Beamer Memorial Conservation Area
Louth Conservation Area
Mountainview Conservation Area
Rockway Conservation Area
Woolverton Conservation Area

MASTER PLAN

Niagara Peninsula Conservation Authority

NIAGARA PENINSULA CONSERVATION AUTHORITY

BEAMER MEMORIAL CONSERVATION AREA
LOUTH CONSERVATION AREA
MOUNTAINVIEW CONSERVATION AREA
ROCKWAY CONSERVATION AREA
WOOLVERTON CONSERVATION AREA

Master Plan

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APPROVED BY: Executive Committee _____

Full Authority _____

Minister of Natural Resources _____

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1. SUMMARY AND RECOMMENDATIONS

a) Acquisition of Beamer Memorial, Louth, Mountainview, Rockway and Woolverton Conservation Areas was to maintain public access to, and portions of the Niagara Escarpment.

b) The Conservation Areas, with the exception of Woolverton, have been purchased by the Authority. Woolverton is being leased to the Authority by Ontario Hydro for a period of twenty-five (25) years. That lease commenced in January, 1981.

c) The five Conservation Areas are situated on the Niagara Escarpment in the Towns of Lincoln and Grimsby.

d) Due to the natural and sensitive environment of the escarpment, only passive recreational activities will be permitted at the five Conservation Areas. Activities such as hiking, nature appreciation, viewing, picnicking, and in the winter, snowshoeing and cross-country skiing are acceptable.

e) To enhance the environment of the escarpment, woodlot improvement will occur in the five Conservation Areas.

f) Entrance signs will be erected at the Beamer Memorial and Woolverton Conservation Areas. These signs will acknowledge the agencies which assisted in the acquisition/lease of the properties. Smaller signs listing the rules and regulations of the Conservation Areas will be erected below the entrance signs.

g) The installation of four cement picnic tables at Beamer Memorial will provide for the visitors to the Conservation Area. Additional tables will be installed in the future when, and if, demand warrants.

h) The stone washroom facilities should withstand the vandalism which has plagued such facilities in other Conservation Areas in the past.

i) Visitor information at Beamer Memorial will consist of an interpretive display on the outside walls of the washroom facility. This display will be in mural form and consist of illustrations and information concerning the significance of the Niagara Escarpment, the woodlot improvement program, and the hawk species.

j) The Authority will work with provincial agencies, municipalities and local residents to ensure appropriate use of the Conservation Areas.

k) Development and management costs, as recommended in the Plan are estimated at $11,900.00 based upon the 1982 dollar. Individual cost estimates for implementation of the Master Plans for the properties are: Beamer Memorial $7,800.00; Louth $700.00; Mountainview $500.00; Rockway $1,900.00; and Woolverton $1,000.00.

l) Development and implementation of the management programs will occur in a series of phases as finances permit. The Plan will be reviewed when necessary, based upon needs and changes in environmental conditions, and user characteristics.

2. INTRODUCTION AND CONTEXT

This Master Plan is a study of five similar Conservation Areas situated on the Niagara Escarpment.

These properties have been purchased/leased by the Niagara Peninsula Conservation Authority to preserve the Niagara Escarpment and to assist in the maintenance of the Bruce Trail. In order to be consistent with the preservation objective, development within these areas has been minimal.

2.1 Purpose of a Conservation Area Master Plan

A Master Plan is a written document which serves as a detailed policy guide for the planning, development, and management of a Conservation Area, or as in this case, a combination of five similar Conservation Areas. Master Plans are formulated for the following reasons:

a) to establish the goals of Conservation Areas and the specific objectives which must be fulfilled in order to attain these goals;

b) to analyze the biophysical resources of the Areas to determine the types and location of development which will be compatible with the Areas' natural resources;

c) to identify and evaluate recreational opportunities, and to determine the type and intensity of recreational development best suited to the Conservation Areas;

d) to define the role, function, and significance of the Conservation Areas in relation to the Niagara Peninsula Conservation Authority's overall Watershed Plan;

e) to assess and evaluate development alternatives, where applicable, based on the Conservation Areas' resource capabilities, and to outline the most appropriate courses of development; and

f) to determine the need for a visitor services program to promote an increased visitor awareness of Conservation Areas, and the Authority's programs.

2.2 Location

The five properties are situated on the Niagara Escarpment between the Town of Grimsby and the Town of Lincoln. The properties lie within a 30 kilometre (18.64 mile) radius from each other.

2.2.1

Beamer Memorial Conservation Area encompasses Part of Lots 9 to 13 inclusive, Concession II, and Part of Lots 11 ~~and 12,~~ Concession III, in the former Township of North Grimsby; and Lot 92 on Corporation Plan No. 4 in the Town of Grimsby, in the Regional Municipality of Niagara.

Purchased for escarpment preservation and nature study, this 53 hectare (132 acre) Conservation Area has become one of the most popular areas for observing the annual hawk migration.

2.2.2

The Louth Conservation Area is situated on Part of Lots 14 and 15, Concession VII and Part of the unopened road allowance between Lots 14 and 15, Concession VII, in the former Township of Louth, now in the Town of Lincoln, in the Regional Municipality of Niagara.

The property has a total of 31.7 hectares (78.4 acres). Within this area lies the Niagara Escarpment, Sixteen Mile Creek, the Creek gorge, and a waterfall.

2.2.3

The Mountainview Conservation Area occupies Part of Lot 21, Concessions III and IV, both in the former Township of Clinton, now in the Town of Lincoln, in the Regional Municipality of Niagara.

Mountainview consists of 25.09 hectares (62 acres) and is mainly composed of forested land and nature trails.

2.2.4

The Rockway Conservation Area is located on Part of Lot 8, Concession VII in the former Township of Louth, now in the Town of Lincoln, in the Regional Municipality of Niagara; and in Part of Lots 6 and 7, Concession VII in the former Township of Louth, now in the City of St. Catharines, in the Regional Municipality of Niagara.

Purchased for the preservation of the escarpment, this property, covering an area of 87 hectares (215 acres), contains a section of Fifteen Mile Creek and a waterfall.

The remains of an old salt well on the property are historically significant. Examined in 1792 by the Deputy Surveyor, it was discovered to contain the best quality and quantity of salt in the province.

2.2.5

The Woolverton property occupies Part of Lots 17 to 23 inclusive, Concession III, in the former Township of Grimsby, now in the Town of Grimsby, in the Regional Municipality of Niagara.

The 16.2 hectare (40 acre) property is predominantly covered with lush woodland growth.

This area has been leased to the Niagara Peninsula Conservation Authority for a period of 25 years. During this time the Authority is responsible for the preservation and maintenance of the area, and a section of the Bruce Trail contained within.

2.3 Local and Regional Context

a) Transportation and Access

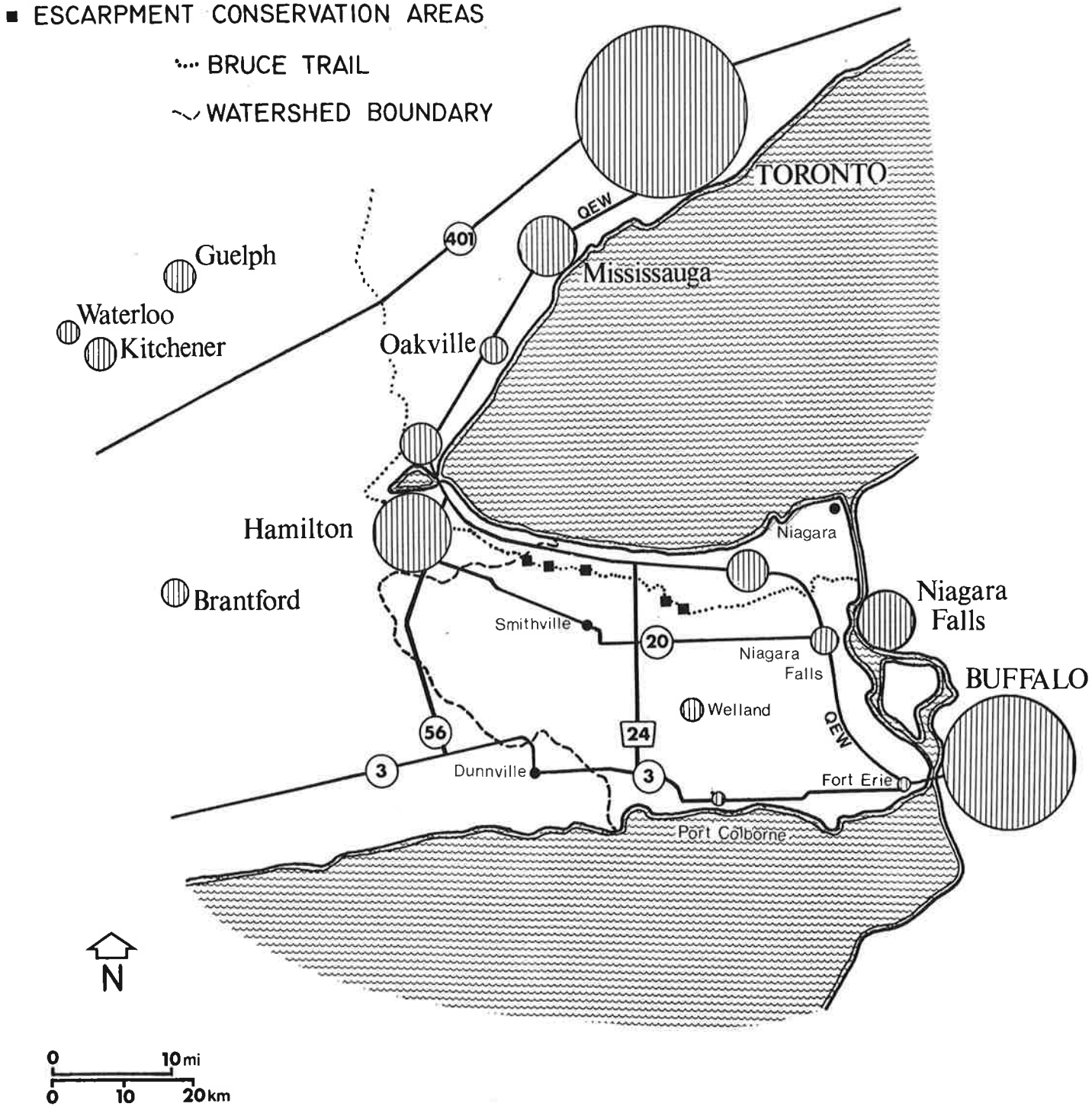
The five properties are located within the north-western boundary of the Niagara Peninsula Conservation Authority's area of jurisdiction. The sites are situated along the escarpment, from the Forty Mile Creek in Grimsby to the Fifteen Mile Creek in the Town of Lincoln.

The major east-west routes providing access to the Conservation Areas are the Queen Elizabeth Way to the north and Highway #20 to the south. The Q.E.W. is located below the Niagara Escarpment and parallels the south-west shore of Lake Ontario, thereby connecting the Peninsula with the Cities of Hamilton and Toronto. The Conservation Areas can be reached from the Q.E.W. via several connecting roads, as indicated in Figure 1.

The Conservation Areas are not presently serviced by public transportation, nor is any such service expected in the future.

FIGURE 1

REGIONAL CONTEXT



b) Population Centres

The largest urban centre near these properties is St. Catharines with a population of 123,617.* St. Catharines, situated north of Rockway and Louth, and east of Woolverton, Beamer Memorial, and Mountainview, is in close proximity to all properties.

The Town of Grimsby (population 15,515*) is the largest centre north-west of the properties. Spectacular views of the Town may be observed from the neighbouring Woolverton and Beamer Memorial Conservation Areas.

2.4 Watershed Plan

The Authority is currently preparing a comprehensive Watershed Plan for the area over which it has jurisdiction. In the interim, the Authority refers to the Niagara Peninsula Conservation Report (1972) for policy guidelines regarding water and related land management. Policies which include ensuring adequate stream flow, and improving the quality and quantity of surface water supplies are addressed in the Conservation Report. The Authority supports multiple land use: the preservation of the natural environment including areas of natural, scenic, biological and historic interest; fish and wildlife management; forestry; and compatible recreation. Furthermore, an active educational program will be established to promote public understanding of the Authority's aims and objectives. In summation, these policies represent the rationale for purchasing the five properties included in this Master Plan.

All of the properties were purchased to preserve, maintain, and/or enhance the natural environment of the escarpment, and to provide opportunities for compatible and passive recreational opportunities.

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*Source: 1981 Municipal Directory (Ministry of Intergovernmental Affairs)

3. PRELIMINARY GOALS AND OBJECTIVES

Section 20 of the Conservation Authorities Act states:

"The objects of an Authority are to establish and undertake, in the area over which it has jurisdiction, a program designed to further the conservation, restoration, development and management of natural resources other than gas, oil, coal and minerals R.S.O. 1980, c. 85, s. 20."

The Niagara Peninsula Conservation Authority is one of 39 Authorities which have been established under the Conservation Authorities Act. Authority boundaries are established on the basis of watersheds or drainage systems rather than political boundaries, since political boundaries often traverse a watercourse and complicate the management and control of the water resources as a unit. The 2,424 square kilometre (936 square mile) area of jurisdiction of the Niagara Peninsula Conservation Authority includes all of the Regional Municipality of Niagara, and the easterly portion of the Regional Municipalities of Haldimand-Norfolk and Hamilton-Wentworth that are drained by the Welland River, Twenty Mile Creek, Forty Mile Creek and their tributaries.

Since its establishment in 1959, the Authority has purchased over 1,740 hectares (4,300 acres) of land in 31 separate conservation areas. These properties were acquired for a number of reasons which include flood control and water conservation, reforestation and woodlot management, fish and wildlife habitat improvement, restoration of historic sites, preservation of unique life and earth science features, and conservation education and interpretation. Frequently, when managing the natural resources of an area, it is both desirable and beneficial to extend Authority activities to encompass such recreational pursuits as camping, picnicking, swimming, hiking and nature studies. The Authority also encourages the

proper management of all natural resources throughout the watershed with its conservation services programs, flood plain mapping and land use planning. Thus the purchase and/or lease of Conservation Areas are within the mandate of the Authority.

Specific goals and objectives for the Conservation Areas which are the subject of this Master Plan are described below:

3.1 Goals

The goals of the Niagara Peninsula Conservation Authority in relation to escarpment properties are to preserve, maintain, and enhance the natural environment of the escarpment; to maintain and manage the water resources present; and to provide passive recreational opportunities for the people of the Niagara Peninsula and the Province of Ontario.

3.2 Objectives

To achieve the above goals, the following objectives for these Conservation Areas have been formulated:

1) to preserve the natural environment of the Conservation Areas in order to protect the areas' inherent scenic and ecological resources.

2) to aid in the protection of the region's wildlife resources by preserving the diversity of habitat currently existing in the Conservation Areas.

3) to maintain the Conservation Areas for passive, day-use recreational activities which will be compatible with the management objectives for these natural land and water resources.

4) to maintain and expand visitor services and outdoor educational programs which promote public information, outdoor conservation education, natural resource management and passive recreation, in order to enable visitors to understand, appreciate and enjoy the Conservation Areas.

5) to provide opportunities for the municipality, public or private agencies,

individuals or groups and the Authority to co-operate in the conservation and management of the areas.

6) to enhance and maintain the forest cover of the sites so as to retain its aesthetic qualities and provide ecological benefits for all users of the escarpment resource.

7) to develop Conservation Areas which will be an integral part of the Authority's Watershed Plan.

4. SITE INVENTORY

The site inventory information provided in this section of the Master Plan is based upon those features of the escarpment existing at Beamer Memorial, Louth, Mountainview, Rockway and Woolverton Conservation Areas as of May, 1982.

All areas are analogous to each other, therefore, in this section they have been treated as an entity, the Niagara Escarpment.

The escarpment extends 725 kilometres (450 miles) from Queenston on the Niagara River to Tobermory at the tip of the Bruce Peninsula.

4.1 Geology and Geomorphology

Geologists describe the escarpment as a massive ridge of fossil-rich sedimentary rock that originally served as the outer rim of the shallow Lake Iroquois about 450 million years ago. According to the document entitled, Earth Science Candidate Nature Reserves , (Ministry of Natural Resources, 1976), the escarpment displays a wide variety of geological and geomorphological features, representing a long interval of geological time.

Bedrock of the escarpment consists of shale, sandstone, limestone, and dolomite. These rocks were deposited during the Upper Odovician Period, and the Lower and Middle Silurian Periods of the Paleozoic Era (500 to 405 million years ago). A. Straw (1968) states that the morphology of the escarpment is variable. In places, a fine free-face of rock persists; in others, it is benched or channelled lengthwise. It is blanketed by tills, fronted by glaciofluvial gravels and solifluction aprons, gullied by stream-cut gorges, or partially collapsed with mass movements.

TABLE 1

PARTIAL CLASSIFICATION OF ORDOVICIAN AND SILURIAN PERIODS

Niagara Peninsula
(Niagara Falls-Hamilton)

(Upper Ordovician)	Alexandrian Series (Lower Silurian)	Niagaran Series (Middle Silurian)				
	Cataract Group	Clinton Group			Albemarle Group	
		Lower	Mid.	Upper	Formation	Member
ueenston	Grimsby	Reynales		DeCew	Guelph	Eramosa
	Power Glen	Neahga		Rochester	Lockport	Goat Island
	Whirlpool	Thorold		Irondequoit		Gasport

ource: Vos, M. A., Stone Resources of the Niagara Escarpment Industrial Mineral Report 31 (1969).

Upper Ordovician Period

The Queenston red shale is the only formation of this period within the escarpment. This formation forms the base of the entire escarpment.

The remaining regions of the escarpment are not composed of the same material. For this reason, the escarpment is often separated into two regions - the Niagara to Hamilton region and the Hamilton to Tobermory region. Because all of the Conservation Areas lie in the Niagara to Hamilton region, this Master Plan only addresses the former region.

The face of the escarpment is derived from the Lower and Middle Silurian Periods. According to A. Straw (1968), it is occupied mainly by beds of the Cataract and the Clinton groups which comprise 30.48 to 45.72 metres (100 to 150 feet) of relatively less resistant, thin sandstones, shales, dolomites, and limestones.

Lower Silurian Period

The Cataract group characteristically consists of shales, sandstones, and dolomites from the Lower Silurian Period. This group is divided on the basis of lithology, into formations. The three formations in the Niagara Region are Whirlpool, Power Glen, and Grimsby. According to T. E. Bolton (1957), each of these formations is lithologically uniform; a product of continuous deposition, and may consist of one type of rock, or of two or more varieties of related rocks.

Middle Silurian Period

This period is comprised of the Clinton and Albemarle groups. The Clinton group, composed of Lower and Upper groupings, forms a transgressive sequence from sandstone to shale to carbonate. According to T. E. Bolton (1957), a period of

non-deposition marks Middle Clinton time in the Niagara Peninsula, resulting in a distinct disconformity separating the Lower Clinton Reynales dolomite from the Upper Clinton Irondequoit limestone.

The Lower Clinton group is composed of Thorold sandstone, Neahga shale, and Reynales dolomite. Irondequoit limestone, Rochester shale, and Decew dolomite form the Upper Clinton group.

The Albemarle group, the other component of the Middle Silurian Period, consists of well-bedded dolomite and forms the resistant caprock of the escarpment.

The Albemarle group is composed of two formations, the Lockport and the Guelph. The Lockport is further divided into the Eramosa, Goat Island, and Gasport members.

4.2 Topography

The predominant pattern of the escarpment is a linear cliff face exposure 3.048 metres (10 feet) to 15.24 metres (50 feet) in height. This area contains such features as: rim plains, cliff faces, talus slopes, terraces, unconsolidated till slopes and incised valleys (Significant Natural Areas, M.N.R., 1976. p. 80).

Below the slopes, the broad plains on the terraces provide a mixture of loam and ravine patterns. The stoney escarpment slope consists of boulder scree soil with a finer matrix on the talus slopes. The middle and lower slopes consist of rolling, loamy soil with scattered boulders.

4.3 Soils

The major soil types found within the five Conservation Areas are the Oneida Loam, Smithville Loam, Ravine and Escarpment soils.

Oneida Loam

This soil is moderately well-drained. Oneida soil is derived from till material which provides good surface water runoff and, therefore, good external drainage. High value fruit crops such as cherries, grapes, and peaches are grown on this soil.

Smithville Loam

This is a moderately well-drained soil derived from clay till material. The soil material includes large amounts of lacustrine silt sediments as well as considerable quantities of siltstone and shales from the Niagara Escarpment. Clay tills have a high moisture-holding capacity and, under high moisture conditions tend to swell and prevent moisture movement. Nearly all profiles, therefore, show some mottling in the subsoil horizons which is more intense in the soils with high clay contents.

Ravines

Ravines of various sizes are predominant landscape features of the entire escarpment bench, and of the Iroquois Plain below the escarpment. The banks of the ravines are deep and steep sloping. Slopes of the valleys have become stabilized with vegetation.

Escarpment

Soils of this type are found on the escarpment face. The soil is thin, and therefore, of little agricultural value.

4.4 Hydrology

Within the areas addressed in this Master Plan are sections of the Fifteen, Sixteen, and Forty Mile Creek watersheds.

Fifteen Mile Creek

The Fifteen Mile Creek, flowing through the centre of the Rockway Conservation Area, has a drainage area of 67 square kilometres (26 square miles) and a gradient of .0156 metres/kilometre (0.8 feet/mile). As a result, flooding occurs on this topographically flat area, causing increased siltation and deposition.

Two waterfalls exist along Fifteen Mile Creek. The waterfall located in the southwest region of the Conservation Area plunges 18.3 metres (60 feet) and the smaller waterfall drops 12.2 metres (40 feet) over a series of rapids.

The Ministry of Natural Resources (Junior Conservationist Award Program, 1977) completed a preliminary water quality analysis for Fifteen Mile Creek. The dissolved oxygen content was determined to be at a level suitable to sustain a variety of fish species. (Fish species will be further discussed under section 4.7, Fish and Wildlife).

This watercourse is slightly alkaline, which is also necessary to support fish and plant life.

Sixteen Mile Creek

The Sixteen Mile Creek watershed covers an area of 38.85 square kilometres (15 square miles). The Creek flows through the western region of the Louth Conservation Area. The flat gradient of 3.4 metres/kilometre (17.99 feet/mile), results in flooding which washes away soils, and creates deltas downstream.

The Creek is relatively alkaline and has an adequate oxygen content to sustain fish. Throughout the year, varying climatic conditions reduce the depth of the rocky streambed, consequently reducing the velocity of flow.

The varying conditions of the Creek modify the oxygen content, and as a result, the potential for fish species deteriorates.

Two waterfalls are present along this Creek. The upper falls plunges 3.66 metres (12 feet) and the lower falls in the northwest region of the Conservation Area, plummets 7.92 metres (26 feet). The waterfalls create a barrier for fish travelling further upstream.

Forty Mile Creek

The Forty Mile Creek watershed lies in the Counties of Lincoln and Wentworth, bounded by the Stoney Creek watershed to the north and Twenty Mile Creek watershed to the south. The Forty Mile Creek drainage area covers a 60.39 square kilometre (23.3 square mile) vicinity, and is divided by the escarpment. The headwater area for the creek lies in the Vinemount Moraine in the uplands of the escarpment. The average width of the creek is 4.02 kilometres (2.5 miles).

The creek runs westerly from its source for 13.36 kilometres (8.3 miles) rising at an elevation of approximately 205.74 metres (675 feet). At Grimsby, the creek meanders north over the escarpment where it discharges into Lake Ontario at an elevation of approximately 74.98 metres (246 feet). The watercourse flows through the central section of Beamer Memorial Conservation Area.

Forty Mile Creek forms a narrow, V-shaped gorge through the escarpment. In this area, the gradient is low and the flow is sluggish. The average gradient of the creek is 1.553 metres/kilometre (8.2 feet/mile). Downstream, at Beamer's Falls, the creek plunges 22.86 metres (75 feet). Interjacent of Beamer Memorial and

Regional Road 81, the creek has a gradient of 1.973 metres/kilometre (125 inches/mile), from Regional Road 81 to its mouth, the gradient is 17.05 metres/kilometre (90 feet/mile).

4.5 Climate

The Niagara Peninsula experiences a mild climate as a result of the moderating effects from the bordering Lakes Erie and Ontario.

Temperature data tend to vary along the escarpment. The Town of Grimsby is considered to be the climatical dividing point between Hamilton and Niagara. St. Catharines and Hamilton experience mean summer temperatures of 9.7 ^{o}C (49.5^{o}F) and 8.8^{o}C (47.8^{o}F) respectively.

The eastern regions are also warmer in the winter. The average winter temperature for St. Catharines, -1.6^{o}C (29.2^{o}F), is higher than the average winter temperature for Hamilton, -4.4^{o}C (24^{o}F).

Spring frosts retreat 2 or 3 days earlier in the east and fall frosts are delayed 6 days. The average growing season for Vineland is 183 days compared to 154 days at Stoney Creek.

Temperatures also vary with elevation at the escarpment. Temperatures below the escarpment are higher than those above the escarpment. The scarp-foot plain is protected by the escarpment from westerly cold air during the winter months.

4.6 Vegetation

The escarpment area contains a variety of flora. According to the Ministry of Natural Resources, the Niagara Escarpment provides the largest area of relatively continuous forest cover remaining in Southern Ontario. The five Conservation Areas are dominated by sugar maple trees. Beech, red oak, white ash, black walnut, bitternut, hickory, ironwood, trembling aspen, and american basswood are also present.

Soils on the escarpment footslope are generally loamy, seepage-prone, and mainly free of boulders.

Large talus boulder slabs, in combination with uneven and irregular rolling loamy slopes, constitute the lower talus slope forest. Maple, ash and basswood comprise the canopy cover in this area.

Shrubs are important to the overall habitat of the area as they and saplings provide the understory of the wooded areas. Shrubs and vines function as a source of food for the wildlife, and the understory provides coverage for wildlife and nesting areas for song birds.

Prominant species composing the understory are chokecherry, flowering dogwood, hawthorn, and narrow leaf spirea. The surface vegetation along the escarpment consists of winter grape, grass, goldenrod, wild raspberry and strawberry, trillium, moss and Queen Anne's lace.

The Rockway Conservation Area, according to the Niagara Peninsula Conservation Authority (1976 Biology Crew) is characterized by an interesting diversity of vegetation species, such as jack-in-the-pulpit, witch hazel, and sycamore. This fact establishes the area as a valuable resource from an educational, recreational and wildlife standpoint.

Over fifty percent of the Louth Conservation Area is covered with young trees. Louth contains approximately thirty-three tree species, thirty of which are coniferous.

Mountainview contains a well-forested area which is approaching maturity. Vegetation is varied in this area consisting of light sensitive plants such as: moss, climbing nightshade, and bracken fern.

Young woodland growth, steep slopes, scarp outcrops and talus boulders are all present at the Woolverton Conservation Area.

Beamer Memorial is forested with a large mixture of saplings and mature trees. The understory is well-developed and succession is evident at the old quarry parking lot.

4.7 Fish and Wildlife

The Ministry of Natural Resources (R. T. McLaughlin), in the report Wildlife in the Niagara Escarpment Planning Area (1976), refers to the escarpment as an invaluable refuge for the wildlife of Southern Ontario due to the abundance of forests and the high quality habitat present. The large population of forest species provide a vital resting and feeding area for the assorted wildlife in the vicinity. McLaughlin further states that management of the habitat is the key to maintaining wildlife in the Niagara Escarpment Planning Area (NEPA).

a) Fish

The NEPA is significant for sport fisheries due to the diverse nature of its aquatic resources. Unfortunately, little information has been gathered concerning the fish population in the three watercourses discussed in this report. However, species such as pumpkinseed, rock bass, largemouth bass, yellow perch, brook trout and green sunfish have been observed in the area.

b) Reptiles and Amphibians

Thirty-six species of reptiles and amphibians have been catalogued, of which four species (northern dusky and spring salamanders; and the massassauga and timber rattlesnakes) could possibly depend on the NEPA for their survival. The escarpment has become a significant refuge for these creatures due to habitat destruction in surrounding areas caused by urbanization.

c) Waterfowl

Waterfowl such as herons, gulls, and terns generally have low populations due to lack of wetland habitat in the area. However, some important breeding areas do exist in the Niagara Peninsula such as shallow, open-water marshes at the mouth of streams emptying into Lake Ontario, north of the Niagara Escarpment. Common, and widely distributed in the NEPA, are surface feeders and dabbling duck species.

d) Birds

The escarpment contains a diversified bird population. Over 300 species either nest in or migrate through the area. One of the most noteworthy birds in the NEPA is the hawk. Migrating hawks travel northward through New York State during spring migration. They are deflected east or west along the southern shore of Lake Ontario, after crossing the escarpment.

Beamer Memorial Conservation Area offers an ideal area for observing the annual hawk migration, which occurs from late February to early May. Four observation stands have been erected by the Conservation Authority. These lookouts offer close range observation of the migrating hawks, and spectacular aerial views of the City of Grimsby and Lake Ontario.

At Beamer Memorial, local naturalists have counted up to 1,000 hawks in one day.

The large number of species of birds present are a result of a wide range of berry bushes and shrub species. The two forest regions (Great Lakes-St. Lawrence and Southern Carolinean Deciduous) are important ecologically as they provide suitable habitat for a wide variety of birds. A list of bird species present at the Conservation Areas can be obtained at the Conservation Authority office.

e) Mammals

Some species of mammals, including raccoons, foxes, mice, and chipmunks, have been observed within the NEPA.

The cottontail rabbit is one species which thrives in the area. The Niagara Peninsula is one of the best areas in the province for the cottontails' subsistence.

Deer are plentiful in the area as well, as they thrive in locales with brushy edges bordering adjacent forests, orchards or pastures. It has been noted (R. T. McLaughlin) that there exists a close correlation between the extent of forest cover and the size of deer populations. Deer are common near wooded areas below the escarpment.

4.8 Historical, Cultural and Archeological Resources

According to the Ministry of Citizenship and Culture, there is no record of any archeological resources at any of the five sites. However, it is possible that undocumented archeological sites may exist in these areas. In their correspondence to the Authority, the Ministry proposed that the five Conservation

4.9 Visual/Aesthetic Qualities

The Niagara Escarpment supports an array of biological and geological resource features. Each of the Conservation Areas represented in this Master Plan passes a diversity of vegetation, wildlife and rock outcrop formations which are visually pleasing.

Woolverton, Beamer and Mountainview Conservation Areas each contain lookout points which provide a unique view of the Iroquois plain and Lake Ontario. Louth and Rockway Conservation Areas command spectacular views of waterway gorges and waterfalls.

4.10 Land Use

The Conservation Authority purchased the five escarpment areas to maintain access to the Niagara Escarpment, and to secure the existance of the Bruce Trail contained within. The escarpment is geologically significant and, as such, it is a policy objective of several government agencies and municipalities to maintain public access to the Escarpment.

Beamer Memorial Conservation Area

Beamer Memorial Conservation Area was purchased in the late 1960's for approximately $74,000. The purchase of this 53 hectare (132 acre) property was made possible with the assistance of the Province of Ontario and the Nature Conservancy of Canada through the Richard Ivey Foundation.

Development to date, consists of a sign, composed of limestone, at the entrance, a gate, and a stone roadway at the entrance which leads to a pull-off parking lot. Another gate is situated at the Quarry Road entrance adjoining a stone roadway leading into the old quarry parking lot and the lookouts. This is a service road, employed for emergencies, and is not utilized by the public.

LOCAL CONTEXT

NIAGARA ESCARPMENT PARKS SYSTEM

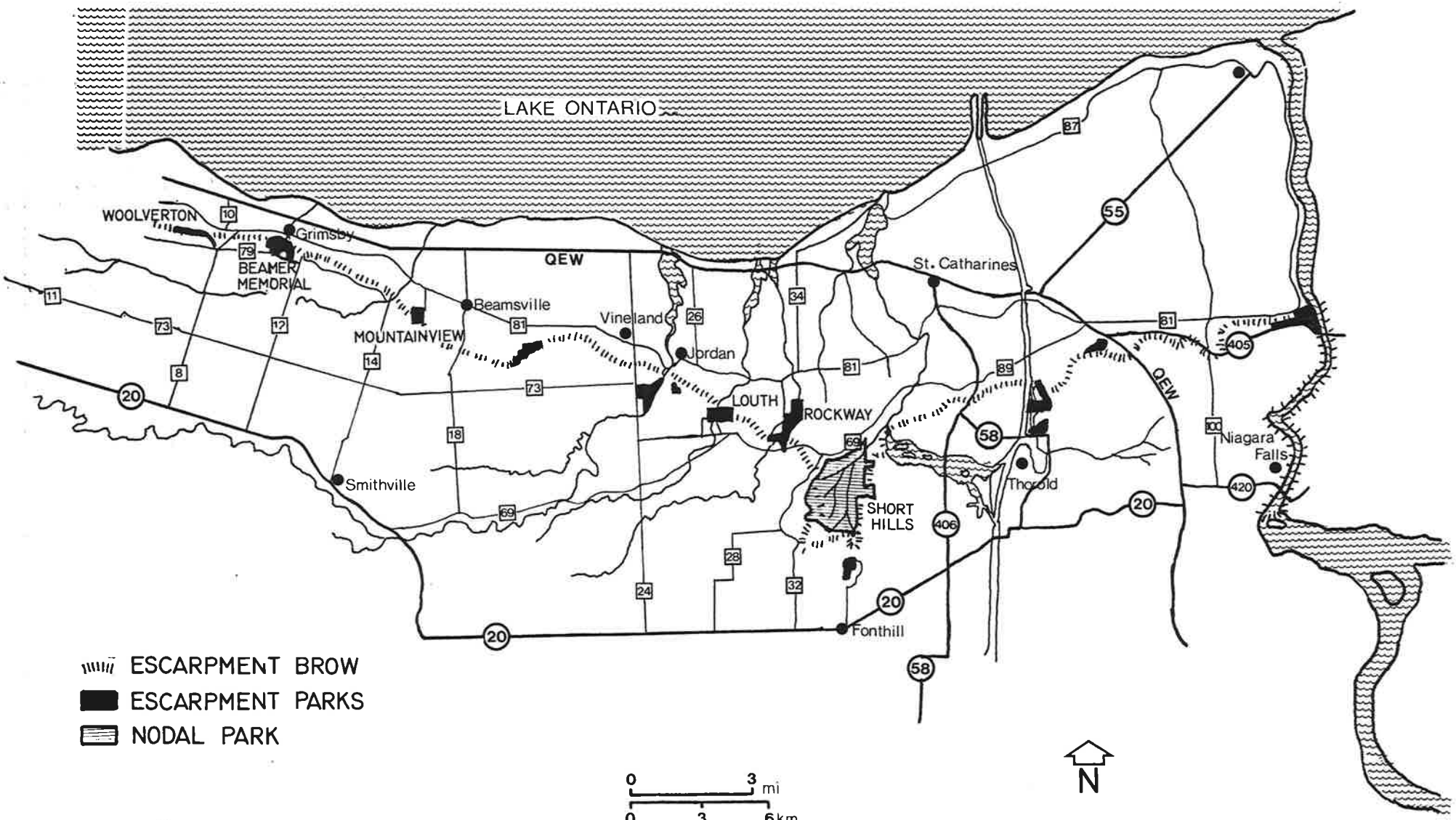
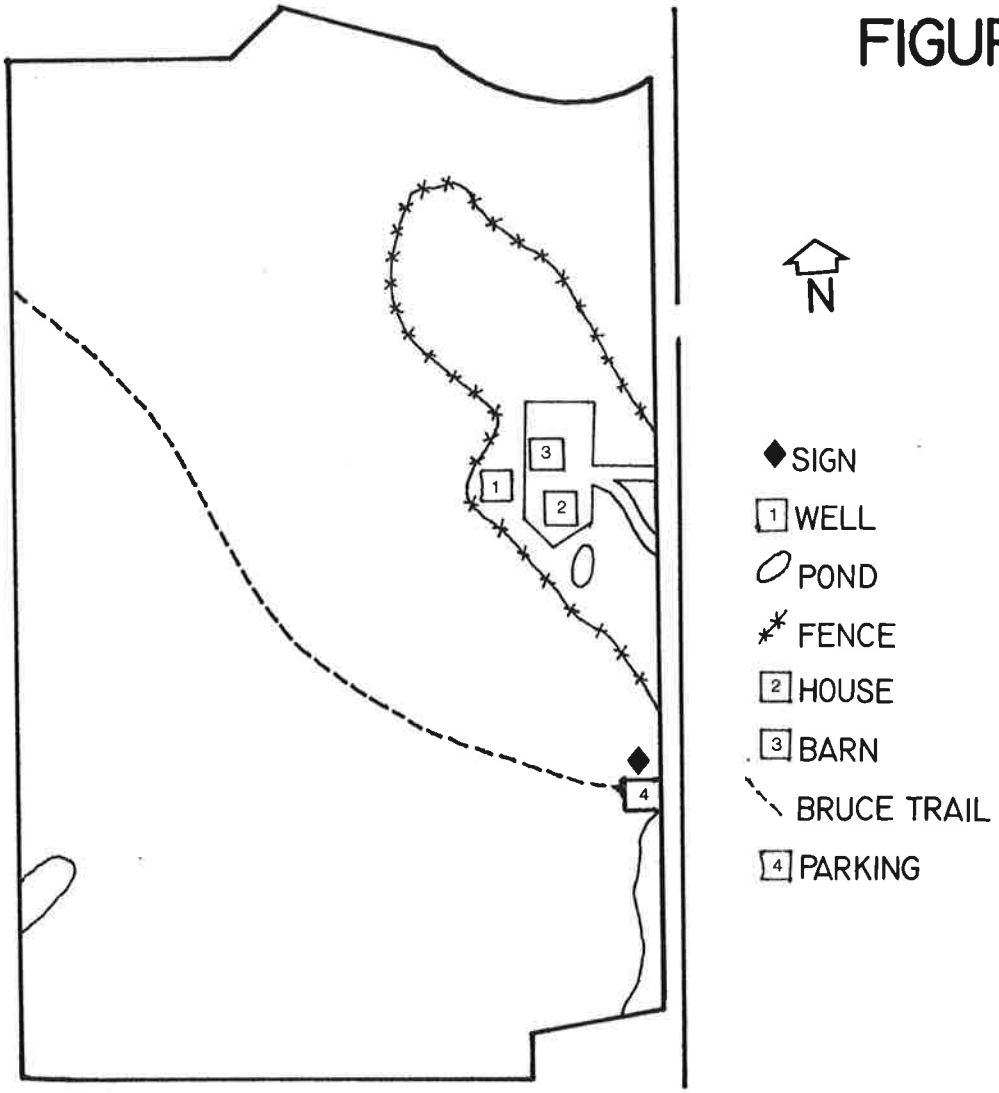


FIGURE 2

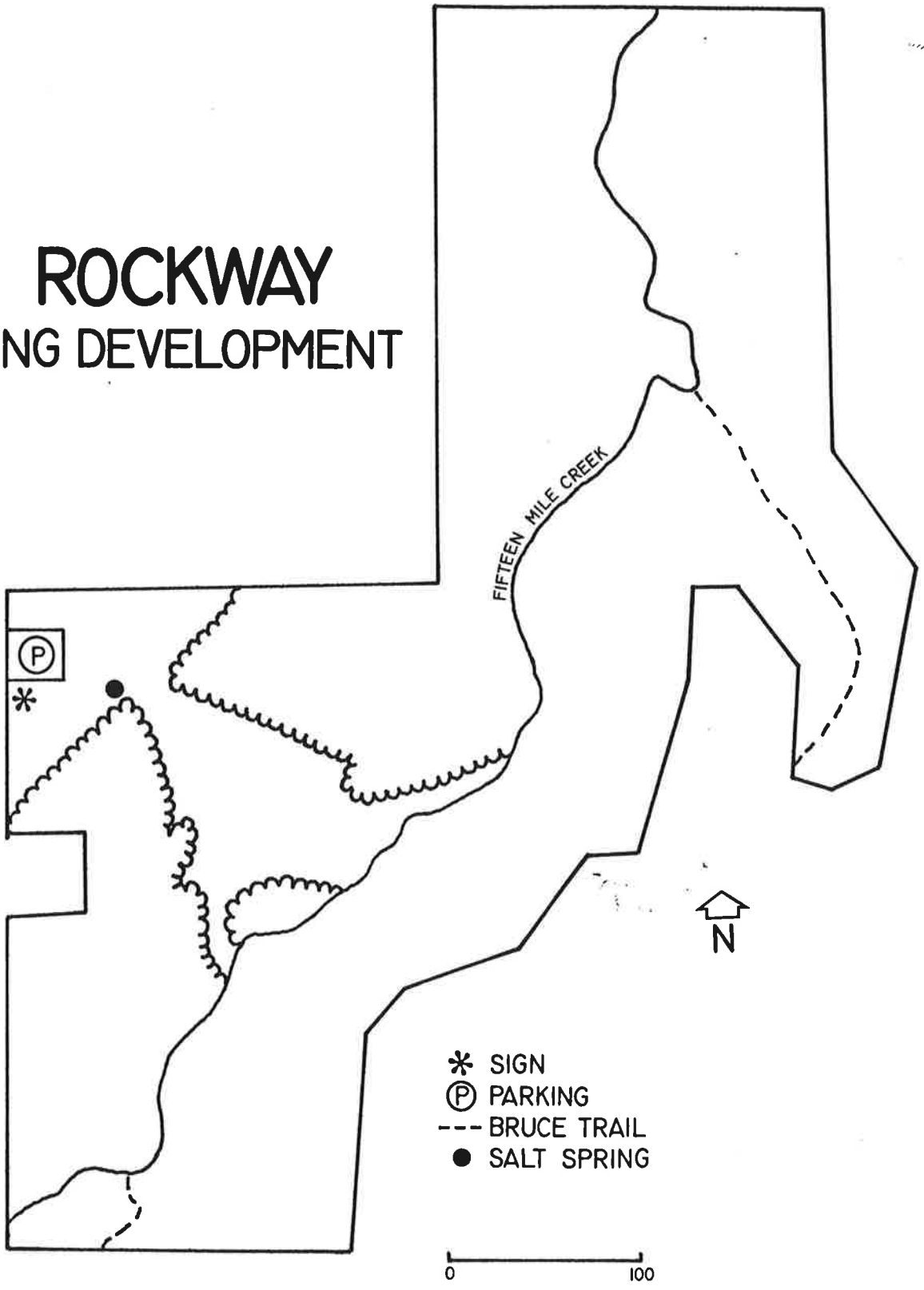
FIGURE 4



MOUNTAINVIEW
EXISTING DEVELOPMENT

FIGURE 5

ROCKWAY
EXISTING DEVELOPMENT



Furthermore, a chained entrance is located at the Bruce Trail entrance at Ridge Road. This chain was installed to prevent uncontrolled access into the park. Culverts have been installed throughout the Conservation Area to assist drainage. Fencing has been established along Quarry Road and at the boundary of the property leading to the chained entrance at Ridge Road. Woodlot management has also occured throughout the area. Dead wood has been cleared to diminish the fire hazard in the northern region of the property. Recreational and related facilities include four viewing stands which overlook the City of Grimsby and Lake Ontario, one pit privy, and several garbage cans. Many nature trails are present in the area, including a section of the Bruce Trail.

Louth Conservation Area

The Louth Conservation Area consists of 31.7 hectares (78.4 acres) which were purchased in 1973 for $82,592. This property was purchased by the Authority with the assistance of the Bruce Trail Association, and the Province of Ontario.

A Conservation Area sign was erected at the 7th Avenue entrance and perimeter fencing was installed at the southern and eastern boundaries of the property in 1974. In addition, approximately 5,000 trees were planted in the field west of the vineyard and a gravel entrance and accompanying twelve car parking lot were constructed.

In 1979, the gravel entrance was blocked off due to vandalism and rowdiness. A smaller parking lot was then built closer to 7th Avenue.

The Authority is presently leasing a 2 hectare (5 acre) vineyard in the north east corner of the Conservation Area to the former owners. The lease denotes payment to the Authority of $50.00 per acre per year with an expiry date of December 31, 1983.

Mountainview Conservation Area

The Mountainview property was purchased in 1972 for $72,000. This property contains approximately 25.09 hectares (62 acres). Acquisition of this land was made possible with financial assistance of the Province of Ontario and the Bruce Trail Association.

Development in this Conservation Area consists of a property sign and a small parking lot. The Bruce Trail is also found in the Area. Some reforestation has occured in the clearing north of the parking lot. Silver Maple and Evergreens were planted for the purpose of woodlot management.

Situated north of the reforested area are a house and barn which are rented to an Authority staff member who polices the area. A 4.88 metre by 3.66 metre (16 feet x 12 feet) addition to the house was completed in 1974.

In 1975, an improved access route was constructed leading from Mountainview Road to the house. Also that year, a well was installed to supply the house with water, and an iodine system was added to the well, in 1982, to purify the water.

Rockway Conservation Area

The Rockway Conservation Area was purchased by the Conservation Authority with the assistance of the Bruce Trail Association and the Nature Conservancy of Canada through the Richard Ivey Foundation. This 87 hectare (215 acre) property was assembled through a series of individual land purchases. The last land acquisition occured in 1977.

A Conservation Area sign has been erected in the northern section of Rockway in conjunction with a roadway and parking lot. This parking lot, built in 1974, is no longer accessible. The roadway was closed off due to vandalism, thereby forming a small parking lot, at its base close to 9th Street.

In the southern section of the property, east of the Rockway Community Centre on Regional Road 69, reforestation has occured. This section does not have a parking lot. However, visitors use the parking lot at the Rockway Community Centre.

The Bruce Trail is situated in the southern section of the Conservation Area. In addition, other trails are found throughout the southern and northern sections of the Area.

Woolverton Conservation Area

The Woolverton Conservation Area was leased to the Conservation Authority by Ontario Hydro for a period of 25 years commencing in January, 1981.

The Conservation Authority leases the property for the sum of one dollar plus municipal taxes (an estimated $8,000 for the 25 year period).

At present, there is no development at this site. The purpose of leasing this 16.2 hectare (40 acre) property is to preserve a section of the escarpment and to provide for public access to the escarpment and surrounding area.

4.11 Regional Planning Context

Regional Municipality of Niagara

The Regional Municipality of Niagara was established on the first day of January, 1970. It is composed of twelve area municipalities. These are: the Cities of Niagara Falls, St. Catharines, Welland, Port Colborne, and Thorold; the Towns of Pelham, Fort Erie, Grimsby, Lincoln, and Niagara-on-the-Lake; and the Townships of Wainfleet, and West Lincoln.

The Regional Municipality is a two-tiered form of government, whereby responsibilities are divided between two levels of jurisdiction. The local area councils are responsible for matters of local concern, such as fire protection, storm drainage, garbage collection, local roads, and planning. The regional council is responsible for matters common to the whole region, such as the collection and treatment of sewage, the treatment and distribution of water, regional roads, police, health, welfare, finance, and regional planning.

In its Policy Plan, the Regional Municipality of Niagara designated the lands occupied by the Escarpment Conservation Areas as "hazard" and "environmental protection areas". The Regional Municipality defines hazard lands as having inherent physical/environmental characteristics such as poor drainage, organic soils, flood and erosion susceptibility, steep slopes and other physical limitations to development. Activities permitted on hazard lands include agriculture and forestry practices, conservation of soils and/or wildlife, and passive recreation. These lands are to be managed to complement adjacent land uses and protect them from physical hazards or their effects. Environmental protection areas are lands which display some unique environmental feature, such as the Niagara Escarpment.

Lands adjacent to the Conservation Areas are predominantly "rural and agricultural". Agricultural lands serve as a buffer between the escarpment and

urbanized areas, thereby lessening land use conflicts.

Further, the Regional Council recognizes and endorses the role of the Conservation Authority as the primary public provider of regional natural resource based recreation opportunities.

The Town of Lincoln

According to the Official Plan for the Town of Lincoln, the Conservation Areas are defined as "Escarpment Area," in the "Open Space" category. "Open Space" defines the areas owned by a Provincial Public Agency. These lands are purchased to minimize land use conflicts. "Escarpment Area" is a term given to lands which are not hazard, however, they are not suitable for extensive recreational development. These lands require careful consideration when developing, due to their scenic and natural value.

The Plan states that these lands should be utilized for conservation and passive recreational enjoyment such as viewing and hiking. Furthermore, the escarpment should be preserved, planned, and developed as a single park network. The Town suggests that a Provincial Public Agency should purchase escarpment lands with high potential for recreation. The Town also encourages the construction of loop trails and parking facilities in conjunction with the Bruce Trail.

The Town of Grimsby

In its Official Plan, the Town of Grimsby designates the escarpment as "Hazard Land." These lands are designated primarily for preservation and conservation of the natural land and/or environment. Other activities such as agriculture, outdoor recreation, nursery gardening, forestry and the conservation of soil and/or wildlife, are permitted.

Lands within this hazard designation are to be managed to complement adjacent land uses and protect them from any physical hazards or their effects.

Niagara Escarpment Commission

The Niagara Escarpment Commission was established in 1973 to maintain the escarpment as a natural environment.

The Proposed Plan for the Niagara Escarpment (1979), designates the Conservation Areas as "Escarpment Natural Areas" and "Escarpment Protection Areas." These areas are to be utilized for resource management, trail activities, nature viewing and other activities which will not be detrimental to the natural environment.

4.12 Current Management and Operation Programs

The five Conservation Areas included in this Master Plan are open to the public on a year-round basis free of charge. Passive recreational uses such as nature interpretation, observation of wildlife species, hiking and outdoor photography are permitted in these areas.

The Authority does not station full-time staff at these Conservation Areas. However the Authority does perform any required maintenance.

5. MARKET ANALYSIS

The purpose of a market analysis is to identify and evaluate the manner in which a recreational site is compatible with the existing system of parks in a defined geographic region. A comprehensive market analysis deals with the functions and problems of the site by addressing the following components: the present level of supply, the distribution of that supply, the demand relationships in the vicinity of the recreational site, and the recreational site user characteristics.

A comprehensive market analysis, however, can not be developed for the Conservation Areas addressed in the Plan. Insufficient user data exist for these areas due to the nature of the surrounding environment and the lack of facilities. However, pertinent information was extrapolated from existing recreational inventories prepared for the Niagara Region and applied to the five Conservation Areas.

The escarpment properties are natural areas, therefore, they are best suited for passive recreational activities. This market analysis will be concerned with those activities compatible with these areas such as hiking, photography, nature observation, viewing, picnicking, cross-country skiing, and snowshoeing. These activities are either currently available, or are likely to be provided in the future. They are evaluated under the headings of i) trail-oriented activities, and ii) picnicking.

Basically, the market area is defined by the expected travel limits for day-use recreation. The market area for these Conservation Areas is the Niagara District, which is an administrative unit utilized by the Ministry of Natural Resources and includes all lands within the Regional Municipality of Niagara together with the Towns of Haldimand and Dunnville.

5.2 Trail-oriented Activities

Trail-oriented activities in the five Conservation Areas will be restricted to those activities which are passive. According to the Ontario Recreation Supply Inventory (ORSI), there are forty facilities which offer trail-oriented activities. Fifteen percent (15%) of these facilities are offered in the Towns of Grimsby and Lincoln. Presently, this supply is adequate for the extent of traffic through the areas.

Future demand might warrant additional trails or the installation of marked cross-country trails, however, at this point in time, general maintenance of the trails is sufficient.

5.3 Picnicking

According to the Ontario Recreation Supply Inventory, in 1980, prior to the removal of the picnic tables at Beamer Memorial, there were 150 picnicking facilities in the Niagara District. However, only 10.7% of the total picnicking opportunities were offered in the Towns of Grimsby and Lincoln.

In his report entitled An Outdoor Recreation Market Analysis for Chippawa Creek Conservation Area (1978), S. J. Girling stated that the Town of Grimsby and the City of Thorold have the lowest proportion of publicly accessible picnicking opportunities. Generally, the concentration of supply was in the southern portion of the peninsula. The City of Port Colborne, the Township of

Wainfleet, and the Towns of Dunnville and Fort Erie were found to contain an accumulated 53.4% of the publicly-accessible picnicking opportunities. It was recommended by Girling, that the provision of future outdoor recreation supply for day-use activities be concentrated near major population centres with lower supply per capita figures (i.e. Niagara Falls, St. Catharines, and Grimsby).

Picnic tables installed at Beamer Memorial will somewhat alleviate the deficit. However, due to the fragile nature of the escarpment, picnic tables installed at Beamer Memorial will be limited.

6. SITE EVALUATION

The preceding sections have described the biophysical resources of the Conservation Areas, the present state of area development and the market analysis for the Areas. This section is designed to identify the environmental characteristics which may influence the development and use of the Conservation Areas.

6.1 Environmental Analysis

The environmental characteristics particular to the escarpment properties are as follows:

a) Climate

The Conservation Areas may be utilized by the public on a year-round basis provided that climatic conditions are adequate.

During the summer months, the most significant factors affecting the enjoyment of the Conservation Areas are sunshine and precipitation. For the most part, the Conservation Areas experience favourable climatic conditions for passive recreation. However, summer rainfall may occasionally disrupt nature observation, photography, and hiking activities. Due to the steep cliffs and rolling topography associated with the escarpment, winter recreation will be limited to snowshoeing and cross-country skiing, when weather conditions permit.

b) Soils

Analysis of the soil type in the Conservation Areas reveal some limitations to development. Minor drainage problems will result due to the clay content in the soil. Compaction of the soils will be evident in high-use areas such as the Bruce Trail.

c) Topography and Drainage

The topographical relief of the escarpment restricts active recreational activities. In addition, construction of roadways and facilities must be in accordance with the surface drainage of the Areas to ensure the natural flow of the watercourses.

d) Vegetation

Each of the Conservation Areas are highly forested areas with a diversified population of plant species. Both native and rare plants are found in the Areas. The virginia creeper, dewberry, and hawthorn are a few of the rare species present in the area. Selective cutting and minimal reforestation has occurred due to the Authority's objective of preserving the natural escarpment environment.

6.2 Capability Analysis

i) Terrain Analysis

To date, recreational facilities at the Conservation Areas, with the exception of nature trails, have been minimal.

The rolling topography and rugged terrain of the escarpment restrict many activities. Rockway, Louth and Beamer Memorial will offer picnicking facilities should future demand for this activity be identified.

The northern section of Rockway offers a terrain suitable for winter sports such as cross-country skiing, snowshoeing, and toboganning.

ii) Canada Land Inventory - Land Capability for Recreation:

In report No. 6, Land Capability Classification for Outdoor Recreation (1969), the Canada Land Inventory rated the recreational capability of the land in Canada. Seven classes of land exist which are differentiated on the basis of the intensity of outdoor recreational use, or the quantity of outdoor recreation which may be generated and sustained per unit area of land per annum.

Class 1 has the highest capability for outdoor recreation and Class 7, the lowest.

The capability ratings and recreational facilities offered for Beamer Memorial, Louth, Mountainview, Rockway, and Woolverton Conservation Areas are discussed below:

Beamer Memorial

Beamer Memorial Conservation Area has been classified 3VQ. Lands of this classification have a moderately high capability for outdoor recreation, a vantage point which offers a superior view and varying topography which offers an opportunity for nature appreciation and passive recreational activities.

Louth

The Louth Conservation Area has a double rating as it is situated in two regions of classification. Louth is located in the 5 QVR and the 6 OPQ classifications.

The former rating represents land with a moderately low capability for outdoor recreation, a varied topography enhancing recreational activities, viewing opportunities and interesting rock formations. The latter classification refers to land with a low capability for outdoor recreation, upland wildlife viewing, interesting landscape patterns, and varied topography providing recreational activities.

Mountainview

Mountainview has a rating similar to Louth. The Canada Land Inventory has rated Mountainview 5 QV and 6 OP.

Woolverton

The Woolverton Conservation Area has been rated 4 QV by the Canada Land Inventory. Land of this classification has a moderate capability for recreation, varying topography which enhance passive recreation, and viewing opportunities.

Rockway

The northern section of Rockway has been rated by the Canada Land Inventory to be 5 OP. This classification represents land with a moderately low capability for outdoor recreation, good upland wildlife viewing opportunities, and interesting landscape patterns.

The southern section of Rockway situated on the escarpment has been rated 4 FVQ. The higher rating is a result of the presence of the escarpment and the waterfall. According to the Canada Land Inventory, 4 FVQ is defined as land that has a moderate capability for outdoor recreation, a waterfall, viewing opportunities, and a varied topography which enhances passive recreational activities.

Generally, the ratings assigned to these areas illustrate that the escarpment land is best suited for passive recreational activities. Utilizing the areas for other purposes may result in detrimental impacts

to the environment.

6.3 Zoning

According to, A Guideline for Master Planning Conservation Authority Lands - A Proposed Zoning Framework, zoning is a technique used by Conservation Authorities to delineate units of land or water. The land is zoned in terms of type and degree of acceptable use/development in order to realize the objectives of the entire area.

The escarpment Conservation Areas have been purchased/leased by the Conservation Authority for the preservation and management of the natural environment of the escarpment. Zoning applicable to the Conservation Areas is outlined below and illustrated on Figures

Natural Zone

The purpose of this zone is to maintain unique or representative natural features, sites or areas. Access, facilities, or programming will be provided in such a manner that will neither encroach upon nor detract from the site or its character.

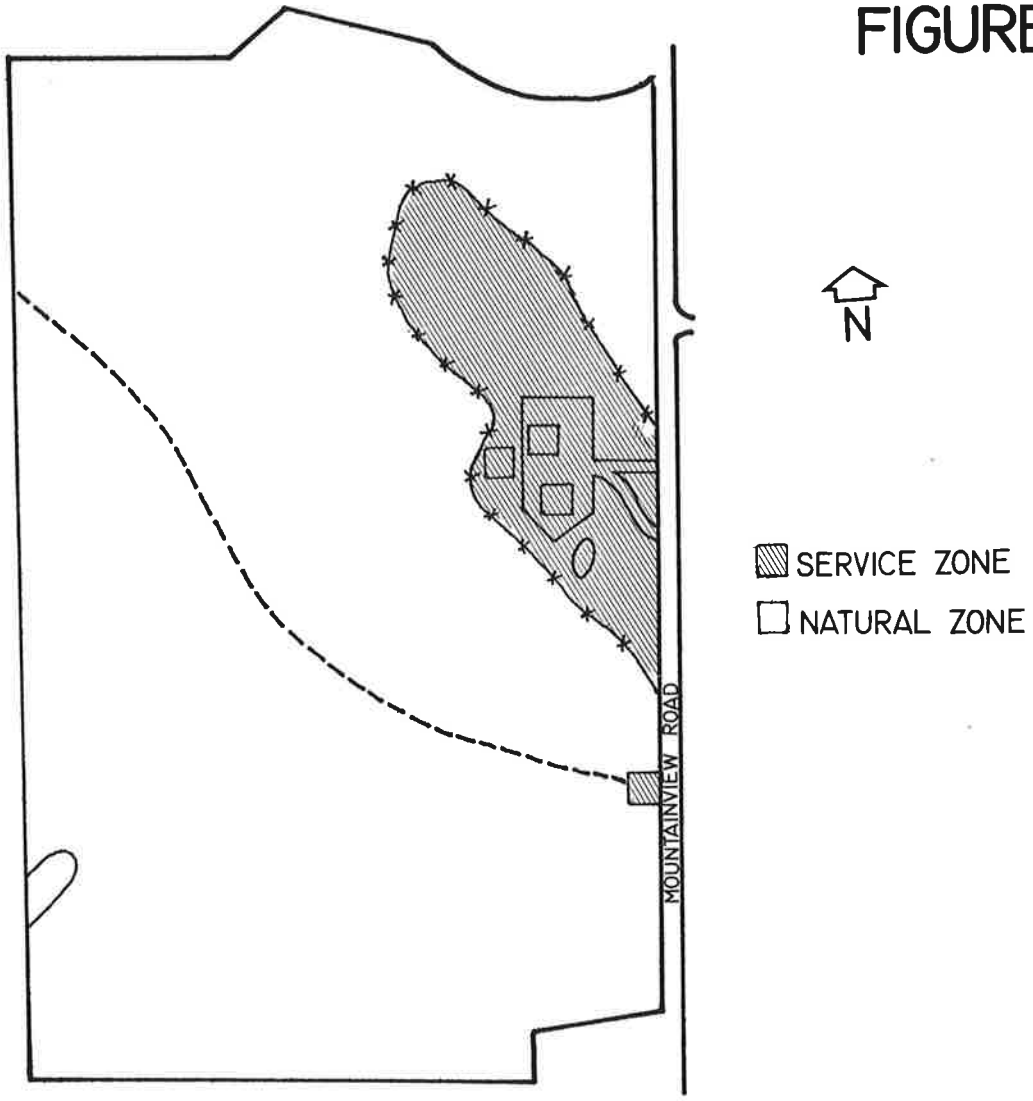
Resource Management

The purpose of this zone is to conserve, restore, develop or otherwise manage the renewable natural resources of a watershed. Activities and development will involve the Authority or Ministry of Natural Resources personnel. Certain activities and programmes which require minimal support facilities or which clearly demonstrate the conservation objectives of the Authority will be permitted in this zone.

Service Zone

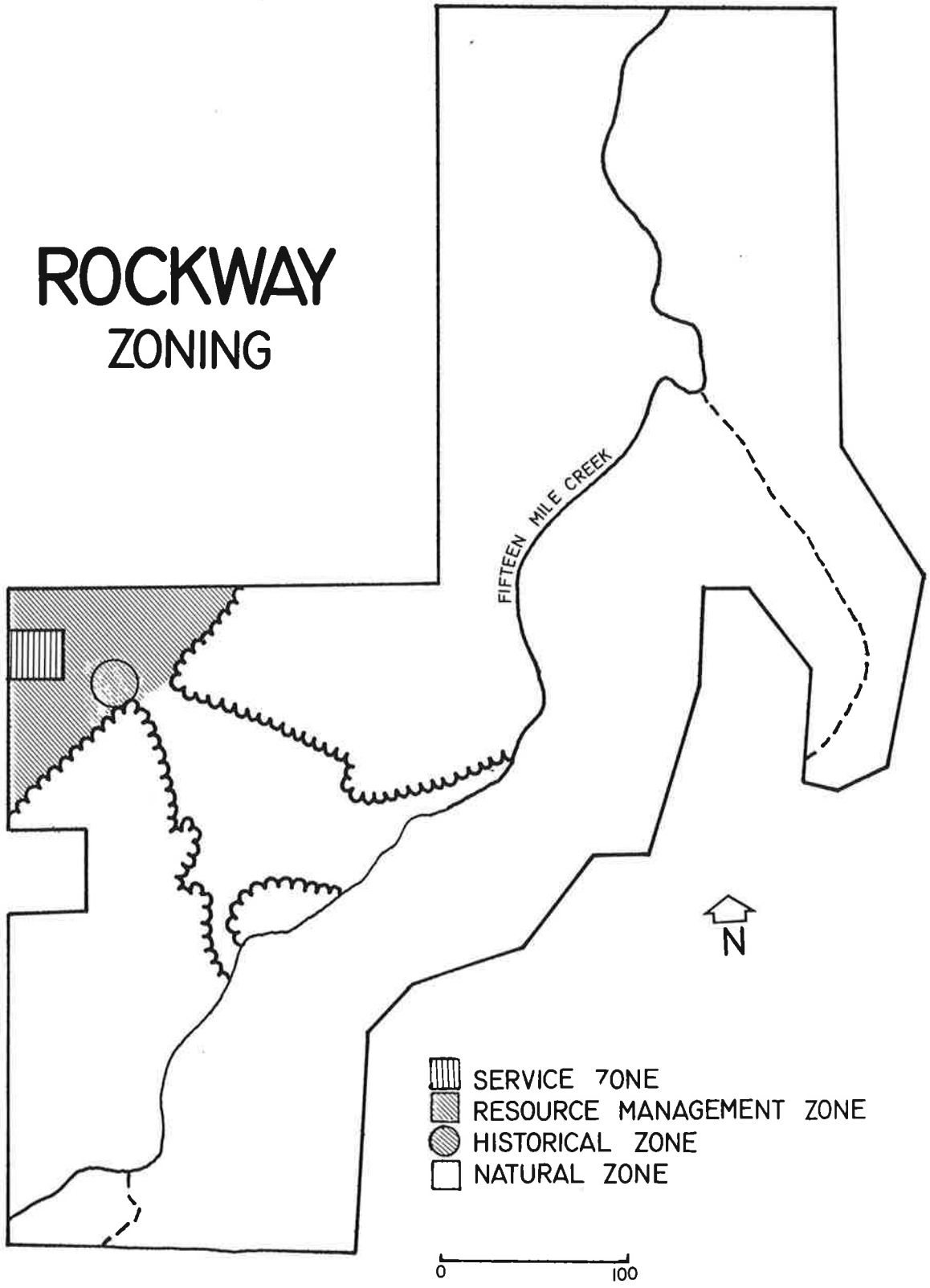
The purpose of this zone is to provide the necessary access to maintain, and support facilities for the activities and programmes offered at the Areas. The service zone represents the parking lots and the access routes at the Conservation Areas.

FIGURE 8



MOUNTAINVIEW
ZONING

FIGURE 9


ROCKWAY
ZONING
FIFTEEN MILE CREEK
N
SERVICE ZONE
RESOURCE MANAGEMENT ZONE
HISTORICAL ZONE
NATURAL ZONE
0
100

7. CONCEPT SELECTION

7.1 Master Plan Summary

The Master Plan is prepared by considering the goals and objectives of the Authority, the market analysis, the resource inventory and the existing site development at the Conservation Areas.

The following section outlines the Master Plan for Beamer Memorial, Louth, Mountainview, Rockway, and Woolverton Conservation Areas. These five areas are situated on the Niagara Escarpment. The environment of this geological feature is fragile and must be preserved. Development in these areas will be minimal for this reason.

7.2 Management/Development Program

Entrance and Regulation Signs

Beamer Memorial Entrance Sign

An entrance sign composed of wood will be erected in the Beamer Memorial Conservation Area and situated at the Quarry Road entrance. This sign will inform visitors that the Conservation Area was purchased by the Authority with the assistance of the Province of Ontario and the Nature Conservancy of Canada through the Richard Ivey Foundation.

Woolverton Entrance Sign

An entrance sign composed of wood similar to the entrance signs at other Conservation Areas will be erected in the Woolverton Conservation Area at the Woolverton Mountain Road entrance. This sign will inform the public that the land is owned by Ontario Hydro, but leased and maintained by the Conservation Authority.

WOOLVERTON
MASTER PLAN

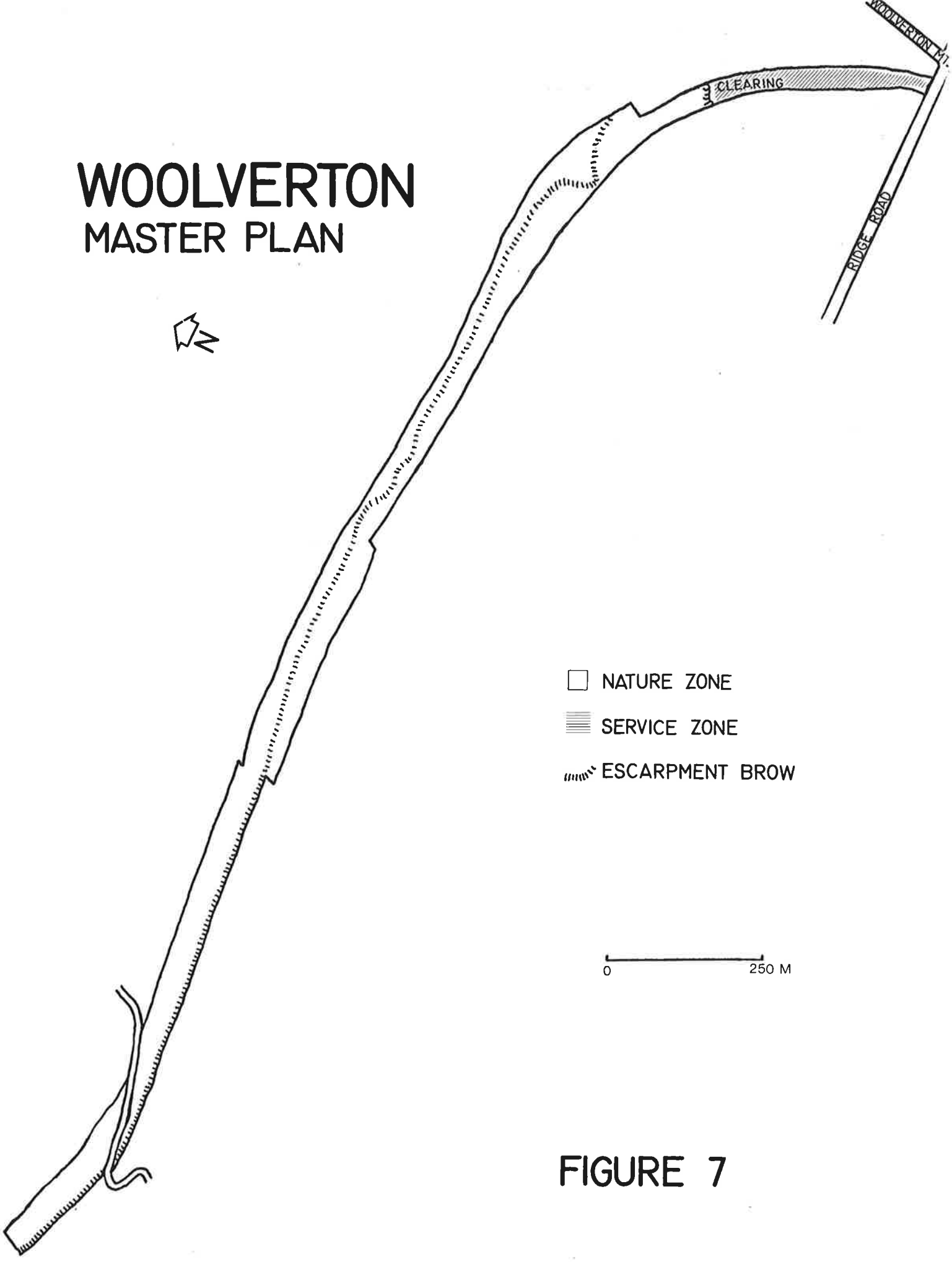


FIGURE 7

Rules and Regulations Signs

Smaller signs will be erected at the Conservation Areas prohibiting activities incompatible with the environment. These signs will be similar to and attached to the entrance signs. They will be composed of wood, with the appropriate lettering routered into them. These signs will list the rules and regulations of the Conservation Areas, prohibiting such things as fires, firearms, alcoholic beverages, unauthorized vehicles and unauthorized tree cutting.

Many fires have occurred along the rails throughout the areas; some have resulted in emergency vehicles being called to the sites. For this reason, fires will be prohibited.

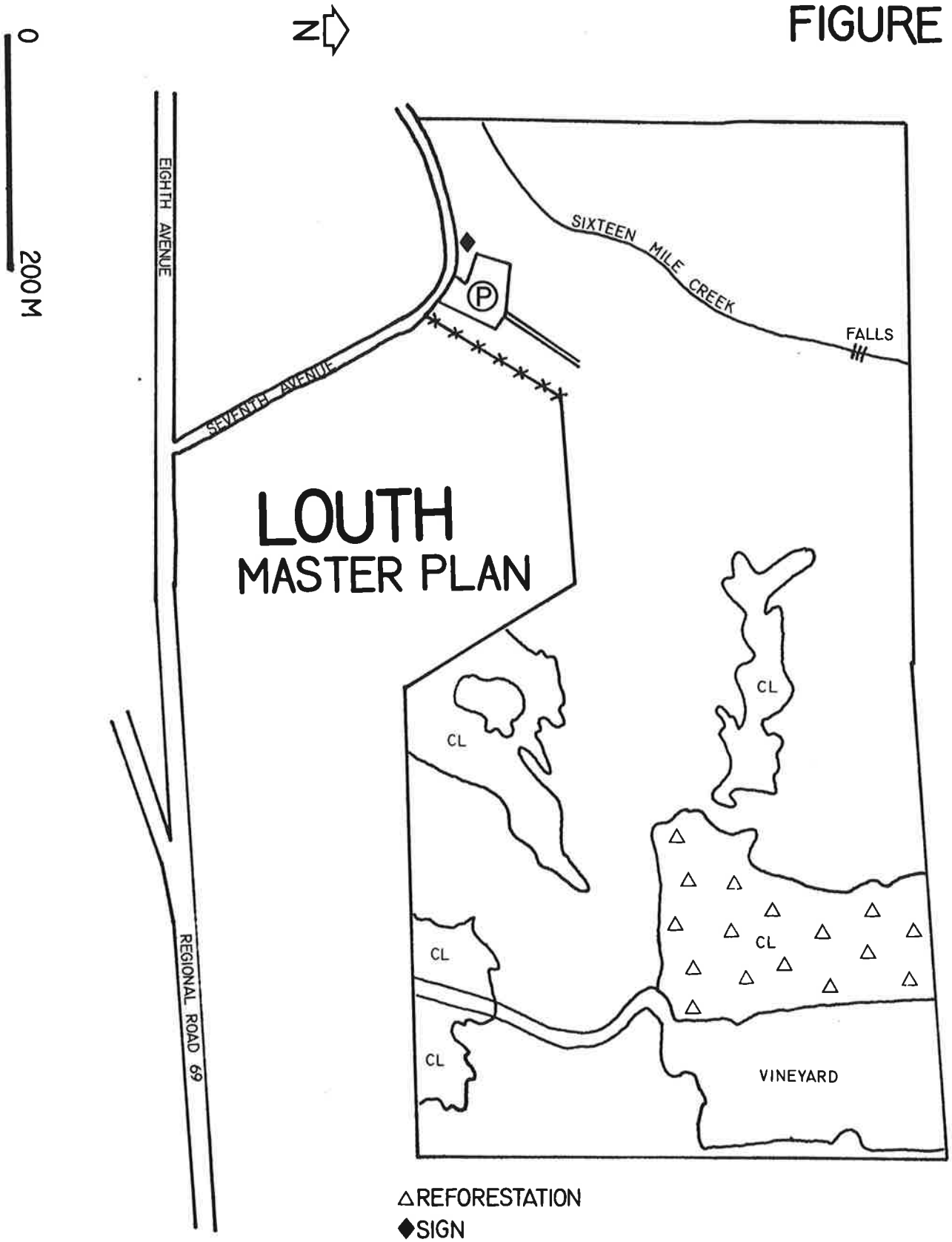
Hunting will also be prohibited in the five Conservation Areas in concurance with the Authority hunting policy for Conservation Areas.

Unauthorized vehicles will be prohibited to diminish unnecessary trampling and destruction of the trails and the landscape. In the past, this unnecessary traffic has produced ruts in the trails, and has compacted the soils which resulted in disrupted drainage and soil erosion.

Woodlot Improvement

Pruning and general maintenance will continue throughout the five areas. The Town of Grimsby Fire Department has recommended that the Authority remove some of the dead wood in Beamer Memorial to lessen the fire hazard. Fires are very severe in this heavily wooded area. In previous years, many fires have occurred in this Conservation Area and it has been difficult for emergency vehicles to respond to calls. Therefore, the removal of dead trees will occur at all of the areas to decrease the risk of fire.

FIGURE 4


N
0
200M
EIGHTH AVENUE
SEVENTH AVENUE
SIXTEEN MILE CREEK
FALLS
P
LOUTH
MASTER PLAN
CL
CL
CL
CL
CL
REGIONAL ROAD 69
VINEYARD
△REFORESTATION
◆SIGN
FENCE
Ⓟ PARKING (SERVICE ZONE)
CL CLEARING
□ NATURE RESERVE ZONE

Selective cutting of trees will be restricted to those areas that are hazardous to the hikers. In some instances, brush piles will be made out of the wood to provide for wildlife habitat.

Reforestation

Reforestation will occur in the northern section of the Rockway Conservation Area near the parking lot, and in the Louth Conservation Area in the field adjacent to the vineyard. Species of trees such as white pine, spruce, maple, or ash will be planted. These trees will increase the wildlife habitat and the wildlife population in the area.

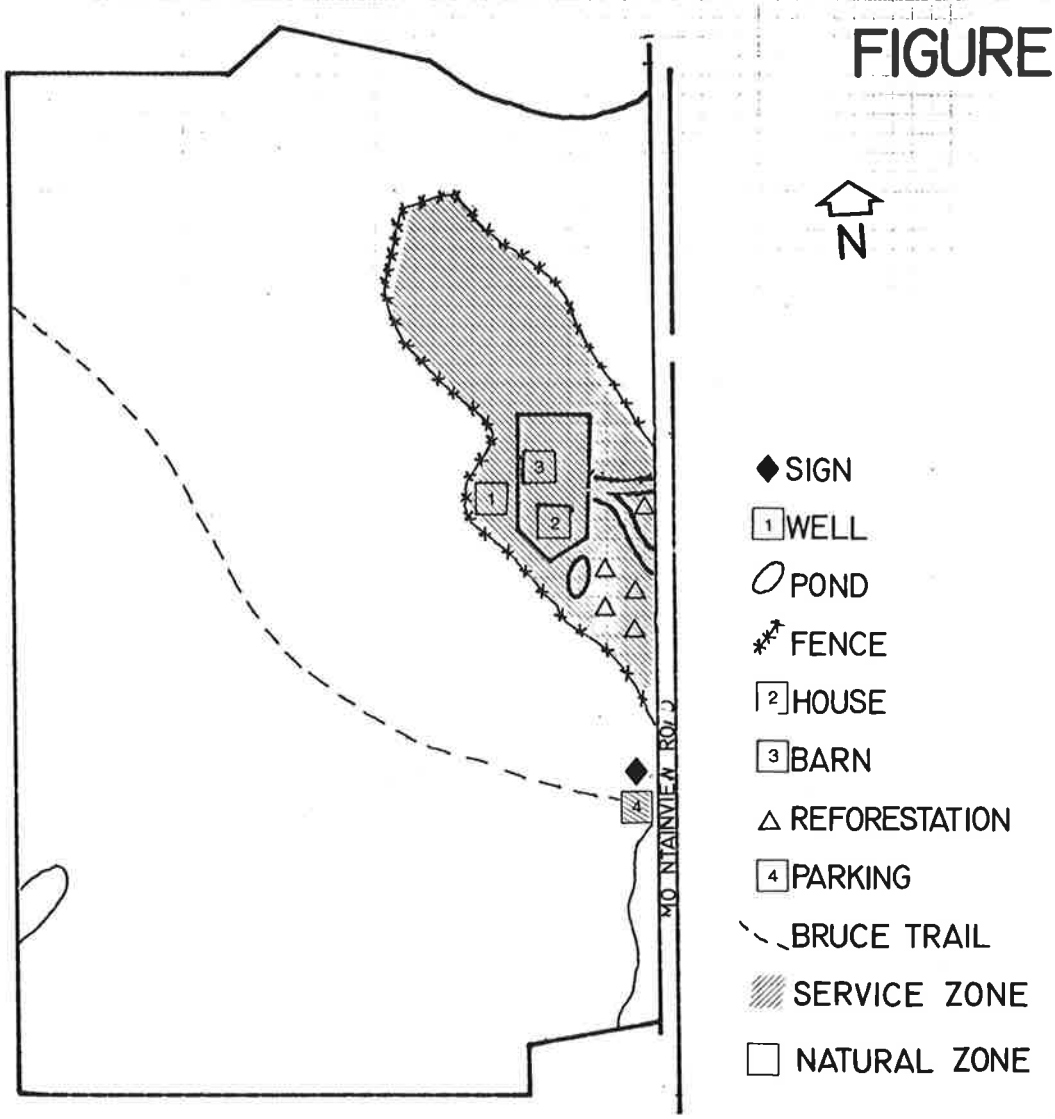
Commerorative Plaque/Salt Wells

A plaque will be erected at the location of the salt well at Rockway Conservation Area to commemorate the historical significance of this heritage resource. The Authority will remove brush surrounding the well so that the structure and the chimney are exposed. Due to the potential cultural/historical resources of this settlement sight on the Niagara Escarpment, the Authority will undertake a thorough research project examining potential artifacts and describing the historical significance of this salt well to the use of the local communities. That study may recommend enhancement of the salt well in the form of an intrepretive display or complete restoration of the well and chimney. These recommendations would be addressed as this Master Plan undergoes the routine review process.

Picnic Tables

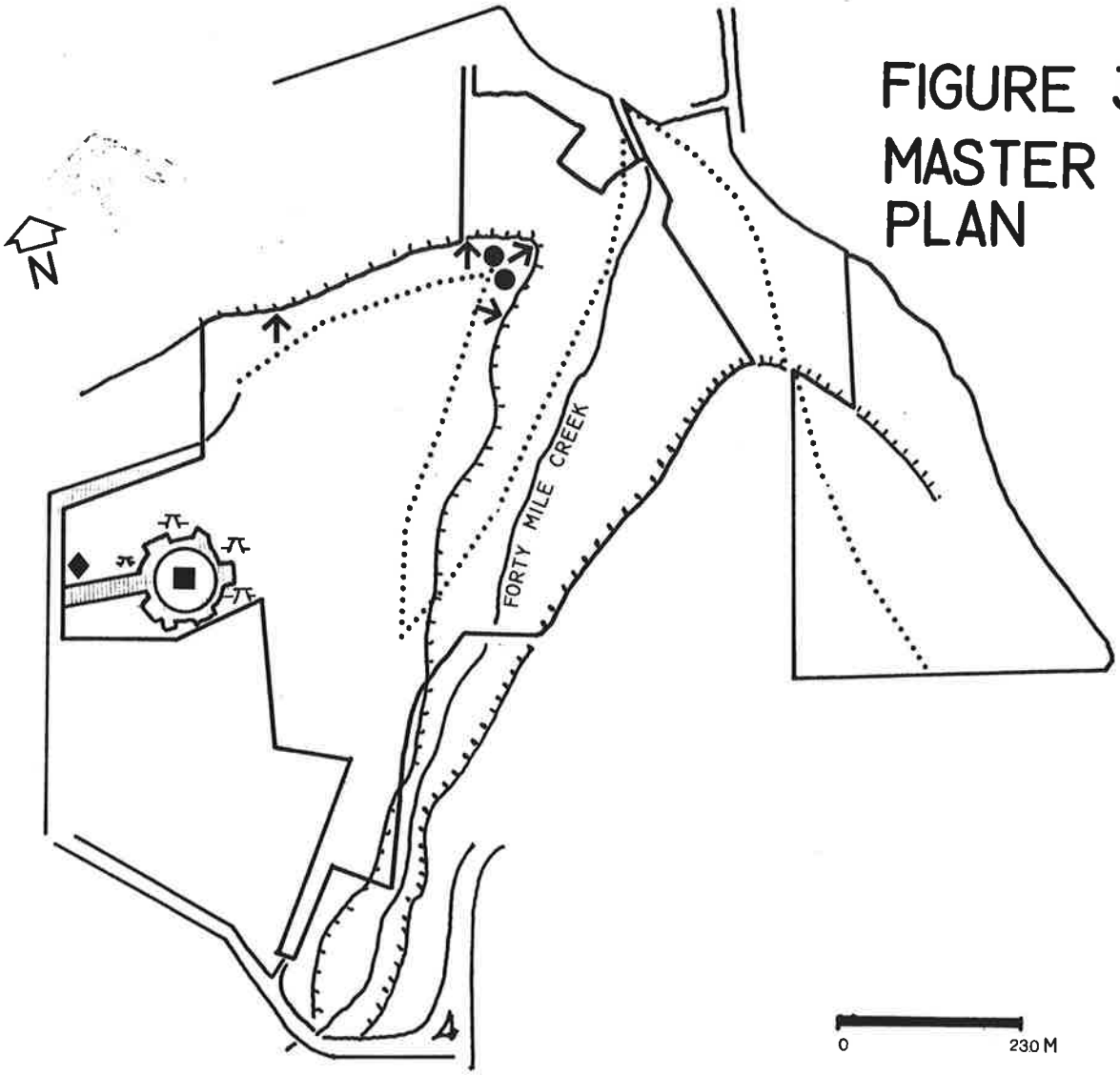
Four picnic tables will be installed at Beamer Memorial Conservation Area. The tables will be constructed of cement and situated in the pull-off parking areas along the circular roadway. In the past, the wooden picnic tables have been destroyed, thereby necessitating cement tables which should withstand vandalism.

FIGURE 5



MOUNTAINVIEW
MASTER PLAN

FIGURE 3
MASTER PLAN



BEAMER MEMORIAL

- ◆ ENTRANCE SIGN(S)
- PICNIC TABLES
- ■ TOILET FACILITIES
- ● BENCHES
- ↑ LOOKOUTS
- ····BRUCE TRAIL
- ESCARPMENT BROW
- SERVICE ZONE
- [ ] NATURAL ZONE

Toilet Facilities

One privy will be installed at Beamer Memorial. The privy will be constructed of stone and erected inside the circular roadway. The stone building will contain two separate washroom compartments. The two doors will be constructed of wood and painted similar to the Conservation Areas signs.

Interpretive Display

The stone privy in Beamer Memorial will be painted with murals illustrating some of the programs the Authority is involved with in this area. The geological signficance and the importance of the preservation of the fragile environment of the Niagara Escarpment will be illustrated. In addition, information concerning the woodlot improvement program will be displayed. Interesting information concerning hawks will be included to provide the hawk viewers with some insight into these species.

Other Development Proposals

The following is a list of secondary future development proposals which will occur when, and if, future demand warrants them, and subject to budget and staffing constraints. These proposals are not priorized, and may occur at any time.

1. Two additional pull-off parking lots will be installed along the circular roadway at Beamer Memorial to reduce the congestion of vehicles during the hawk migration.

2. Two additional picnic tables will be installed along the circular roadway at the pull-off parking lots if demand warrants at the Beamer Memorial Area.

3. Two benches will be constructed in Beamer Memorial if the vandalism at the area decreases. These benches will provide comfort for the hawk viewers and the hikers.

4. The restoration of the historically significant salt springs at Rockway will be considered by Authority staff once sufficient information concerning the history and operations of the spring is obtained.

5. All of the Conservation Areas will be fenced either in whole, or in part, as necessary, to reduce trespassing on the neighbouring properties.

8. PLAN IMPLEMENTATION

8.1 Site Plan Guidelines

A Master Plan is the conceptual plan of the development and management of the natural resources of the Conservation Areas.

For each development and management proposal mentioned in this Master Plan, a site plan will be prepared. Site plans represent detailed drawings of each of the proposed developments and the corresponding cost estimates. These site plans are designed with consideration of environmental characteristics such as flooding, topography, existing vegetation, and soil type and drainage of the area.

8.2 Phasing and Costs of Development

The development of the five escarpment properties proposed in the Master Plan will occur as funds permit. A suggested sequence of project phasing is devised, and depending upon the Authority's budget, each phase of development may take several years to complete. Individual items within phases may be advanced or delayed as a result of changes in demand, the Authority's priorities or budget.

The proposed phasing of development and the estimated costs are outlined below.

Phase I

(i)	Construction of entrance signs at Woolverton and Beamer Memorial	$ 1,000.00
(ii)	Five rules and regulations signs	500.00
(iii)	Woodlot improvement at all areas	500.00
(iv)	Reforestation at Louth and Rockway	200.00
(v)	Two benches at lookouts in Beamer Memorial	400.00
	Estimated cost of Phase I in 1982 dollars	$ 2,600.00

Phase II

(i)	Stone or block washroom at Beamer Memorial	$ 4,000.00
(ii)	Four cement picnic tables at Beamer Memorial	1,000.00
(iii)	Commemorative plaque and research study of salt springs at Rockway	200.00
(iv)	Woodlot improvement at all areas	500.00
	Estimated cost of Phase II in 1982 dollars	$ 5,700.00

Phase III

(i)	Interpretive display at Beamer Memorial	$ 500.00
(ii)	Two pull-off parking lots at Beamer Memorial	400.00
(iii)	Two additional picnic tables at Beamer Memorial	500.00
(iv)	Reforestation at Louth and Rockway	200.00
(v)	Fencing at all areas	1,000.00
(vi)	Continued research and restoration of salt spring at Rockway	1,000.00
	Estimated cost of Phase III in 1982 dollars	$ 3,600.00
	Total estimated cost in 1982 dollars	$ 11,900.00

Based upon the above information, the total estimated development costs for the five areas, based upon 1982 dollar values, are as follows, Beamer Memorial, $7,800.00; Louth, $700.00; Mountainview, $500.00; Rockway, $1,900.00; and Woolverton, $1,000.00. The total estimated cost for the five escarpment properties is $11,900.00.

8.3 Administration, Maintenance, and Staff Requirements

The Conservation Areas will operate as year round, day use facilities. No entrance fees will be charged at these areas. Routine daily maintenance will be carried out during June, July and August. Duties will be completed by Authority staff and will include grass cutting, garbage disposal and general maintenance.

In the off-season (September to May), maintenance of the trails, and tree pruning will be performed. In addition, the lookouts will be maintained at Beamer Memorial. Any major capital projects for any of the areas will take place during this time in order to minimize visitor inconvenience and moderate staff workload.

8.4 Visitor Services

Generally, there will be little or no visitor services offered at the areas. The number of visitors to the areas do not warrant further services and the preservation objective limits development to passive recreational activities. Picnicking, and the mural display surrounding the privy at Beamer Memorial will represent the major visitor services offered at any of the five Conservation Areas. At Rockway, the erection of a plaque explaining the significance and the use of the salt springs will provide the visitors with interesting information of the area's history.

8.5 Environment Impact Monitoring

Much of the land in the five areas is in the "Natural Zone." The purpose of this zone is to conserve the unique natural features of the Conservation Areas. To ensure that these features are preserved, a monitoring and evaluation system will be implemented as required by the Niagara Escarpment Commission, The Proposed Plan for the Niagara Escarpment, 1979 (Section 3.2.4.4).

According to the plan, the monitoring and evaluation system should include:

a) Information Gathering: Information on the environment of the park shall be gathered to develop an on-going environmental monitoring program.

b) Indicators: Indicator plant and animal species are to be identified to assess environmental changes. Environmental conditions (i.e. water quality, erosion rates) will also be monitored.

c) Trail Monitoring: Trail management will include provisions for monitoring conditions on trails within the park.

The purpose for acquiring these lands is to preserve the Niagara Escarpment, therefore, it is essential that impacts resulting in environmental changes be monitored and minimized to maintain the natural environment of the escarpment.

Prior to the inauguration of any management technique, the exact type of impact and the resulting changes must be assessed. In the five Conservation Areas, the monitoring of the environmental impacts will be achieved by general observation of the Authority staff. The degradation of the trails, the trampling and destruction of the plant life, and the instability and erosion of the escarpment face are the major environmental impacts that will be monitored.

A management decision can then be made to determine the allowable level of use and the maintenance techniques necessary to ensure that the biophysical carrying capacity of the Conservation Areas is maintained. Some management techniques consistent with the goals and objectives of the Conservation Areas include: limited environmental manipulation (i.e. trail surfacing, fertilizing, and mulching); and facility development (i.e. boardwalks and log steps).

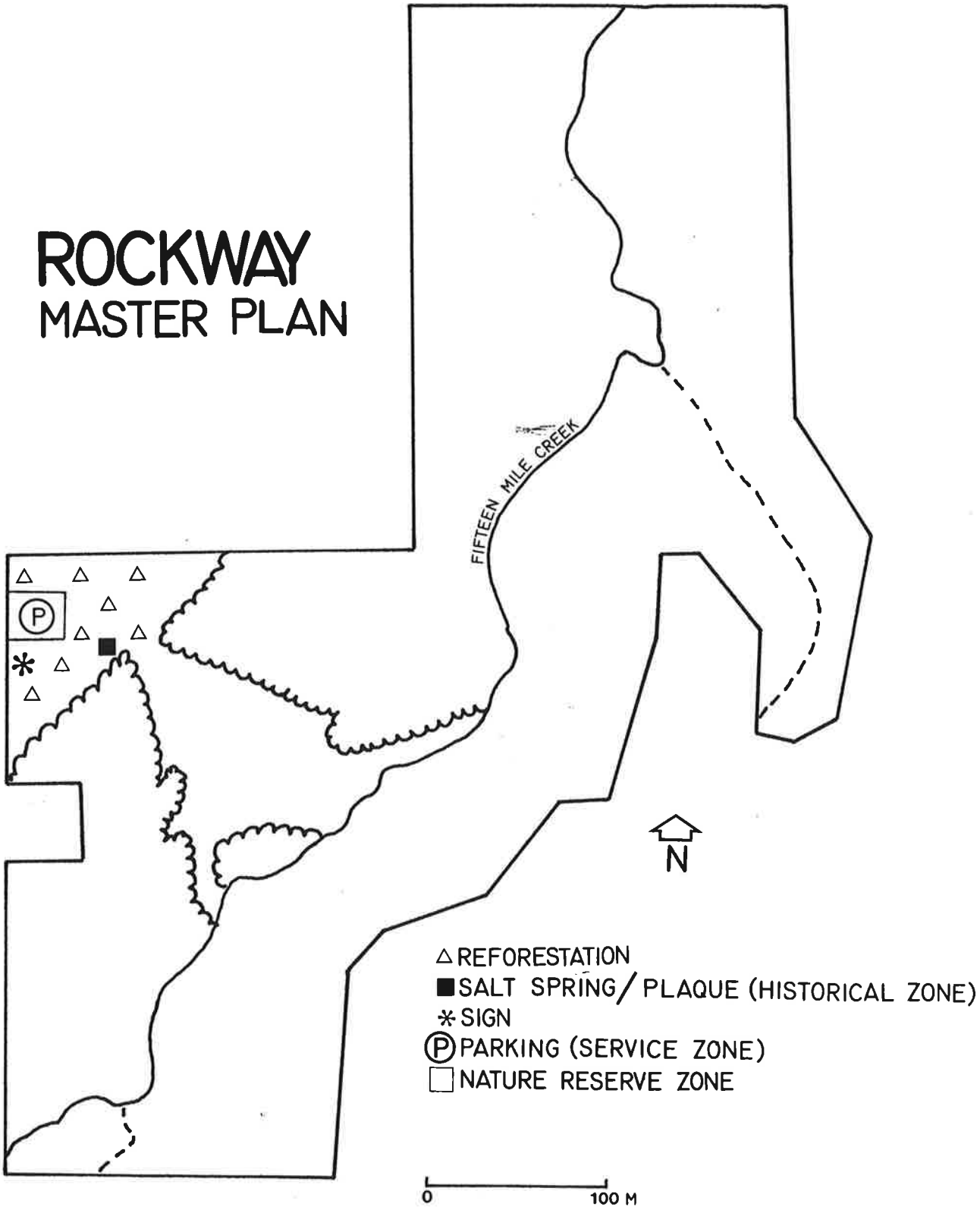
Any changes recommended as a result of the monitoring and evaluation system will be addressed during the plan review process.

8.6 Plan Review

The concept of the Beamer Memorial, Louth, Mountainview, Rockway and Woolverton Conservation Areas are designed to develop and manage the areas over a period of five years. Completion of the plan will, therefore, occur in phases as funds and priorities permit.

The plan will be reviewed based on changes in attendance, user characteristics, and needs and changes in environmental conditions. Appropriate revisions to the Master Plan will be made at that time.

FIGURE 6


ROCKWAY
MASTER PLAN
FIFTEEN MILE CREEK
P
N
△ REFORESTATION
■ SALT SPRING / PLAQUE (HISTORICAL ZONE)
* SIGN
Ⓟ PARKING (SERVICE ZONE)
□ NATURE RESERVE ZONE
0
100 M

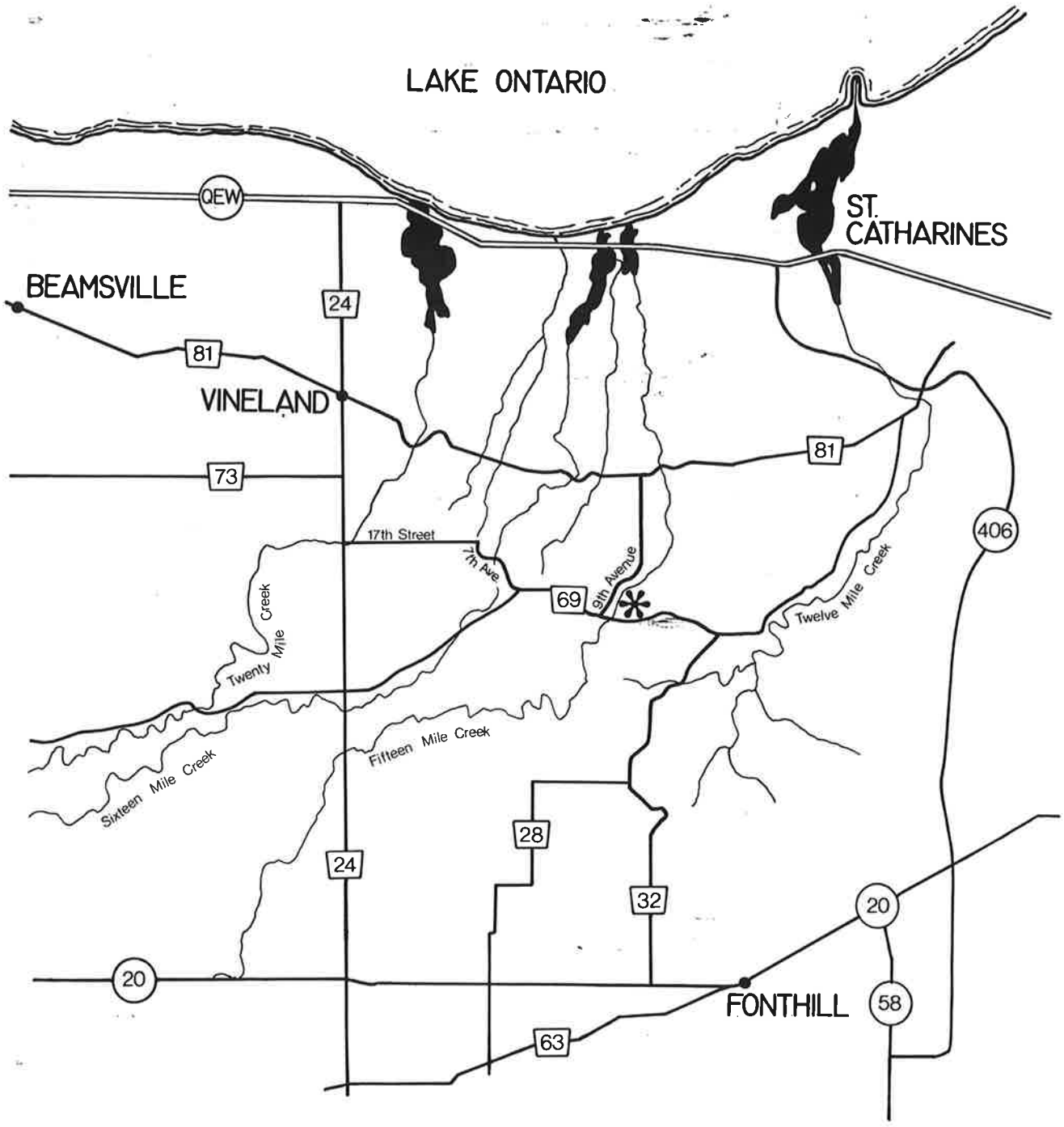


FIGURE **LOCAL SETTING**

✱ ROCKWAY CONSERVATION AREA

0 1 2 3 MILES
0 1 2 3 4 5 KILOMETRES