use except those mentioned in AA and A

C - Secondary contact recreation (boating and fishing) and all other uses except those mentioned in AA and A

D - Secondary contact recreation, not suitable for propagation of fish

This classification also indicated good water quality for this area of Lake Champlain although the classification of Deep Bay does indicate that its carrying capacity may be limited.

d. Climate

The following information on the weather of the Plattsburgh area is from a report by Mark Bellm, 1982, entitled Climate Atlas of Clinton County. The climate of the Point Au Roche area is generally well suited for year-round recreational purposes. The summers are clear, sunny and generally warm, and winters cold with a good deal of snow.

The average annual precipitation for this area is 31.3 inches with the greatest amount of precipitation occurring in the months of August and September. The average annual snowfall for the area is 67 inches providing ample opportunity for cross-country skiing and other outdoor winter activities.

The average annual temperature is 45.8 degrees Fahrenheit. In January the average temperature is between 18-20 F with the average minimum for the month being between 8-10 F. The average temperature in July is between 70 and 72 F with the average maximum temperature for this month being between 82-84 F.

The average annual windspeed for the area is 6.51 knots per hour. Due to the configuration of the Champlain Valley the winds in this area tend to be predominantly from the north and south (Figure 14). Winds blow from the north-northeast consistently except during the summer (July) when they originate primarily from the south-southeast. To a lesser extent, winds also blow consistently from the west.

6. BIOLOGICAL CHARACTERISTICS

a. Vegetation

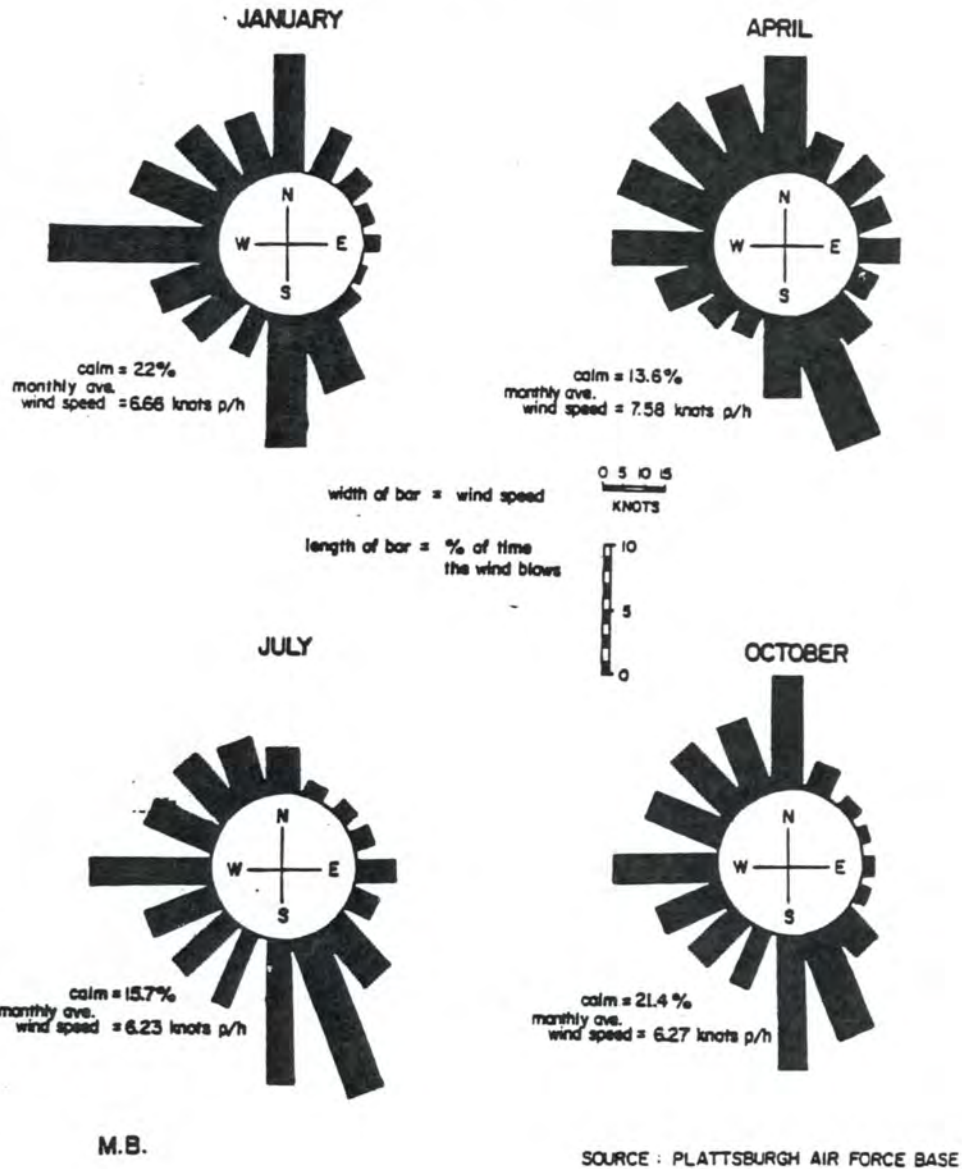
A few hundred years ago the Point Au Roche area was covered with mature virgin forest. During the 1800's however, much of the land was cleared for timber or agriculture. Today, the vegetation resources at Point Au Roche can be grouped into 4 categories (Figure 15). The park is mainly brushland or old field areas which are in the early stages of forest succession. These fields contain various species of grasses and sedges as well as wildflowers normally associated with a goldenrod/aster complex. Small individual trees/shrubs such as white cedar, aspen, dogwood and willow are found throughout the open fields. A few rows of mature trees (e.g. oaks), which probably functioned as property or field boundaries in the past, are interspersed throughout the fields. A portion of the western part of the park is leased for agricultural purposes.

The two ponds in the park appear to be natural and support a variety of macrophyte and microphyte species. The ponds (and associated wetlands) are critical areas in terms of parkland diversity and nature interpretive opportunities.

The wet areas in the park are either natural or a result of past development activities. For example, the area upstream or east of Duck Pond supports natural wetland species such as cat-tails. The wet condition of other areas is very transitory and a result of poor drainage in areas modified by prior development activities (e.g. the area north of the berm created for the former railroad which served the Fantasy Kingdom theme park). These wet areas do not contain the wetland species of plants as listed in the Freshwater Wetland Act.

While amounting to less than 20 percent of the land cover, the forest substantially contributes to the number and variety of plant species in the park. The predominant tree species is white cedar. Areas of white cedar with mature white pine can be found in the northeastern peninsula, and Long and Middle Points. Areas of mixed deciduous forest (hickory, oak, beech, aspen, birch, maple) can also be found on Long Point and the area behind the easternmost

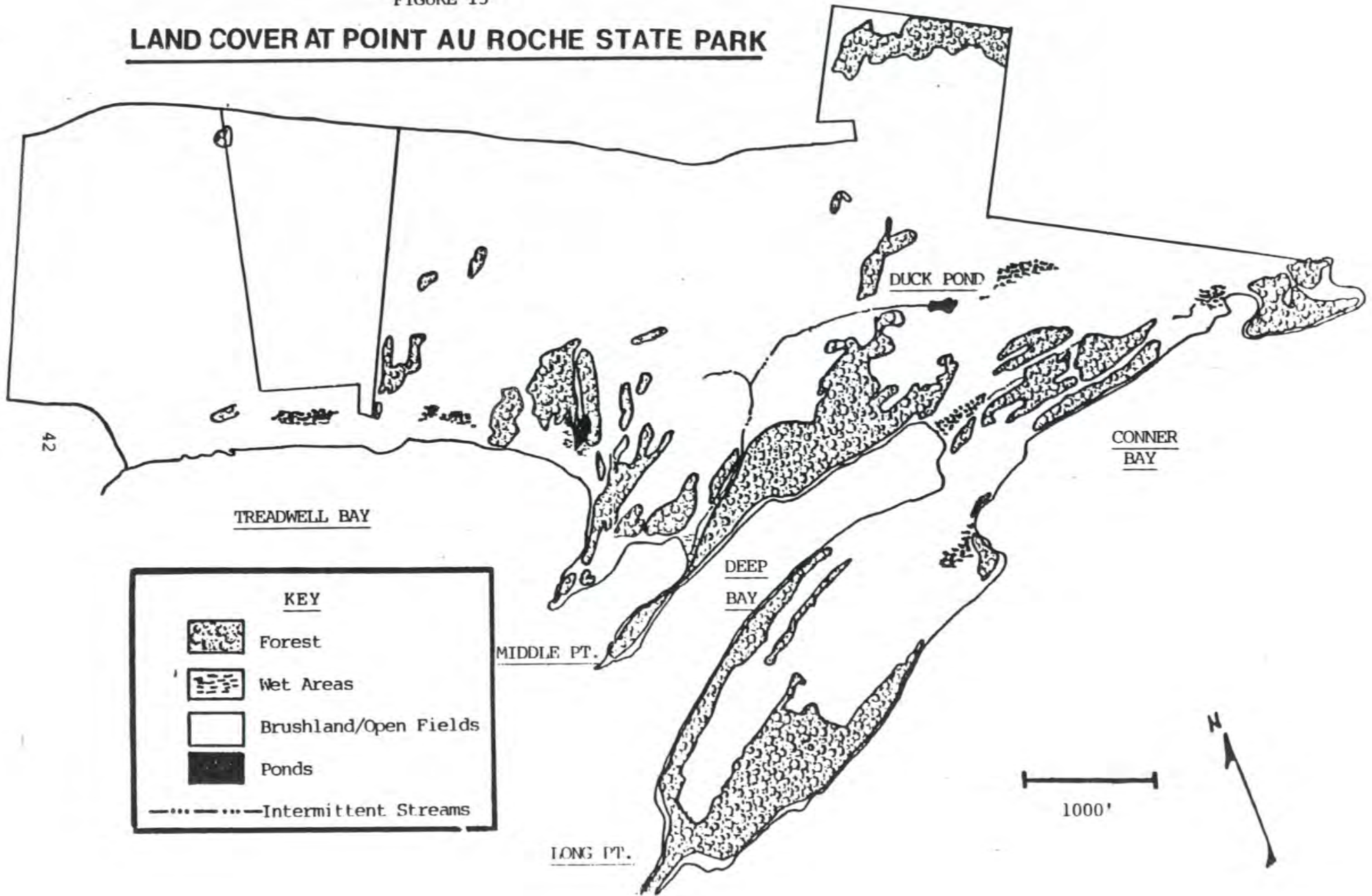
FIGURE 14
 AVERAGE WIND SPEEDS AND PERCENTAGE OF
 THE TIME WIND BLOWS FROM DIFFERENT DIRECTIONS
 PLATTSBURGH AIR FORCE BASE, CLINTON COUNTY, NEW YORK
 (10 years average: 1966-'70, 1973-'77)



From Bellm, 1982

FIGURE 15

LAND COVER AT POINT AU ROCHE STATE PARK



beach facing Treadwell Bay. This is also the area with the greatest diversity since it possesses deciduous and coniferous forest (including mature hemlocks), a pond and wetland system and open field/brush land areas.

Species of plants found in association with the forested areas vary according to forest type and include crowberry, trillium, buffalo berry, orchids, and various species of mosses and ferns.

Appendix D is a listing of protected plant species likely to be found in the Town of Beekmantown. Many of these species are also found within Point Au Roche State Park.

b. Fish and Wildlife

The Point Au Roche property has four primary types of wildlife habitat which are utilized by a wide variety of species: 1) forest, 2) brushland, 3) wetland, and 4) lake shoreline. A DEC preliminary wildlife management plan for the park identified 169 species of woodland birds and waterfowl, 40 species of mammals and 23 species of reptiles and amphibians which may occur in the park. (Appendix E). In addition, the Beekmantown Natural Resources Inventory (1979) identified several areas within the park as being high potential wildlife habitats or areas which are likely to support an abundant variety of wildlife.

In general the most commonly seen wildlife in the park are species such as woodchuck, raccoon, cottontail rabbit, pheasant, whitetail deer and a large variety of birds, particularly waterfowl. These species may use parts of each of the various habitats in the park, although waterfowl generally use only the lake and shoreline areas and may feed on crops planted on the farmland. Also, species usually only associated with the habitat of the Adirondacks, such as the snowshoe hare and ruffed grouse, may be present in this area occasionally.

Lake Champlain supports over 80 species of natural and introduced species of fish and is popular for both warm and cold water sport fishing. Cold water species, such as brown, rainbow, and lake trout and Atlantic salmon are stocked in the lake although rainbow smelt is the lake's only major cold water fishery at present (NERBC, 1978). The lake is considered to be one of the best warm water fisheries in the U.S. (NERBC, 1978). The portion of the lake near Point Au Roche State Park is relatively shallow and warm and therefore offers substantial opportunities for the warm water sports fisherman. The most sought after game fish in this area are northern pike, yellow perch, smallmouth bass and walleye pike. Lake Champlain is also extremely popular for ice fishing. Both New York and Vermont have fisheries management programs underway to restore species which were once native to the lake. Appendix E contains a listing of the fish species of Lake Champlain.

No rare, threatened or endangered species of wildlife are presently known to exist within Point Au Roche State Park. While the park is not identified by DEC as Significant Habitat, a more

detailed evaluation by DEC's Significant Habitat unit is appropriate.

7. CULTURAL RESOURCES

Field Services Unit of OPRHP's Division of Historic Preservation has determined that there are no structures within the park that are included in the National or State Register of Historic Places. Based upon the agency's archeological sensitivity model, however, the park area is archeologically sensitive. A 1977 field visit to the park by Historic Preservation staff confirmed the presence of a stone foundation believed to be that of the 1783 Mooers cabin, the first settler cabin in the area. Preliminary research efforts by Historic Preservation staff members have also indicated that the park may contain other sites as well. The park may have been occupied by troops during the Revolutionary and French and Indian Wars and French Colonial sites may have existed within the park before 1759. In addition, artifacts have been found along the entire Point Au Roche shoreline which provide evidence of use of the area by Native Americans. (Clinton County Planning Office, 1979)

A preliminary study of documents relating to the cultural resources of the area has been completed (Atlantic Testing Laboratories, 1984b). Consistent with the report's recommendation and the recommendation of the Field Services Bureau of the Division of Historic Preservation (J. Stokes, 1984), a second more detailed investigation has been conducted. A report on the findings from that investigation is expected to be completed soon. Findings from both studies will be considered in the final design of the various park facilities.

8. SCENIC RESOURCES

The scenic resources can be classified as within and outside the park. The primary scenic resources within the park are the bay areas and the cliffs/woodland of the three peninsulas. The bay water, the stark cliff portions of the bay shoreline and the various colors of the mature forest provide impressive scenic views especially from Short, Middle and Long Points.

Other areas within the park that possess considerable scenic quality are the entire Long Point peninsula, the pond/woodland area behind the beach facing Treadwell Bay and the hilly area just east of the Headlands Building in the eastern upland section of the park. The old field area of Long Point combines with the mature forest of this peninsula to provide a significant pastoral setting; a setting which is quite consistent with proposed interpretive center and programs for this scenic park. The pond/wooded area behind the beach facing Treadwell Bay and the hilly area substantially contributes to the park's diversity of natural systems. Likewise the hilly, woodland area to the east of the Headland Building provides scenic relief along the Conner Bay shoreline.

Scenic resources external to the park are Lake Champlain, Vermont and the Adirondack Mountains. The view from the proposed bathing area of the lake and distant mountains is particularly impressive.

It should also be noted that Point Au Roche serves as a scenic resource to boaters viewing the shoreline of Lake Champlain. The shoreline is undeveloped and the design for park development in the Master Plan provides for the protection of this sense of natural shoreline.

9. EXISTING PARK RECREATION

a. Facilities

The only recreational facilities presently in use in Point Au Roche State Park are hiking and cross-country skiing trails. The park does, however, contain several buildings and roads, (Figure 16) There are two primary roadways within the park. One leads from an entrance along Point Au Roche Road westward to the St. Armand beach area and is closed to the public. The other road begins at a point further east along Point Au Roche Road and leads first to the Headlands Building area and then to the Long Point peninsula. These roads are used for hiking and skiing.

There are a total of twelve structures in the park, ranging in date of construction from 1850 to 1950 (Table 5). One of the oldest buildings, originally occupied by Hiram Conner, is presently occupied by the Acting Park Manager. A cottage and three associated buildings on Long Point are rented. The remaining structures in the park are either vacant or used for storage of maintenance equipment.

An environmental education program has been developed in conjunction with Dr. Philip Walker, retired professor at SUNY, Plattsburg. The program has its headquarters at the Headlands Building in the eastern upland portion of the park and will provide for guided interpretive hikes throughout the park, guest lecturers with expertise in various outdoor-environmental education areas, and exhibits of species and natural systems in the park.

b. Activities

Present uses of Point Au Roche include hiking, cross-country skiing, and outdoor orientation programs by various groups. The park also serves as a resource for natural history study and interpretation by educators and students as well as the general public. Also, areas of the park are presently leased for agricultural purposes.

Bays are frequented by boaters and people fishing and Deep Bay is used as an informal mooring area for deep draft vessels. In 1983, 2506 boats moored in Deep Bay and the numbers have increased every year since 1980. (Table 6). While there is considerable

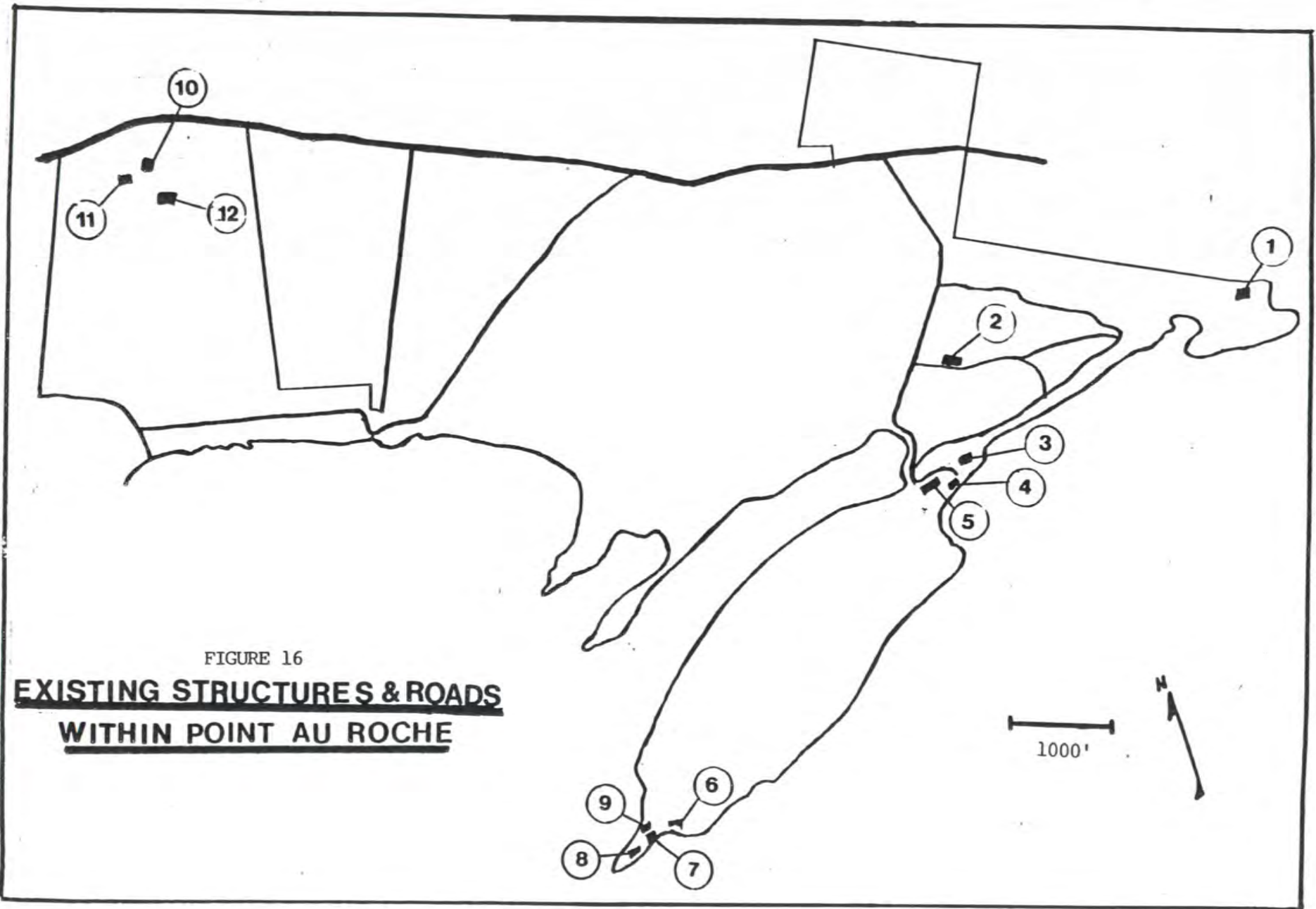


FIGURE 16
EXISTING STRUCTURES & ROADS
WITHIN POINT AU ROCHE

Table 5 Existing Structures in Pt. Au Roche State Park

<u>Building Number (as shown in Figure 16)</u>	<u>Building</u>	<u>Present Use</u>	<u>Yr. Built</u>
1	Camp	not used	1940
2	Storage Building	storage	1950
3	House	Park Manager's Residence	1850
4	Storage Building	storage	1950
5	Maintenance Building	maintenance	1948
6	Garage	rented seasonally	1935
7	Storage Building	storage	1948
8	House	rented seasonally	1940
9	Summer Guest House	rented seasonally	1940
10	House	rented year-round	1930
11	Barn	rented year-round	1938
12	Barn	rented year-round	1930

TABLE 6
Number of Boats (Monthly Totals) in Deep Bay

	1980	1981	1982	1983
April	--	--	--	2
May	26	53	55	31
June	132	249	271	354
July	573	701	863	1,043
August	404	442	566	677
September	101	173	171	293
October	10	20	55	106
November	--	--	--	2
TOTAL	1,246	1,638	1,981	2,506

interest and demand for swimming access, contact recreation is not allowed because of health and safety concerns associated with the absence of a program and staffing funds.

V. POLICIES AND GOALS FOR PARK MANAGEMENT

The purpose of goals and objectives or the identification of general policies is to provide guidance and general direction to staff in the development of a master plan. The following policies are based on a series of park program policy statements detailed in SCRIP and are in accordance with the State Park Land Classification System designation for Pt. Au Roche State Park. They were developed with the assistance and advice of the Pt. Au Roche Ad Hoc Committee. The sequence of the policies should not be interpreted as a ranking of importance.

POLICIES FOR PT. AU ROCHE STATE PARK

- o Identified deficiencies* in recreational opportunity in the Clinton County Tourist area will be important considerations in determining the type and degree of development of Pt. Au Roche State Park.
- o Consistent with its parkland classification*, at least seventy percent of Pt. Au Roche State Park will remain undeveloped*. Buffer zones* will be maintained around developed areas* and along park boundaries and lake shoreline.
- o Appropriate resource analyses will be undertaken to insure that the carrying capacity* of the park land and water resources is taken into consideration in the design and location of facilities.
- o If the park land carrying capacity is to be modified, findings from a cost/benefit analysis will be considered prior to facility design and location.
- o The park will be in operation on a year round basis through development of the four season concept for selected activities.
- o Design of the park will incorporate concepts to make all park facilities fully accessible and usable by all segments of the population.
- o Development of recreational facilities at Pt. Au Roche State Park will be done in coordination with the management and operation of the recreation facilities at Cumberland Bay State Park and other parks and public and private recreational facilities in the area.
- o In developing facilities, consideration will be given to energy efficient design and location.
- o Public participation will be an important element in present and future planning and environmental review for Pt. Au Roche State Park.
- o At the time of adoption of the Park Master Plan, there will be

created a local Citizens' Advisory Committee to work with the Thousand Islands Park and Recreation Commission in the implementation of the plan; further, should there be changes proposed to the plan, the committee will be so advised and their counsel sought.

* DEFINITIONS OF SELECTED TERMS:

Buffer Zones: Natural or landscaped areas which separate differing and potentially conflicting recreational uses and/or protect important natural or scenic parkland resources.

Carrying Capacity: The type and level of development which can be accommodated without noticeable adverse effect on the overall character of parkland resources. In some instances the capacity of parkland resources for use can be quantified (e.g. the amount of additional nutrients a lake can assimilate without significant degradation of its water quality.) In other instances, the carrying capacity of a particular park can be evaluated by comparison of the proposed development (both in terms of intensity and type) to the parkland resource classification. Pt. Au Roche appears to fit into OPRHP's Scenic Park classification. (see parkland classification). The policy of maintaining over 70% of Pt. Au Roche State Park in its natural condition is consistent with this scenic park classification.

Deficiencies in Recreational Opportunity: Analysis by TISP&RC staff has shown a need for additional swimming, camping, boating, more cross-country skiing facilities, and public access over public land to Lake Champlain from New York.

Developed Areas: Areas of the park which will be noticeably changed following plan implementation. Facilities which may be located in areas to be developed are campsites, bathhouses, parking lots, nature centers, boat launches and docks, roads, and maintenance and operation areas.

Undeveloped Areas: Areas of the park which will not be noticeably changed following plan implementation. Uses of these areas are passive types such as hiking, nature interpretation and photography, cross-country skiing, scenic vistas and farming.

Parkland Classification: Technical Report #3 entitled "New York State Park Land Classification System" contains the findings of a land capability analysis of State Parklands. The purpose of the analysis was to provide guidance in determining the intensity of use a particular area or park can support. Pt. Au Roche State Park was within the group described as parks where "some development in natural surroundings" could occur. Pt. Au Roche State Park appears to be best described as a scenic park. Under this classification the park's major attraction is its natural setting, and while certain areas of the park may receive concentrated use of a particular type, development is primarily designed to accommodate visitors who seek nature- and scenic-oriented activities.