1969

The Locational and Legal Aspects of Recreational Open Space in the Urban Community

Donald Carman Wilson
Wilfrid Laurier University

THE LOCATIONAL AND LEGAL ASPECTS OF RECREATIONAL OPEN SPACE IN THE URBAN COMMUNITY

by

Donald Carman Wilson

Submitted in Partial Fulfillment of the
Requirements for the M.A. Degree in Geography

Department of Geography, University College
Waterloo Lutheran University
Waterloo, Canada

1969

ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 - 1346

ABSTRACT

THE LOCATIONAL AND LEGAL ASPECTS OF
RECREATIONAL OPEN SPACE IN THE URBAN COMMUNITY

This study develops a locational model for open space within the urban community based on the open space standards set down by the Community Programs Division of the Department of Education for the Province of Ontario and utilized by many of the municipalities throughout Ontario. A theoretical deductive locational model was developed and applied to the cities of Kitchener-Waterloo to determine the locational and acreage adequacy of parks within a given set of standards. As part of this application, variables not considered in the model were introduced. The modified model provides a device for assessing the locational and acreage aspects of a municipal park system.

An evaluation of the legislation affecting the acquisition of open space within the urban communities of Ontario was made, in an effort to explain a municipality's ability to acquire sufficient open space to meet the given standards. It was found that the legal tools available within the legislation of Ontario are generally inadequate, as they now stand, in terms of acquiring sufficient open space to meet the existing standards. Based on these findings, possible changes to the legislation were suggested.

These changes take the form of either expanding existing legal tools or incorporating new ones. Most of the changes suggested are based on the legal tools for acquiring open space that have been utilized with considerable success in the United States.

TABLE OF CONTENTS

	Page
ABSTRACT	ii
LIST OF TABLES	vi
LIST OF FIGURES	vii
LIST OF APPENDICES	viii
ACKNOWLEDGMENTS	ix
INTRODUCTION	1

PART A. STANDARDS FOR PARKS

Chapter

I. STANDARDS AND CLASSIFICATION OF PARK AREAS 7

(a) Problems Associated with Park Areas
(b) Classification of Park Areas
(c) Existing Standards
(d) Similarity of Standards
(e) Differences of Standards
(f) Need for Device to Determine Demand for Outdoor Recreation

PART B. APPLICATION OF STANDARDS

II. MODELS AND MUNICIPAL PARK SYSTEMS 26

(a) Introduction
(b) Model for Determining Location of Units Within Municipal Park System
(c) Acreage of Parks in the "Locational Model"
(d) Conclusion

III. APPLICATION OF STANDARDS TO STUDY SITE . . 47

(a) Municipal Park System of Kitchener-Waterloo
(b) Application of Model to Study Site

(i) Application to Developed Areas
(ii) Application to New Areas
(c) Summary and Conclusions

PART C. LEGAL ASPECTS OF PROVIDING OPEN SPACE

IV. LEGAL TOOLS AFFECTING THE ACQUISITION OF OPEN SPACE 68

(a) Introduction
(b) Bequests, Donations and Gifts
(c) Purchase
(i) Purchase and Leaseback
(d) Expropriation
(e) Excess Condemnation
(f) Subdivision Grants
(g) Official Plans and Urban Renewal
(h) Restricted Development
(i) Scenic Easements and Development Rights
(i) Greenbelt Statute
(ii) Open Space Statute
(j) Zoning
(k) Taxation as a Supplemental Method of Land Use Control
(i) Exemptions
(ii) Preferential Assessment and Tax Deferrals
(l) Conclusion

PART D. CONCLUSION

V. SUMMARY AND CONCLUSIONS 110

(a) Standards, Model and Legislation: An Evaluation
(b) Lines of Further Research

APPENDICES 118

BIBLIOGRAPHY 155

LIST OF TABLES

Table		Page
I.	Classification of Park Areas	9
II.	Examples of Facilities Found in Units of Classification Applicable to Study	10
III.	National Recreation Association Standards for Park Areas	14
IV.	Application of NRA Standards to Nashville, Tennessee	16
V.	Community Programs Division Standards for Park Areas	17
VI.	Application of CPD Standards to Kitchener-Waterloo	19
VII.	Statistics for Hypothetical City	42
VIII.	Proposed Acreages for Hypothetical City . . .	43
IX.	Municipal Park System for Hypothetical City .	44
X.	Legal Tools for Preserving Open Space	71
XI.	Population Statistics for Kitchener-Waterloo .	133

LIST OF FIGURES

Figure		Page
1.	Neighbourhood Parks	34
2.	Community Parks	35
3.	Neighbourhood and Community Parks	36
4.	Regional Parks and Natural Areas	39
5.	Municipal Park System	40
6.	Grid Used in Applying Locational Model to Kitchener and Waterloo Area	54
7.	Major Variables Affecting Location of Parks in Kitchener-Waterloo	55
8.	Theoretical Location of Units of Municipal Park System of Kitchener-Waterloo	59
9.	Actual Location of Units of Municipal Park System of Kitchener-Waterloo	60
10.	Example of How Locational Model Can Be Used to Establish Area for a Proposed Park	65
11.	Graph of Population Densities on Semilog. Paper	132

LIST OF APPENDICES

Appendix		Page
A.	Determination of Hexagonal Grid Used in Municipal Park System	119
B.	Inventory of Open Space and Park Facilities in Kitchener-Waterloo	121
C.	Commercial and Industrial Uses Permitted Under Zoning By-law 1108	126
D.	Population Density Map	128
E.	(a) Canadian Legislation Affecting the Acquisition of Land for Open Space . .	136
	(i) Federal Legislation	
	(ii) Provincial Legislation (Ontario)	
	(iii) Municipal Legislation (Kitchener-Waterloo)	
	(b) United States Legislation Affecting the Acquisition of Land for Open Space . .	151
	(i) Federal Legislation	
	(ii) State Legislation (New York and California)	

ACKNOWLEDGMENTS

The author is deeply indebted to the many persons who gave so freely of their time and thoughts to assist in the preparation of this thesis. Particular thanks is offered to Mrs. L. Pierce, Secretary of the Geography Department, for her assistance in preparing the initial draft; Miss R. Richter and Messrs. J. Wilgar and W. Stauch for their assistance in preparing the inventory of facilities; Mr. J. R. Guy, LL.B., for his evaluation and criticism of the legal aspects; Dr. H. A. Whitney for his many ideas concerning methodology; the Treasury Department of Ontario, Regional Development Branch under the direction of Dr. Richard S. Thoman, who provided a much appreciated research grant; and Mr. K. McCleary, fellow M.A. student, who acted as an excellent "sounding board" for ideas in the initial stages.

Special thanks are offered to Professor George B. Priddle, my thesis advisor, for his guidance, encouragement and constructive criticism, which were vital to the completion of this thesis.

Finally, my wife Shirley, whose understanding and encouragement were invaluable.

D. Carman Wilson

INTRODUCTION

The demand for outdoor recreation is undergoing a significant increase.[1] There are three basic factors underlying this change in demand and they are the increases in population, leisure time, and mobility. The increase in leisure time and mobility will result in a greater demand for resource based and intermediate outdoor recreational facilities as people will have more time, as well as the means, to travel to these areas.[2] This does not negate the need for user oriented facilities.

As early as 1900, it was fully realized that planning for open space in which to provide outdoor recreation was an integral part of community planning. This realization found expression in the Burnham Plan for Chicago of 1911, in which it was stated that "endless multiplication of factories, stores and dwellings makes little sense, and that simple outdoor pleasures are necessary for working and

[1] Clawson & Knetsch, Economics of Outdoor Recreation, pp. 11-26.

[2] Based on Clawson's classification of outdoor recreational areas. Resource Based: - usually located a considerable distance from most users in association with outstanding recreational resources. Intermediate: - usually located closer to potential users (within one day's drive) on best resources available. User Oriented: - very close to users on whatever resources are available. Clawson & Knetsch, Economics of Outdoor Recreation, pp. 36-37.

living in the city."[3] This type of concern gave rise to the concept that outdoor recreation contributes to the social good of the individual through mental and physical health. Just how much outdoor recreation actually contributes to the mental and physical health of the individual is debatable; however, it is stated in the National Survey of Recreation in Canadian Communities that a major consideration in locating industry is the availability of recreational facilities that will supply "the necessary outlets for 'off the job living' to produce satisfactory 'on the job performance.'"[4]

As desirable as the provision of outdoor recreational facilities may be, their provision has not kept pace with the existing demand. As pointed out by the Honourable J. R. Dymond, Southern Ontario is sadly lacking in outdoor recreational facilities.[5] Based on data collected by the Conservation Council of Ontario, he pointed out that there should be ten acres of "readily accessible" parkland for each one-thousand population. Based on the population figures of 1961, this works out to be approximately forty-two thousand acres of parks available in the belt stretching from Oshawa to St. Catharines around the western end of Lake

[3]U. S. Outdoor Recreation Resources Review Commission, Study Report No. 27, p. 16.

[4]Canada, National Survey of Recreation in Canadian Communities, p. 7.

[5]Dymond, Land Use Planning, p. 535.

Ontario. In 1961, there were approximately three thousand acres of parks available in this same area. The rate at which urban centres are expanding into the "tranquil" countryside provides great cause for concern in terms of preserving and providing open space. It is not enough to say "preserve this piece of land for recreation"; caution must be taken to carefully assess and research the extent of the recreational facilities in light of society's needs and the existing demand-supply situation. In this light, a series of questions arise and they must be answered. How much land is required to meet the demand for outdoor recreation? Will the facilities that can be provided on the land already available help to satisfy that demand, or just add to an already existing overabundance of a particular facility? Once it has been determined how much land is required, a series of questions involving the acquisition of this land come to light. As an urban centre expands, the competition for land becomes very keen, and this in turn leads to high land prices. In this light, it must be determined if it is wiser to buy cheaper land that lacks the ideal location for recreational purposes before the prices become prohibitive, or should the more expensive land possessing a better location be purchased before the price goes higher or before it is put into an economic use incompatable with open space development? Should the price of land be controlled? Should there be some method of setting land aside for outdoor recreation without actually purchasing it? Although this piece

of research is not primarily concerned with the economics of purchasing land, one must be cognizant of the problems involved if a complete assessment is to be made of the legal tools, incorporated within existing legislation, for acquiring land for outdoor recreation.

The legal and legislative problems associated with the acquisition of land for open space gives rise to another series of questions. Is the existing legislation sufficient to provide the necessary open space for outdoor recreation within the urban environment? Is it cognizant of the real and potential demand for outdoor recreation? Based on the crowded conditions of most facilities, it is safe to assume that it is not. Existing legislation must be analyzed and changes suggested, changes that will increase the capability of legislation to acquire land with which to satisfy the demand for open space in the urban area. In light of this open space demand, what legal tools are available, and how can they best be utilized to provide land for outdoor recreation that is "readily accessible" to the urban population?

Before a complete assessment of the existing legislation as it affects the acquisition of open space can be made, the capabilities of this legislation to provide sufficient land to satisfy the requirements of existing open space standards must be determined. To accomplish this, an optimum parks system for a hypothetical city will be outlined. Such a model will be based on the existing open

space standards for urban areas as set down by the Community Programs Division of the Department of Education for the Province of Ontario, and the National Recreation Association of the United States. This municipal parks model will be applied to a study site to assess the municipal park system for the area in question. Such a model would serve as a device for determining to what extent open space standards, in terms of location and quantity, are realized within a municipality. If, in fact, there are major discrepancies between the actual and the theoretical, then the question of enabling legislation can be investigated to determine just to what extent legislation is an explanatory variable.

The segment of the real world that has been selected for the application of the model is the "Twin Cities" of Kitchener-Waterloo. This site was selected because of its accessibility to the author, its familiarity, and the excellent cooperation of officials within the governmental structure. More important, however, is the fact that Kitchener-Waterloo has undergone tremendous growth during the post-war years. As such, it is highly representative of the urban sprawl that is being experienced throughout North America and as Doxiadis has pointed out, this area is in the heart of what will be a future Megalopolis.[6]

[6]Conversation with Dr. E. Pleva, University of Western Ontario, March 18, 1968.

PART A

STANDARDS FOR PARKS

CHAPTER I

STANDARDS AND CLASSIFICATION OF PARK AREAS

(a) Problems Associated with Standards

Standards, as they apply to open space for outdoor recreation, are, for the most part, based on arbitrary empirical evidence. A thorough search of the literature pertaining to such standards has failed to uncover any research done prior to the development of standards.

The standards for outdoor recreation in urban areas are based on a specific area per base population within a predetermined distance and with some provisions for preserving areas of exceptional scenic or topographic value. However, as pointed out by the Community Programs Division, such a basis for standards of this nature is questionable.

> This standard which links size of area to the number of people who live in a community is open to question. A degree of flexibility should be used; other factors such as age, income, education, occupations and mobility of the population should be considered.[7]

Many socio-economic factors do affect the demand for outdoor recreation.[8] The Outdoor Recreation Resources Review Commission has pointed out in their studies that the

[7] Ontario, Standards and Definitions of Terms, p. 8.

[8] For these socio-economic factors see U. S. Outdoor Recreation Resources Review Commission, Study Report No. 26, pp. 27-32.

most important socio-economic factors affecting the demand for outdoor recreation are age, income, education, and occupation.[9] The incorporation of these four factors into the standards would serve to make them more representative of the demand than they are at present.

Due to this emphasis on acres per specific number of persons with the provision for preserving areas of exceptional physical quality, existing standards tend to be physically deterministic, particularly in the case of natural areas. In this respect they are similar to the ARDA classification in the Canada Land Inventory.[10] Classifications for such areas should have physical institutions, and, in this respect, factors such as topographic value and scenic amenities should be considered. However, these factors must be considered in conjunction with the factors affecting demand if the flexibility necessary to satisfy a constantly changing demand is to be incorporated into the standards.

(b) Classification of Park Areas

In Canada and the United States there are two major agencies involved in the classification of parks for urban areas. These are the Community Programs Division of the Department of Education for the Province of Ontario (CPD) and

[9]U. S. Outdoor Recreation Resources Review Commission, Study Report No. 26, pp. 27-32.

[10]Canada, Land Capability Classification for Outdoor Recreation.

TABLE I

CLASSIFICATION OF PARK AREAS

Type of Park	Remarks
Neighbourhood	Serve people within neighbourhood - approximately 5,000 persons. Should be within walking distance of all sectors of neighbourhood. Should be developed to meet the interests of that specific area of the municipality.
Community	Serve people within community - approximately 25,000 persons. Accessible by public transport. Large enough to accommodate all types of recreation activities.
Regional	Large, somewhat specialized areas serving the people within a large region - approximately 60,000 persons. May serve more than one municipality.
Specialized Areas	Designed for a special purpose.
Private	Privately owned areas for commercial or membership purposes.

SOURCE: Community Programs Division of the Department of Education for the Province of Ontario.

TABLE II

EXAMPLES OF FACILITIES FOUND IN UNITS OF CLASSIFICATION APPLICABLE TO STUDY

Type of Park	Example of Facilities
Neighbourhood	Parkette Boulevard Tot Lot Local Park Elementary School Play Area Combination Elementary School Play Area and Neighbourhood Park
Community	District Park Athletic Field Secondary School Playfield Combination Secondary School Playfield and Community Park
Regional	Major City Park County Park Conservation Authority Land Provincial Park

SOURCE: Community Programs Division of the Department of Education for the Province of Ontario.

the National Recreation Association of the United States (NRA). So far as can be determined, the only significant difference between the two agencies' standards is nomenclature. The CPD refers to the components of a municipal park system as neighbourhood parks, community parks, and regional parks; whereas the NRA refers to them as playgrounds, playfields, and large urban parks. This study will utilize, for the most part, the CPD classification (see Table V). However, as the CPD classification was derived largely from the NRA classification, the latter will be incorporated to provide a more explicit definition of the standards affecting any one element of the classification when required.[11]

The utilization of the CPD classification and standards for urban park areas is based on the fact that these standards have been incorporated by many municipalities throughout Southern Ontario, including Kitchener-Waterloo.[12]

(c) Existing Standards

Existing standards make provision for both active and passive areas within the confines of any one park. A question arises as to the compatability of these two types of recreational activities within the one park. In terms

[11]Conversation with P. McGarrity, Community Programs Division, April 23, 1968.

[12]Conversation with P. McGarrity, April 23, 1968. Also, Kitchener, Ten Year Plan, pp. 2-4; Waterloo, Parks and Open Space, pp. 27-30.

of the optimum use of a land facility and the economics of land purchase, multipurpose areas incorporating both active and passive activities are the most practical to develop. More important, however, is the fact that the Outdoor Recreation Resources Review Commission found that most people prefer to have facilities for active outdoor recreation provided in conjunction with certain passive pursuits. It was discovered that most people would like to have facilities for such activities as hiking, cycling, horseback riding, boating, swimming, and playfields containing such areas as ball diamonds and tot lots within or close to an area providing picnic facilities.[13] In view of the foregoing, this study will be concerned with the provision of multipurpose areas within the municipal parks system.

The question of relative ease of access presents no problem in terms of neighbourhood and community parks; however, there is room for debate with respect to regional parks. The CPD points out that such facilities should be located as centrally as possible within the area being served. In all cases, they should be placed where they can be reached easily and safely by most people.[14] The NRA defines this a little more explicitly by stating that such a facility, the large urban park, should be designed to serve an area of three miles or more and should be within or on

[13]U. S. Outdoor Recreation Resources Review Commission, Study Report No. 19, pp. 46-47.

[14]Ontario, Standards and Definitions of Terms, p. 3.

the periphery of the urban area being served (see Table III).

It must be remembered that such areas are designed to provide recreational facilities for the urban populace and a large percentage of this population lacks the mobility and/or the disposable income to journey to the more distant recreational areas such as Provincial and National Parks. A two-universe concept is in existence here: the people of "suburbia" and those of the interior part of the city. The people of suburbia, for the most part, possess mobility and disposable income, and residing on the periphery of the urban centre, or close to it, have reasonably good access to the open space areas of the countryside. However, such is not the case with those living within the interior of the urban centre. These are, for the most part, people in the lower income groups who often rely on public transit for their transportation needs, thereby limiting their degree of mobility. Also, these areas are largely high density areas and, as such, open space is at a premium. Therefore, based on these determinants, the author has arbitrarily decided that, for the purposes of this study, the location of regional parks will be based on a three mile radius (see Chap. III [b]).

(d) Similarity of Standards

There are a variety of standards being used at the present (see Tables III to VI). These standards are based

TABLE III

NATIONAL RECREATION ASSOCIATION STANDARDS FOR PARK AREAS

Type of Park	Size	Area	Service Area	Location	Function
Playground	6 acre minimum	1 to 2 acres per 1000 persons depending on shape and intensity of development	Approximately ½ mile radius or 1 square mile neighbourhood, same as elementary school	Preferably adjoining elementary school near centre of neighbourhood	Mostly active areas with some passive areas
Playfield	15 to 25 acres	1 to 2 acres per 1000 persons with at least 1 acre active play area per 1000 persons	Approximately 1 mile radius or 4 to 5 neighbourhoods. Similar service area to high schools	At or near intersection of major or secondary thoroughfares near centre of service area	Active areas including athletic field and playground facilities. Larger percentage devoted to passive
Large Urban	Minimum of 100 acres preferably several hundred acres	Approximately 5 acres per 1000 persons	3 miles or more with good accessibility by auto. One area for each 50,000 to 100,000 persons	Where appropriate land can be obtained incorporating natural features within urban area or on periphery	Active athletic areas similar to playfield but at least ½ of area should be passive. May contain such specialized areas as golf courses

TABLE III (cont'd.)

Type of Park	Size	Area	Service Area	Location	Function
Reservations and Preserves	Several hundred to a thousand or more acres	10 acres per 1000 persons. May include some close in regional areas	Entire Urban area	Usually on fringe of urban development at appropriate sites	Rustic and wild areas, camping, hiking, nature trails, etc.

SOURCE: Doell, Elements of Park and Recreation Administration.

NOTE: Balance of 2 acres of developed parkland comprised of parkways and ornamental areas.

TABLE IV

APPLICATION OF NRA STANDARDS TO NASHVILLE

Type of Park	Size	Area	Service Area	Location	Function
Playground	7 to 15 acres	1 acre per 400 persons	Neighbourhood, $\frac{1}{4}$ to $\frac{1}{2}$ mile radius	Centre of service area in association with elementary school	50% active (tot lot, etc.), 50% passive
Playfield	25 to 40 acres	1 acre per 400 persons	Community 1 mile radius	Centre of service area in association with high school	50% active (playground, etc.), 50% passive
Large Urban	100 acre minimum	2 acres per 400 persons	Metropolitan sector	Centrally located or on periphery of urban area with good access by auto and bus	Primarily passive with some natural areas.* May possess playfield facilities if area permits

Geographical Divisions: 1) Urban Planning Unit (neighbourhood) . . . . . 2,000 persons
2) Urban Community (4-5 neighbourhoods). . . . . 10,000 persons
3) Metropolitan Sector . . . . . 20,000 minimum

SOURCE: Nashville, Recreation Space 1980: A Community Facilities Plan for Parks and Recreation Areas.

* Part of the passive area should be left in a natural state to help satisfy the requirements for such areas. Most of the natural areas are provided by larger regional and state parks.

TABLE V

COMMUNITY PROGRAMS DIVISION STANDARDS FOR PARK AREAS

Type of Park	Area	Service Area	Location	Function
Neighbourhood	1 acre per 1000 persons	Neighbourhood of approximately 5000 persons	Centre of service area in conjunction with elementary school	Primarily active (tot lots, etc.), with passive where area permits
Community	2 acres per 1000 persons	4 to 5 neighbourhoods, approximately 25,000 persons	Centre of service area in conjunction with high school	Balanced between active and passive
Regional	7 acres per 1000 persons	Urban areas of approximately 60,000 persons	As centrally as possible within the urban area or on the periphery	Multipurpose unit containing active, passive and natural areas. Predominantly passive
Natural Areas	10 acres per 1000 persons	Entire urban area	On periphery of service area	Primarily passive areas (nature trails, etc.). May be held as potential parkland

SOURCE: Community Programs Division of the Department of Education for the Province of Ontario.

NOTE: The size of any one facility is determined by the population of the service area.

largely on the concept of twenty acres of parkland per every one thousand persons. This twenty acres is divided into two categories: the first category being ten acres of developed active and passive parkland per one thousand population. The second category is ten acres of undeveloped or "natural" parkland per one thousand population devoted to passive areas or to potential parkland areas. There is no rule of thumb as to just how much acreage is set aside for potential areas as this will vary with the total acreage of natural areas that may be available within the developed part of the system. However, the standards do outline that most, if not all, of the twenty acres should be found within or with relative ease of access to the urban area being served (see Tables III and V). This relative ease of access has been defined, within the NRA standards, as being on the periphery of the area (see Table III) and, it would seem, that the CPD has accepted this definition.[15]

(e) Differences of Standards

As mentioned earlier, there is very little difference to be found in the standards set down by the NRA and CPD other than in the nomenclature. Slight differences are encountered when the application of these standards to specific areas are studied. In looking at their application to Nashville and Kitchener-Waterloo (see Tables IV and VI) it

[15]Conversation with P. McGarrity, Community Programs Division, April 23, 1968.

TABLE VI

APPLICATION OF CPD STANDARDS TO KITCHENER

Type of Park	Size	Area	Service Area	Location	Function
Neighbourhood	8 acre minimum if not in conjunction with school, 13 to 18 acres if with school	1.5 acres per 1000 persons	Radius of ¼ to ½ mile. Neighbourhood of approximately 5000 persons	Centre of service area in conjunction with elementary school with no arterial routes to cross	Primarily active with passive where area permits
Community	20 acre minimum if not in conjunction with school, 40 acres minimum if with school	1.5 acres per 1000 persons	Radius of 1 mile. Community of approximately 25,000 persons	Centre of service area in conjunction with high school on public transportation route	Includes all types of recreation activities
Regional	Minimum of 50 to 100 acres	7 acres per 1000 persons	Designed to serve 50,000 to 60,000 persons	Centrally as possible or on periphery. May be developed in conjunction with conservation area	Multipurpose area with some natural areas

TABLE VI (cont'd.)

Type of Park	Size	Area	Service Area	Location	Function
Natural Areas	100 acre minimum	10 acres per 1000 persons	Entire Urban area	On periphery with easy access by auto	Natural or undeveloped. Used as passive area or potential recreation land

SOURCE: Parks and Recreation Department for the City of Kitchener.

NOTE: The City of Waterloo uses similar standards except for a 1:2:7 ratio for area.

is seen that the actual acreage devoted to any one park varys from those set down by the larger agencies and that they each vary one from the other. It will also be noted that in the case of Kitchener-Waterloo, the location of the various parks within the system, particularly the neighbourhood and community parks, is more explicitly stated (see Table VI). There are also some slight differences in the facilities provided by a park within any one of the municipal park systems outlined. This difference, though, seems to be more pronounced between the large urban park of the NRA and the regional parks of the CPD. On the whole, however, there is no really significant differences among the various standards (see Tables III to VI).

(f) Need for Device to Determine Demand for Outdoor Recreation

The preceding discussion has served to point out the fact that the need is not for new standards, but rather for academic research from which a device or model for determining the demand for outdoor recreation can be established. As pointed out, existing standards are inflexible and, as such, are incapable of meeting the real and potential demand for outdoor recreation. Serious consideration must be given to the factors that can, and do, affect this demand if any attempt is to be made to satisfy it. Also, it is conceivable that the strength of any one of these de-

mand factors can vary from municipality to municipality. To allow for any degree of fluctuation within one or more of these variables, the device for determining demand must be constructed such that the factors affecting demand can be weighted in a manner that a demand representative of the needs and desires of the people would result. The creation of such a device is possible only through very thorough academic research of existing demand and the degree to which each variable affects the demand for outdoor recreation within a specific community. The end result of this research would be a "demand model" that could be applied to any municipality enabling the development of standards that would meet the demand of that municipality for outdoor recreation for that particular period in time.

In conjunction with this model, there is a need for a conceptual framework to guide research along these lines: a framework that would overcome any interdisciplinary problems that may arise. Such an interdisciplinary approach to the planning of urban outdoor recreational facilities can be seen in an article by Perloff and Wingo entitled Urban Growth and the Planning of Outdoor Recreation.[16] This article considers outdoor recreation within a "systems" framework. There are three basic elements involved in the system: the recreation public, the activities, and the facilities. Such a system must be subjected to some form

[16]U. S. Outdoor Recreation Resources Review Commission, Study Report No. 22, pp. 81-100.

of analysis and in order to accomplish this, two basic steps are involved. First, the nature of the elements that comprise the system must be thoroughly investigated and, secondly, the interaction that exists between these elements must be explored. This type of research could be carried out to determine the ability of a municipal park system to meet the demands of the inhabitants for outdoor recreation. In terms of standards and the creation of them, some modifications would be necessary. In the type of model being suggested here, the elements would be composed of the factors that affect the demand for outdoor recreation as outlined earlier: age, occupation, education, and income. Once the data was collected with respect to these factors, they could then be analyzed to determine to what extent each one affects the demand for outdoor recreation within the municipality in question. To what extent does the age of an individual affect his participation in outdoor recreation, and what effect does it have on the type of activity he wishes to participate in? The analysis of each of these factors would determine which elements are to be weighted. The extent to which they should be weighted would be determined by the degree of interaction that exists between the elements. Does the education of an individual alter the types of activities he may engage in, and the frequency of participation you would expect to find for an individual within a specific age group?

Once the nature of these elements had been analyzed

and their interaction explored, they could then be inserted into the model to produce a set of standards that would best satisfy the demands of the people in a given community for a specific period in time. With the existence of such a model, it would be possible to review these standards periodically and make the necessary changes to meet a dynamic demand.

The author has attempted to point out that existing standards may not be adequate to meet the continually increasing and changing demand for outdoor recreation within the urban community. The only manner by which the degree of inadequacy can be determined is through extensive research of the factors affecting demand. If the standards are inadequate this condition will be magnified as time goes on because of their inherent inflexibility. Existing standards must, then, be subjected to considerable review if they are to satisfy the real and potential demand for outdoor recreation within the urban area.

PART B

APPLICATION OF STANDARDS

CHAPTER II

MODELS AND MUNICIPAL PARK SYSTEMS

(a) Introduction

Models have evolved as tools by which man attempts to understand the complex relationships that exist in the world around him.

> The traditional reaction of a man to the apparent complexity of the world around him has been to make for himself a simplified and intelligible picture of the world. "He then tries to substitute this cosmos of his own for the world of experience, and thus overcome it." The mind decomposes the world into a series of simplified systems and thus achieves in one act an overview of the essential characteristics of a domain.[17]

Such a system is simplified to the extent that variables and relationships irrelevant to comprehending the segment of the real world being systematized are eliminated. The resulting system is, thus, bounded by specific parameters which in turn tend to exaggerate the "unity" of the system and the "structural interdependence" of the elements.

> The mind needs to see the system in opposition and distinction to all others; therefore the separation of the system from others is made more complete than it is in reality. The system is viewed from a certain scale; details that are too microscopal or too global are of no interest to us. Therefore they are left out. The system is known or controlled within certain limits of

[17] Chorley and Haggett, Models in Geography, p. 22. A system is defined, by Webster's Dictionary, as "a regularly interacting or independent group of items showing a simplified whole."

> approximation. Therefore affects that do not reach this level of approximation are neglected. The system is studied with a certain purpose in mind; everything that does not affect this purpose is eliminated. The various features of the system need to be known as aspects of one identical whole; therefore their unity is exaggerated. According to this view, reality exists as a patterned and bounded convexity which has been explored by the use of simplified patterns of symbols, rules and processes. The simplified statements of this structural interdependence have been termed "models."[18]

A model, then, is "a simplified structuring of reality which presents supposedly significant features or relationships in a generalized form."[19] The term model is used in different ways.

> The noun "model" indicates a representation in the sense that an architect constructs a small scale model of a building. . . . The adjective "model" implies an idealized display as in the case of a model home, or some sense of perfection. . . . The verb "model" is used in the sense of "to demonstrate" or "to reveal," to show what something is like.[20]

In the manner that they are being used here, models possess all these properties.

It is generally accepted that there are three basic types of models. The iconic model, which is a representation of the real world which differs in terms of scale; the analogue model, which may incorporate the features of the iconic model, usually involves the representation of one property by another, an anology; and the symbolic model, wherein symbols are used to represent the properties of the

---

[18]Chorley and Haggett, Models in Geography, p. 22.

[19]Ibid., p. 22.

[20]Berry, Commercial Structure and Commercial Blight, p. 105.

real world being incorporated into the model. This symbolic model becomes a methematical model if the symbols used are given a numerical value.[21] Because all models possess the common property of differing from the real world they are, in a sense, analogies.

The use of models here was influenced by three characteristics. The first is selectivity; the model builder is able to select that data which is relevant to the study and, by the same token, he is able to eliminate irrelevant data which is commonly referred to as noise. In this respect, the model is a simplification of the real world. However, one is to be cautioned against oversimplification as it tends to reduce the value of the model. The second characteristic is ease of use. A model is much easier to use and manipulate than the real world. A model is a scaled representation of the real world with noise at a minimum which enables a fuller understanding of the relationships affecting the phenomena under study. The third characteristic involved in this selection was that of potential use. Once developed, a model is useful in explaining why the real world differs from the idealized as represented by the model. It may also be used to control future development such that the real world may closer approximate the idealized. This last characteristic has particular relevance with respect to the model that will be developed on the

[21]Berry, Commercial Structure and Commercial Blight, p. 106.

following pages. One of the primary functions of this model is that of locational analysis. Where is the optimum location for the phenomena under study? This is the type of locational analysis that should be done in conjunction with the economic base studies of a region. It is not enough to state that an area should have so many acres devoted to a particular activity. It is equally important to point out where this activity should be located. Such analysis is a major first step in the development of a land use plan which many planners feel is so vital to future development in Southern Ontario.[22]

The general aim of the model builder is to

> . . . reformulate some features of the real world into a more familiar, simplified, accessible, observable, easily-formulated or controllable form, from which conclusions can be deduced, which, in turn, can be reapplied to the real world.[23]

According to Chorley and Haggett, this reapplication of the conclusions derived is a "basic prerequisite for models in the empirical sciences."[24]

Within this study, a model of a park system based on existing CPD and NRA standards will be developed for a hypothetical city. The resultant model will then be applied

[22]Conversations with B. Turnbull, Waterloo Planning Department, September 12, 1968; D. Mari, Kitchener Planning Department, September 17, 1968; and S. Thorsen, Waterloo Area Planning Board, May 11, 1968.

[23]Chorley and Haggett, Models in Geography, p. 24.

[24]Ibid. See also, Chorley, Geography and Analogue Theory, pp. 42-43.

to the study site, a segment of the real world, to determine a park system for Kitchener-Waterloo based on existing standards. The actual model will incorporate the features of both the analogue and symbolic models, but, to some extent, it will also be a mathematical model as actual distance values will be used. The model will be a theoretical deductive model based on Christaller's Central Place Theory and the resultant model, as well as existing standards. Christaller's work has been viewed as "'general deductive theory' to explain the 'size, number and distribution of towns'; in the belief that there is some ordering principle governing their distribution."[25]

Models of the urban structure "assume a measurable degree of order in spatial behavior."[26] A park system is an integral part of that urban structure. In discussing the premises underlying this assumption, Chorley and Haggett point out that, in general, Losch's concept of "law of minimum effort" affects location within the urban system. The idea underlying this concept is that the frictional effect of distance should be kept to a minimum when planning the location of facilities within the urban structure. Such a concept has application when planning the location of parks as well as the location of economic facilities. The question now arises, of those who frequent parks, as to just how far one is willing to travel to partake of a particular

[25]Chorley and Haggett, Models in Geography, p. 307.
[26]Ibid., p. 304.

recreation experience. The answer to such a question is not an issue at this point, as within the terms of the model, distance is predetermined by the standards being used. However, the factors affecting the question of distance should receive serious consideration when the standards are subjected to academic research as outlined earlier (see Chap. I [f]).

Chorley and Haggett go on to point out that "human activity is essentially hierarchial in character."[27] This hierarchial character is expressed in terms of accessibility in that the larger units of the system are located in areas of greater accessibility. Such a characteristic is in keeping with both the CPD and NRA standards which emphasize accessibility as a major prerequisite for location. This tends to suggest the possibility of a hierarchy of parks within the system. A review of the standards indicates two other possible forms this hierarchial structure could possess. It could be expressed in terms of function or in terms of area served. Evidence of a functional hierarchy is seen in that each park unit possesses all the characteristics and provides most, if not all, of the functions of each unit preceding it in the classification. However, a hierarchy in terms of the area being served by any one unit is not as evident. This is due to the fact that this area of park structure does not follow either an arithemetic or geometric progression in that there is a

[27]Chorley and Haggett, Models in Geography, p. 305.

large increase in the area served by regional parks over that of the neighbourhood and community parks. Despite this, evidence of the hierarchial structure is present in that each larger unit of the system is designed to serve a set number of smaller units with respect to both area and population. With reference to the model to be developed, such a hierarchy would be a combination of function and area served, as accessibility is assumed to be uniform throughout the entire area of the hypothetical city.

(b) Model for Determining Location of Units Within Municipal Park System

The purpose of the model is to develop a municipal park system, based on existing standards, for a hypothetical city under the assumption of an isotropic surface. That is, the system will be developed under the conditions of uniform population distribution, uniform accessibility to all units of the system, no pre-existing political boundaries, uniform topography, and no areas zoned for an economic function considered to be incompatible with park development.

The actual location of the parks within the system are determined by the distance factors as outlined in CPD and NRA standards. Accordingly, any individual should be within one-quarter to one-half mile of a neighbourhood park, assuming that the population density is sufficient to warrant the creation of such a park. Using one-half mile as

the radius, a hexagonal grid was established in order to discern the area served by any one unit within the system.[28] The hexagonal-shaped polygon was used as they provide "the most economical form for the equal area division of an area between a number of points."[29] A neighbourhood park unit is to be found in the centre of each hexagon and the resulting system, referred to as P=1, wherein one-half mile is the radius of the hexagon used to represent the area served by any one neighbourhood park is shown in Figure 1.

Using the same method, a similar grid was established for the community parks. The standards state that a community park is designed to serve four or five neighbourhoods, which would place a community park within approximately one mile of any individual within the service area. Based on this, a radius of one mile was used to establish the grid for the community park system, and is referred to as P=2 (see Fig. 2). The community park system (P=2) superimposed on the neighbourhood park system (P=1), serves to illustrate the hierarchial nature of these facilities (see Fig. 3).

In a hierarchy wherein some of the smaller units of a lower tier are replaced by larger units of a higher tier, assuming the units of the higher tier possess all the functions of the units of lower tiers, some leakage from the lower tier units to those of the higher tiers will occur.

[28]For complete explanation of development of hexagonal grid see Appendix A.

[29]Haggett, Locational Analysis in Human Geography, p. 49.

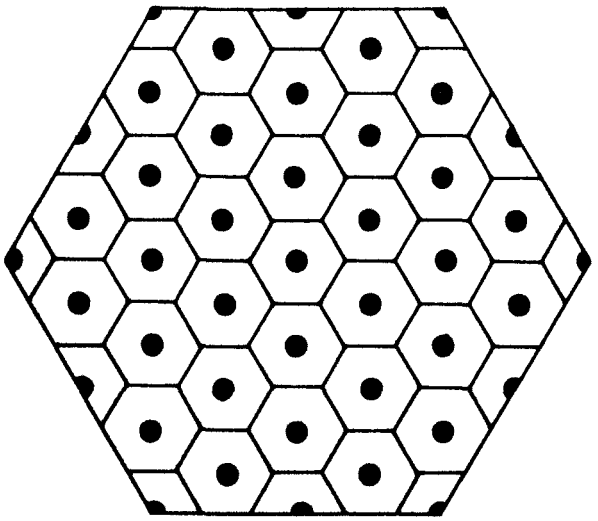


FIGURE 1

NEIGHBOURHOOD PARKS

P = 1

● NEIGHBOURHOOD PARK

1 0 1 2
SCALE MILES

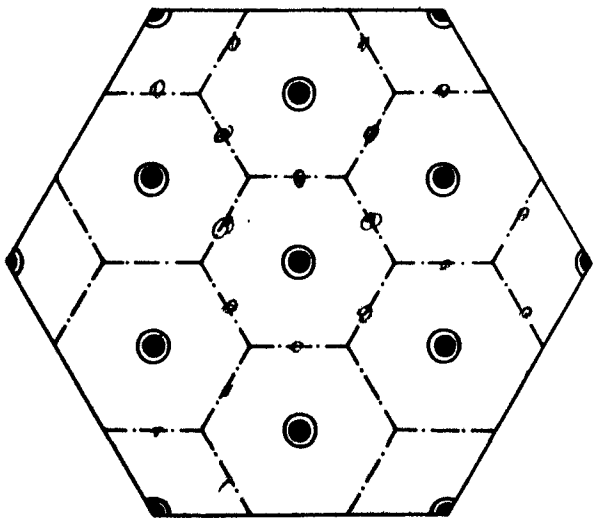


FIGURE 2

COMMUNITY PARKS

P = 2

COMMUNITY PARK

1 0 1 2
SCALE MILES

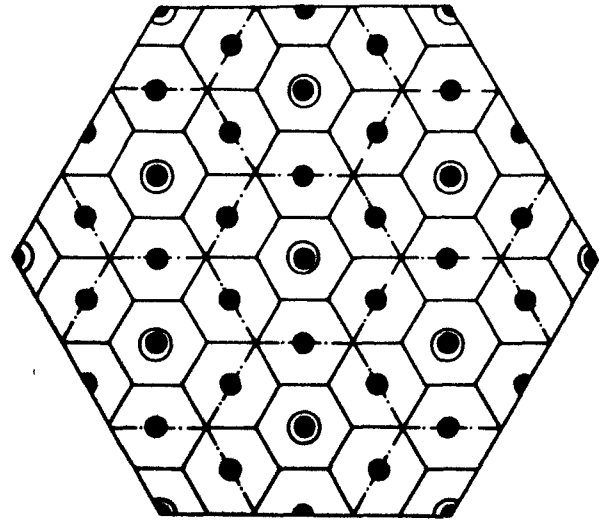


FIGURE 3

NEIGHBOURHOOD AND COMMUNITY PARKS

NEIGHBOURHOOD PARK

COMMUNITY PARK

1 0 1 2

SCALE MILES

Leakage within a municipal park system, as being developed here, would be in the form of population flows from smaller to larger units. That is, a unit of tier P=1 that has been replaced by a unit of tier P=2 will draw visitors from the other units of tier P=1 that are located within close proximity to the larger unit of the higher tier. As the distance between the smaller units and the larger ones increases, the degree of leakage will decrease.[30] However, indications of such leakage are not to be taken as justification to reduce the acreage of, or remove a unit of the lower tier from its position in the system. Although many people may prefer to visit the larger unit, not all of them will, and these people should be provided with facilities within the distances set down in the standards.

In terms of regional parks, the standards point out that they should be located as centrally as possible or on the periphery of the urban area being served. Such a park should be designed to serve approximately 60,000 persons and the NRA states that it should be located within three miles or more of the people being served. Also, both the agencies involved with the creation of these standards agree that there is more merit in establishing a series of smaller units than in creating one larger unit, unless there is an area of exceptional scenic or topographic value to be preserved. Such a procedure tends to minimize the friction of

[30]Haggett, Locational Analysis in Human Geography, pp. 103-105.

distance as well as permitting the creation of a larger number of parks in the fringe areas; areas of future urban expansion. This would improve the capabilities of a municipality to provide outdoor recreational facilities for the increasing volume of urban residents. Based on the premises established and the fact that this is an idealized situation, a three-mile radius was used to establish the hexagonal grid for the regional parks, P=3 (see Fig. 4). It will be noted that the natural areas are also incorporated into this system. Such areas, according to the standards, should be located on the periphery of the area being served. As some of the regional parks are also located on the periphery and these natural areas are designed to serve the same area, it is logical that the same locational determinants should be used for these areas. This, in no way, reduces the number of regional parks in the system as the concept of a functional hierarchy permits the natural areas to provide regional park facilities. Therefore, regional parks and natural areas are incorporated into the P=3 tier in the peripheral areas of the urban centre being served. Thus, a municipal park system for a hypothetical city assuming an isotropic surface is composed of the three tiers, P=1, P=2, and P=3, and possess a functional hierarchy (see Fig. 5).

(c) Acreage of Parks in the "Locational Model"

The acreage of any one park within a municipal park

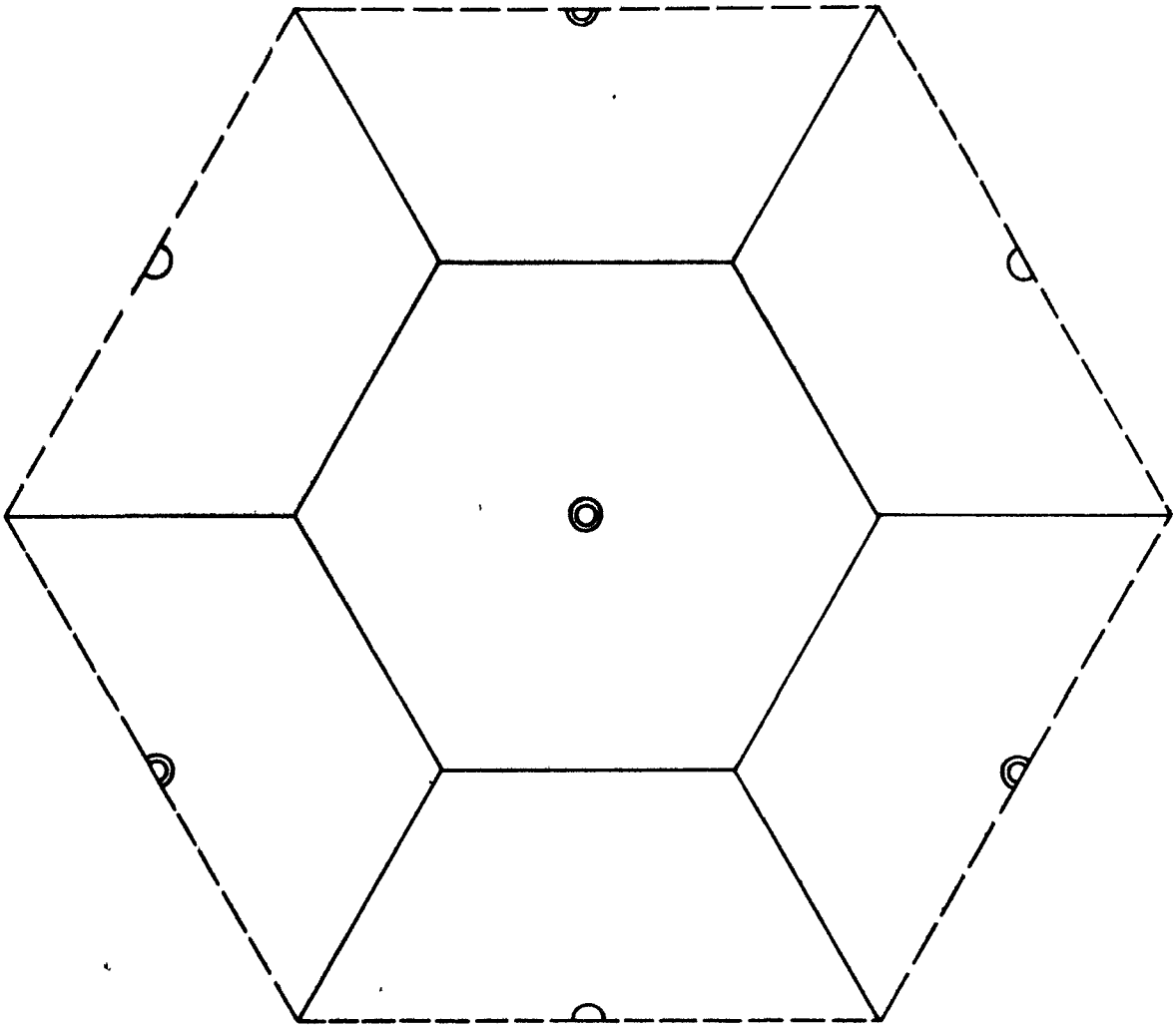


FIGURE 4

REGIONAL PARKS AND NATURAL AREAS

P=3

◎ REGIONAL PARK
○ NATURAL AREA

1 0 1 2
SCALE MILES

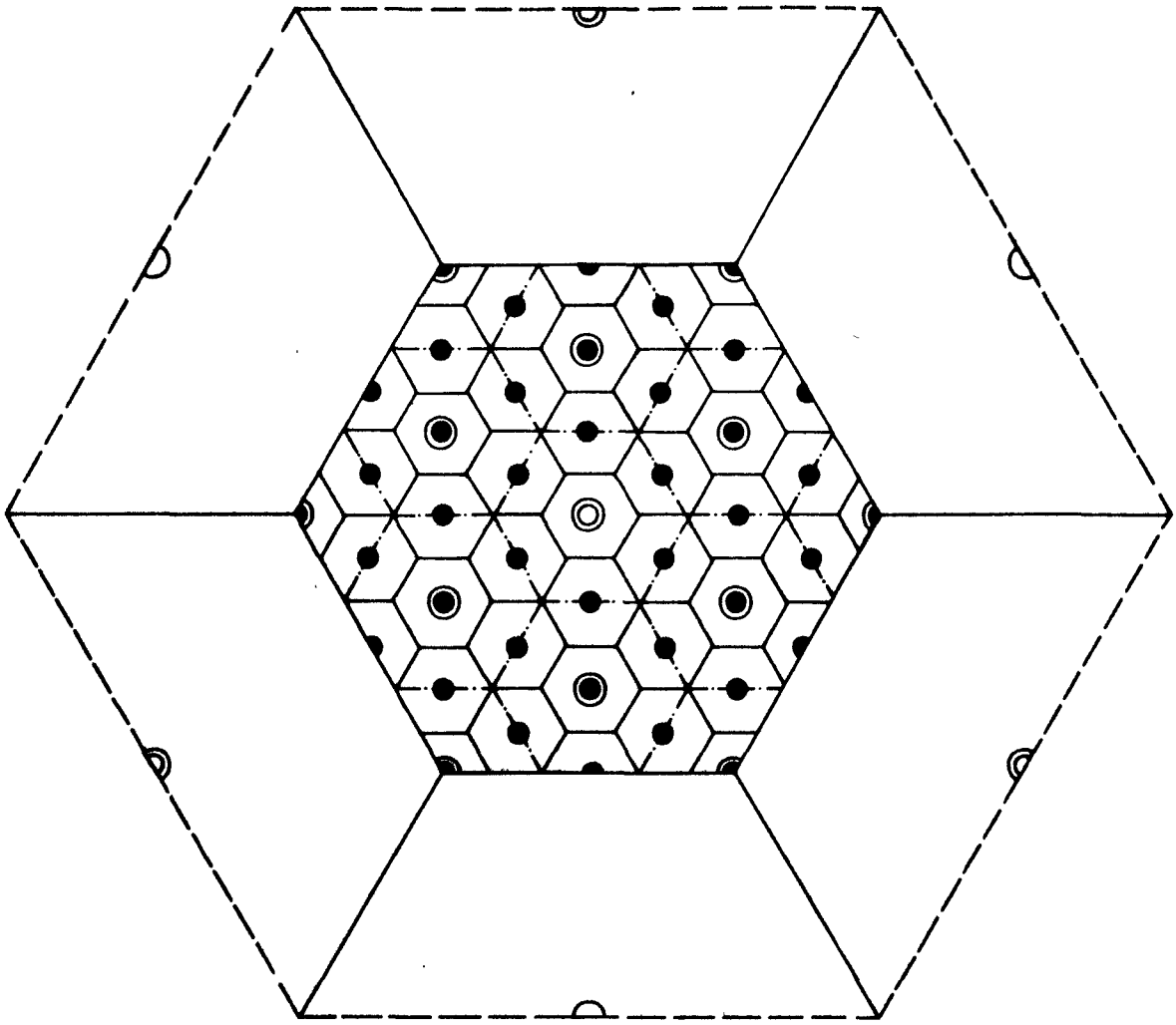


FIGURE 5

MUNICIPAL PARK SYSTEM

- NEIGHBOURHOOD PARK
- COMMUNITY PARK
- REGIONAL PARK
- NATURAL AREA

1 0 1 2
SCALE MILES

system is determined by the population density of the area it is designed to serve. The statistics for the hypothetical city (see Table VII) were based on a population density of 5,000 persons per square mile. This figure was taken from the CPD standards which state that a neighbourhood should possess approximately 5,000 persons, and the NRA standards which state that the service area for a neighbourhood park should be approximately one square mile (see Table IV).[31] However, according to Murphy, a neighbourhood may consist of approximately 500 acres with a population ranging from approximately 4,000 to 8,000 persons.[32] Therefore, a neighbourhood unit of approximately 425 acres, as represented by the hexagonal grid in Figure 1, and possessing a population of approximately 3,250 persons is in keeping with the accepted definition of a neighbourhood.

Based on these statistics and the standards as set down by the CPD and NRA, the municipal park system shown in Figure 5 should possess a total of 2,240 acres of parkland. The actual breakdown of acreages for the individual park units are shown in Tables VIII and IX. It will be noted that the total acreage devoted to neighbourhood parks is less than that outlined in Table VII. It is proposed that this "shortage" will be made up by neighbourhood park facilities that will be found within the community parks--part of

[31] Ontario, Standards and Definitions of Terms, p. 9.

[32] Murphy, The American City, p. 391.

TABLE VII

STATISTICS FOR HYPOTHETICAL CITY

Area	23.4 square miles
Total Population	117,000
Population Density	5,000/square mile
Area of Neighbourhood Unit (hexagon)	.65 square mile
Population of Neighbourhood Unit	3,250

TABLE VIII

SUGGESTED PARK ACREAGES FOR HYPOTHETICAL CITY*

Neighborhood Parks	1 acre/1,000 persons =	1 x 117 =	117 acres
Community Parks	2 acres/1,000 persons =	2 x 117 =	234 acres
Regional Parks	7 acres/1,000 persons =	7 x 117 =	719 acres
Natural Areas	10 acres/1,000 persons =	10 x 117 =	1,170 acres
		Total	2,240 acres

* Based on CPD standards (see Table V).

TABLE IX

STATISTICS FOR MUNICIPAL PARK SYSTEM FOR HYPOTHETICAL CITY

Neighbourhood Parks	30 @ 3.25 acres	=	97.5 acres
Community Parks	12 @ 26 acres	=	312.0 acres
Regional Parks	1 @ 100 acres	=	100.0 acres
	3 @ 225 acres	=	675.0 acres
Natural Areas	3 @ 400 acres	=	1,200.0 acres
	Total		2,384.5 acres

the functional hierarchy.

In keeping with this hierarchial structure, it is also proposed that the regional park located within the city will possess neighbourhood and community park facilities. The actual breakdown for this park is as follows:

Neighbourhood Park Facilities . . .	3.25 acres
Community Park Facilities	26.00 acres
Regional Park Facilities	70.75 acres
Total	100.00 acres

The basis for this figure is to be found in the fact that the minimum size, for the most part, of such a park should be approximately 100 acres. Due to the keen competition for land and the resultant high price, it is unlikely that an urban area would possess such a park in excess of this acreage.

(d) Conclusion

The foregoing has been an attempt to outline the role models can play in determining the location of the units that comprise a municipal park system. However, it must be emphasized that models, such as the one developed here, are not an end unto themselves. They are designed to permit the representation of a particular phenomena in such a manner that noise is kept at a minimum in order that the relationships that exist between the relevant elements of the phenomena under study can be better understood. As such the locational model developed is only a device that can be

used by the planner to aid in determining the optimum location of a park. In terms of existing urban areas, the model has little value other than to provide some method of determining to what extent the municipal parks system that has evolved over the years measures up to the system outlined in the model. However, in areas undergoing, or about to undergo, urban expansion, such a model can provide a useful method for determining the location of parks and in this manner it can play an important part in the decision-making process.

CHAPTER III

APPLICATION OF MODEL TO STUDY SITE

(a) Municipal Park System of Kitchener-Waterloo

The municipal park system of Kitchener-Waterloo is composed of:

Neighbourhood Parks	392.76 acres
Community Parks	131.00 acres
Regional Parks	1,824.00 acres
Natural Areas	353.34 acres
Total	2,701.10 acres[33]

These acreages include regional parks and natural areas located on the periphery of the study site (see Fig. 9). Excellent cooperation exists between the Parks and Recreation Department of Kitchener, the Community Services Board which administers the Parks and Recreation Department for the City of Waterloo, and the Public and Separate School Boards of the respective cities.[34] Therefore, schoolyards are a part of the municipal parks system and in this manner "schoolyards receive maximum utilization as playgrounds rather than being duplicated by a separate municipal recre-

[33]For complete inventory of facilities, see Appendix B.

[34]Conversation with D. Macri, Kitchener Planning Department, September 17, 1968.

ation system."[35] Within such a system, elementary school playgrounds are usually designated as neighbourhood parks, and those of high schools usually as community parks. These facilities are administered by the Parks and Recreation Departments and are accessible to the public throughout the year except during the hours of 8:00 a.m and 5:00 p.m. of a regular school day when they are programmed by the respective school boards.[36] Therefore, the acreages of schoolyards available for such purposes are included in the inventory of facilities. This is in keeping with CPD standards which state that

> . . . all publicly-owned buildings (e.g. schools), grounds and equipment should be made available for public recreation use--as long as this does not unduly disrupt the primary purpose of the facilities or equipment.[37]

In terms of passive pursuits, these areas are of little value as a large portion of the schoolyard is usually paved and functions primarily as a playground. Both Planning Departments feel that parkland should be developed in conjunction with schoolyards in order that these areas can provide more than just playground facilities and would thus meet the prescribed standards. In order to develop these parks, it has been pointed out that, where possible, land should be purchased adjacent to the schools.

[35]Waterloo, Parks and Open Space, p. 28.

[36]Conversation with W. Somerville, Supervisor-in charge of Physical Health and Safety Education, Kitchener and District Public School Board, December 6, 1968.

[37]Ontario, Standards and Definitions of Terms, p. 3.

To receive maximum use, the elements of a recreational system must be located such that they are easily and safely accessible and that they serve the largest possible portion of the population. Particular attention should be given to neighbourhood and community parks. The CPD standards state that

> . . . neighbourhood parks will be developed to meet the interests of that specific area of the municipality and should be within walking distance of all sections of the neighbourhood.[38]

Also, in regard to community parks, they "should be accessible by public transportation and large enough to accommodate all types of recreation activities."[39] The ability of high schools to provide community park facilities is questionable. How many high schools do provide "all types of recreation activities"?[40] The author feels that if land adjacent to a high school is not available to be developed to meet the standards for community parks, then the high school should not be included as a community park within the municipal park system. These areas have been included as community parks in the inventory of facilities by the Planning Departments of both cities.

The standards for the cities of Kitchener and Waterloo state minimum acreages for units for the various types of parks within the system (see Table VI). The

[38] Ontario, Standards and Definitions of Terms, p. 6.

[39] Ibid.

[40] Ibid.

acreages of the individual parks found within these two municipalities seldom meet these minimum standards. Only ten percent of the neighbourhood parks possess the minimum amount of eight acres, and only thirty-three percent of the community parks meet the minimum of thirteen acres. Likewise, only one natural area meets the minimum standard of one hundred acres. Not only do very few parks contain the necessary acreage, but there is also a deficiency in the total number of acres devoted to any one type of park. According to CPD standards, a municipality with the population of Kitchener-Waterloo, 123,314,[41] should possess the following:

Neighbourhood Parks . . .	123 acres	(392.76)[42]
Community Parks	246 acres	(131.00)
Regional Parks	861 acres	(1824.00)
Natural Areas	1230 acres	(353.34)
Total	2460 acres	(2701.10)

On comparing these acreages with those of the existing municipal park system it was found that the total acreage devoted to community parks is only fifty-three percent of what it should be, and the acreage of natural areas is only twenty-nine percent. On the basis of this comparison, it would seem that there are some, as yet undetermined, variables involved that are making it difficult for a

[41] 1966 Census, Dominion Bureau of Statistics.

[42] Figures in brackets are actual park acreages.

municipality to obtain sufficient land in large enough blocks to enable it to attain even minimum standards.

(b) Application of Locational Model to Kitchener-Waterloo

The locational model developed in the last chapter can be applied to assess the locational aspects of the parks. In order to apply the model, an isotropic surface for Kitchener-Waterloo will be assumed initially. Noise is introduced into the model as the isotropic constraints are relaxed. This noise takes the form of major arterial traffic routes; areas zones for economic functions incompatible with open space development; and population density (see Fig. 7).

Accessibility is a major factor in determining the location of parks within a municipality. Major arteries act as barriers in the case of neighbourhood parks, as they are designed primarily as "walk-to" facilities: the other types of parks are usually designed as "drive-to" or "bus-to" facilities. In terms of access to neighbourhood parks, the standards state "there should be no main streets to cross to reach it."[43] The Planning Departments for both cities interpret "main streets" as being major arterial traffic routes. Roads classed as arterial routes were introduced into the model.

Land zoned commercial and industrial is felt to be

[43]Kitchener, Recreation Facility Standards for the City of Kitchener, p. 1.

incompatible with open space development; such places do not contain sufficient population to warrant large-scale park development.[44] Zoning By-law 1108 for the City of Waterloo clearly defines the uses to which commercial or industrial land can be put, and these uses do not include open space, parks, or green zones.[45] Some neighbourhood park facilities can be provided in schoolyards found in commercial areas as this is a permitted land use. Schools are not a permitted land use in industrial areas, and any schools found in such places were built either before the by-law came into effect or before the land was zoned industrial. Land in the "Twin Cities" zoned for either commercial or industrial activity was removed from the universe that can be used for park development.

An important variable is population density; important to both the location and the size of the facility. The standards outline the distance to a facility as being a major determinant in locating parks (see Tables V and VI). Therefore, parks, particularly neighbourhood and community parks, should be located where the people are. Within the older part of the city this does not present a problem as the people are concentrated in relatively small areas. However, in the suburban areas the parks must serve

[44]Conversation with D. Macri, Kitchener Planning Department, September 17, 1968.

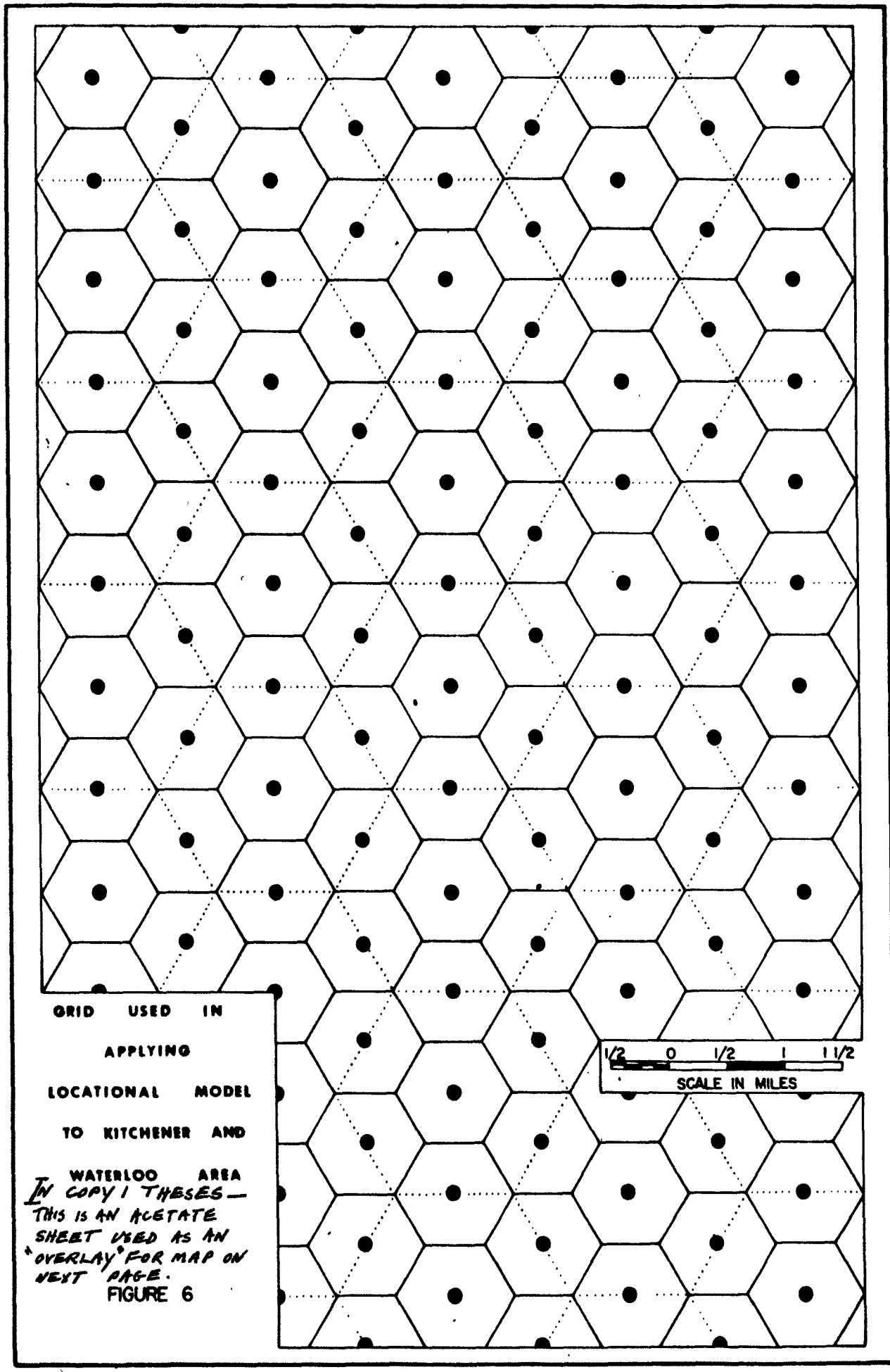
[45]City of Waterloo Zoning By-law 1108. For a complete list of the uses permitted for industrial and commercial land under this By-law, see Appendix C.

low density, dispersed population and this results in locational problems. The primary function of population density is in determining the size of the facility. The standards state that the size of any one unit should be determined on the basis of a set acreage for every 1,000 persons. Therefore, the population density of the service area of a particular park is used to determine its size.[46]

In applying the locational model to the map of Kitchener-Waterloo showing these locational variables, it was found that some of the parks were located within commercial and industrial areas (see Figs. 6 and 7). It was stated earlier that parks, per se, were not included in the list of accepted land uses for these places. Therefore, it was necessary to move the parks of the theoretical municipal park system that were found in these areas to the closest non-commercial or non-industrial land. This is a procedure similar to that used by Getis in applying his map transformation technique. Getis applied a square grid to a city and then warped each cell so that it would be representative of the disposable income of the population within the cell. A supermarket was then located in the centre of each cell and if it was not within commercially zoned land it was moved to the nearest commercial area.[47]

[46]For data used to establish population densities, see Appendix D.

[47]Getis, A Theoretical and Empirical Inquiry Into the Spatial Structure of Retail Activities, pp. 79-97. See also Robertson, Empirical Testing of the Map Transformation Technique in Marketing, pp. 32-48.



GRID USED IN APPLYING LOCATIONAL MODEL TO KITCHENER AND WATERLOO AREA

IN COPY I THESES — THIS IS AN ACETATE SHEET USED AS AN "OVERLAY" FOR MAP ON NEXT PAGE.

FIGURE 6

MAJOR VARIABLES AFFECTING LOCATION OF PARKS IN KITCHENER WATERLOO

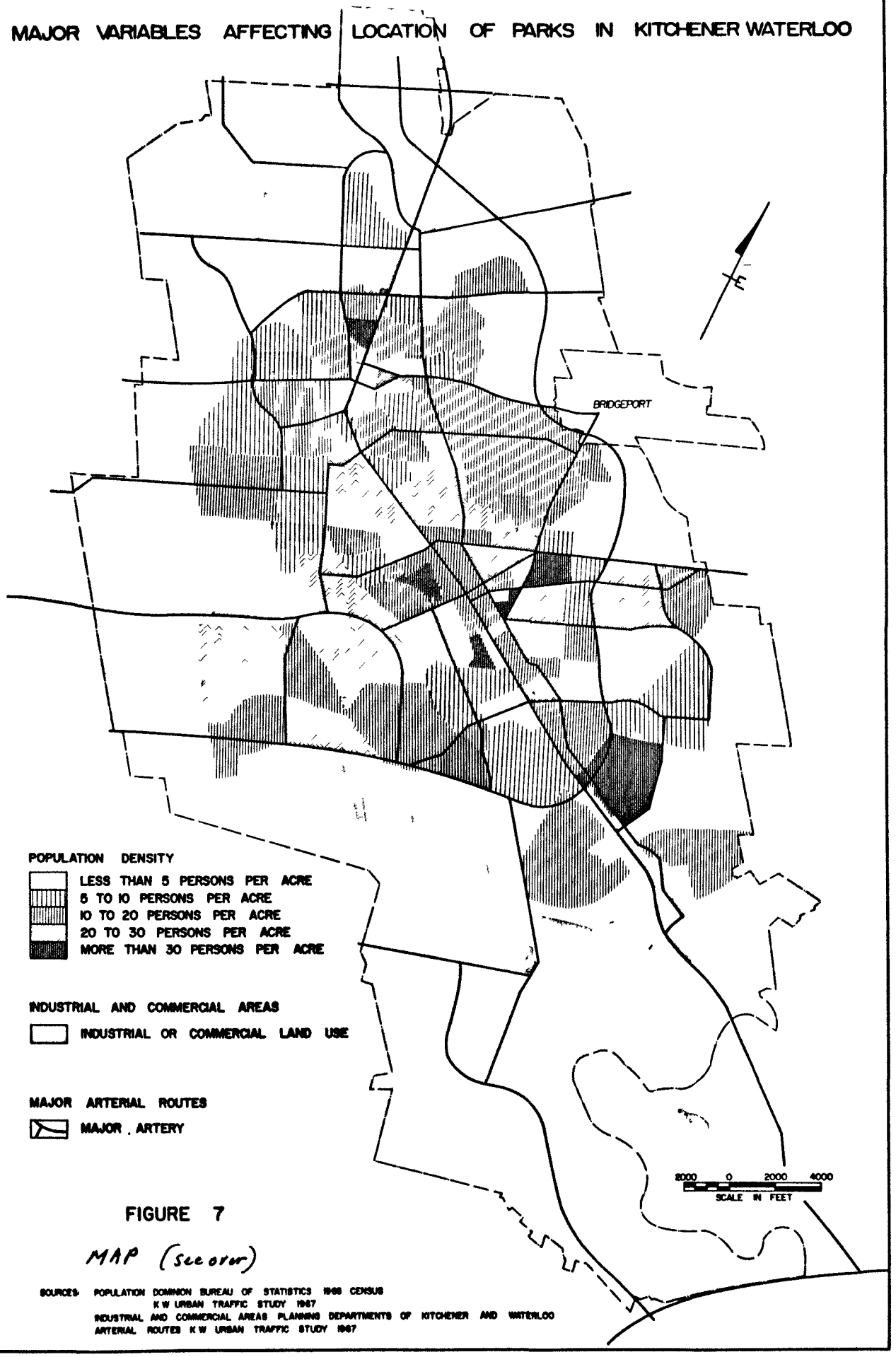
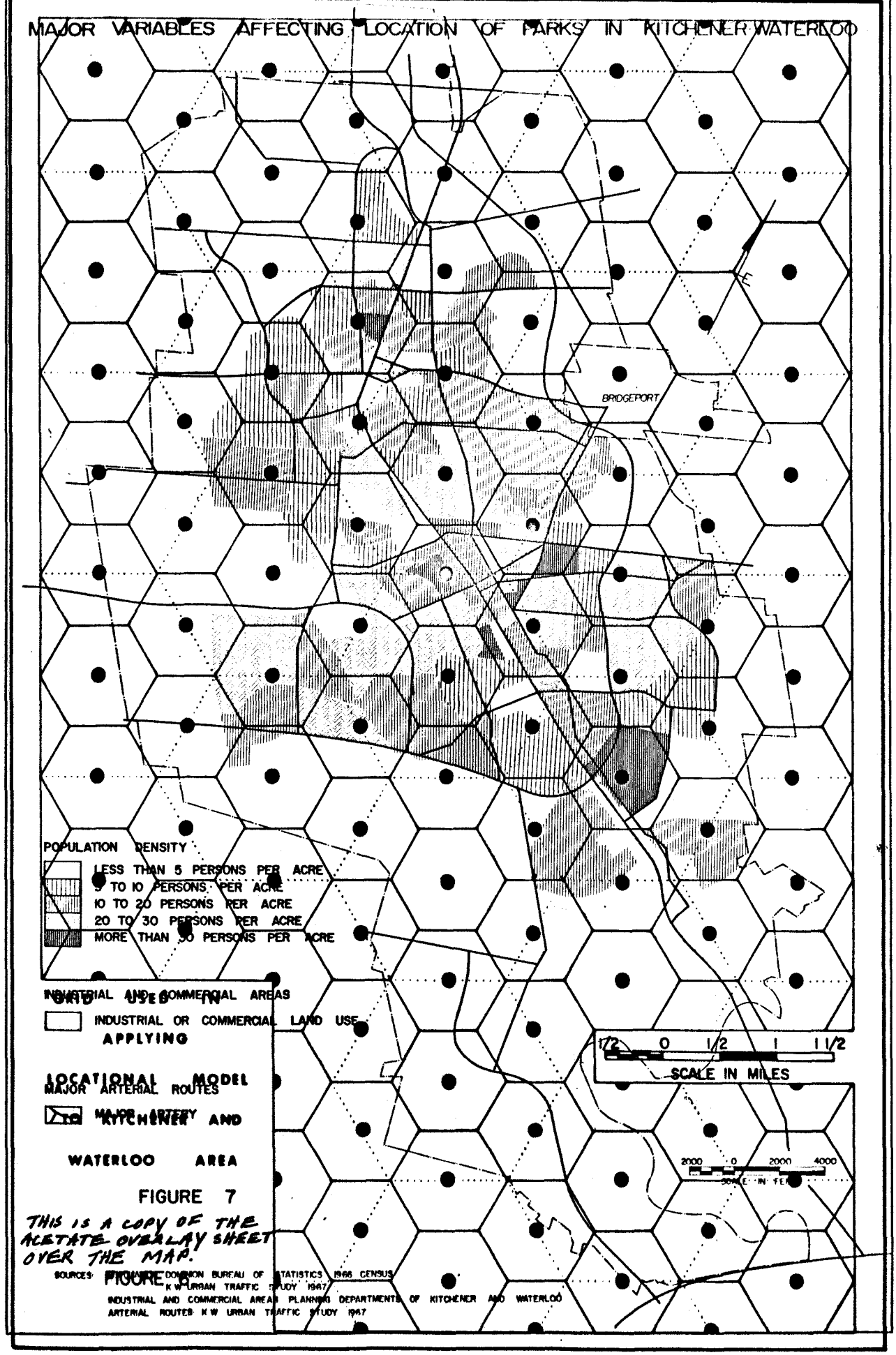


FIGURE 7

MAP (see over)

SOURCES: POPULATION DOMINION BUREAU OF STATISTICS 1966 CENSUS
K W URBAN TRAFFIC STUDY 1967
INDUSTRIAL AND COMMERCIAL AREAS PLANNING DEPARTMENTS OF KITCHENER AND WATERLOO
ARTERIAL ROUTES K W URBAN TRAFFIC STUDY 1967



APPLYING LOCATIONAL MODEL TO KITCHENER AND WATERLOO AREA

FIGURE 7

THIS IS A COPY OF THE ACETATE OVERLAY SHEET OVER THE MAP.

SOURCES: POPULATION DOMINION BUREAU OF STATISTICS 1966 CENSUS
K W URBAN TRAFFIC STUDY 1967
INDUSTRIAL AND COMMERCIAL AREAS PLANNING DEPARTMENTS OF KITCHENER AND WATERLOO
ARTERIAL ROUTES K W URBAN TRAFFIC STUDY 1967

FIGURE 7

This concept of map transformation could possibly be developed further here in that each hexagonal cell could be warped according to its population. In this manner, it may be possible to determine which cells require two or more parks to meet the needs of the inhabitants.

In locating the park units of the theoretical model the same procedure was used as that used in developing the municipal park system for the hypothetical city (see Figs. 1 to 5). The neighbourhood parks were located first and then the succeeding tiers were superimposed on this base. However, as the author is primarily concerned with the provision of open space within the urban setting, only the neighbourhood and community parks are considered here, as both the regional parks and natural areas are usually located on the periphery of these areas. There are a few exceptions to this, such as Homer Watson and Steckle Parks in Kitchener (see Appendix B), however, the standards indicate that these units are more characteristic of periphery or urban fringe facilities.

The location of the major arterial routes became the next major consideration in determining the location of neighbourhood parks. If, when moved, a neighbourhood park was in close proximity to another unit of the same tier, consideration was given to combining the two units.[48] In the case of a major arterial route separating them, no

[48] Concept of leakage within the system becomes a consideration at this point (see Chap. II [b]).

further consideration was given to their combination. If, however, this variable was not present, then the two parks were combined and located at what appeared to be the point of minimum aggregate travel outside the commercial or industrial lands. In order that such a unit could provide all the facilities demanded of it by this larger population, the acreage of the two original parks would also have to be combined; such a park could provide more facilities than most neighbourhood parks.

Examination of the theoretical location of the park units shows that some areas are bounded by major arterial routes and do not have access to neighbourhood parks. If the population of such an area is sufficient to warrant the development of a park and the area was not zoned for either commercial or industrial activity, then a park was located there. This is in keeping with the basic premise that individuals should not have to cross main streets to reach a neighbourhood park.

The introduction of the three major variables considered to have a significant effect on the location of parks has resulted in a relatively large amount of warping of the original locational model (see Fig. 8). This warping has resulted in the combining of some parks, the addition of some parks, and, to some extent, has indicated that when local land use restrictions are taken into consideration, the maximum distance of one-half mile cannot always be maintained.

Superimposing the community park tier on that of the neighbourhood parks and introducing the variables outlined, pretty much the same problems occur. It is necessary to move the location of such parks from industrial and commercial areas. However, major arterial routes are not a factor here as this unit is designed as a "drive-to" or "bus-to" facility. The distance between community parks is twice that of neighbourhood parks and thus it is unlikely that moving a unit will bring it into close enough proximity to another unit to warrant combining the two. Therefore, it is only necessary to move the community parks to the nearest area zoned non-industrial or non-commercial and, based on the functional hierarchy outlined earlier, combine it with the nearest neighbourhood park.[49] The resulting locational pattern is not warped to the same extent as that of the neighbourhood parks because of the fewer number of community units and because the locational determinants are more flexible (see Fig. 8).

(i) Application to Developed Areas

In comparing the theoretical and actual park units in the developed areas it was found that there are generally more units in the existing municipal park system than are in the proposed (see Figs. 8 and 9). This results largely from the fact that there are a number of units in

[49] When combining these two units the acreage of the combined unit must equal the total acreage of the two units so that the total acreage devoted to neighbourhood parks is not decreased.

THEORETICAL LOCATION OF UNITS OF MUNICIPAL PARK SYSTEM OF KITCHENER-WATERLOO

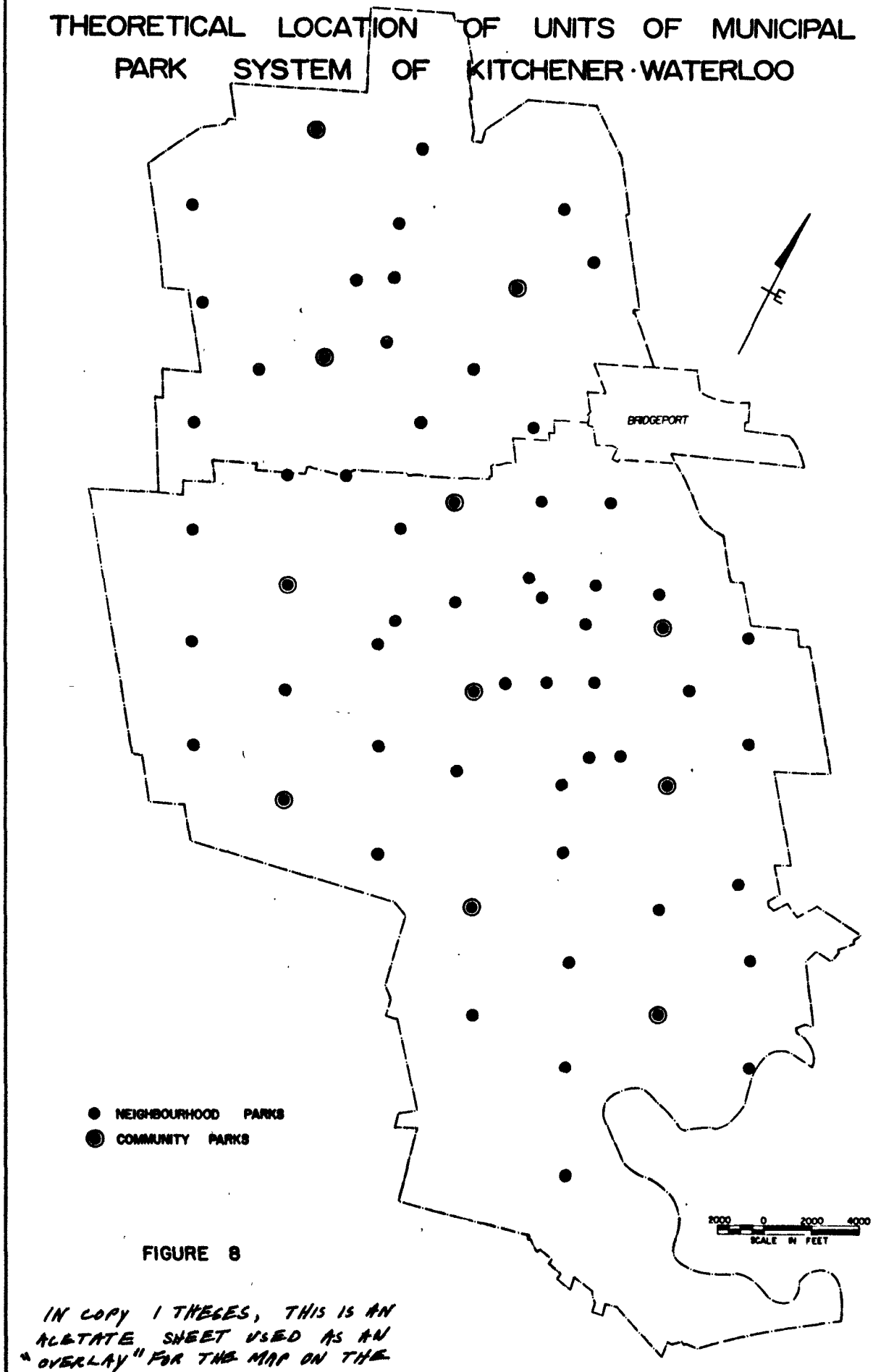


FIGURE 8

IN COPY I THESES, THIS IS AN ACETATE SHEET USED AS AN "OVERLAY" FOR THE MAP ON THE NEXT PAGE.

ACTUAL LOCATION OF UNITS OF MUNICIPAL PARK SYSTEM OF KITCHENER·WATERLOO

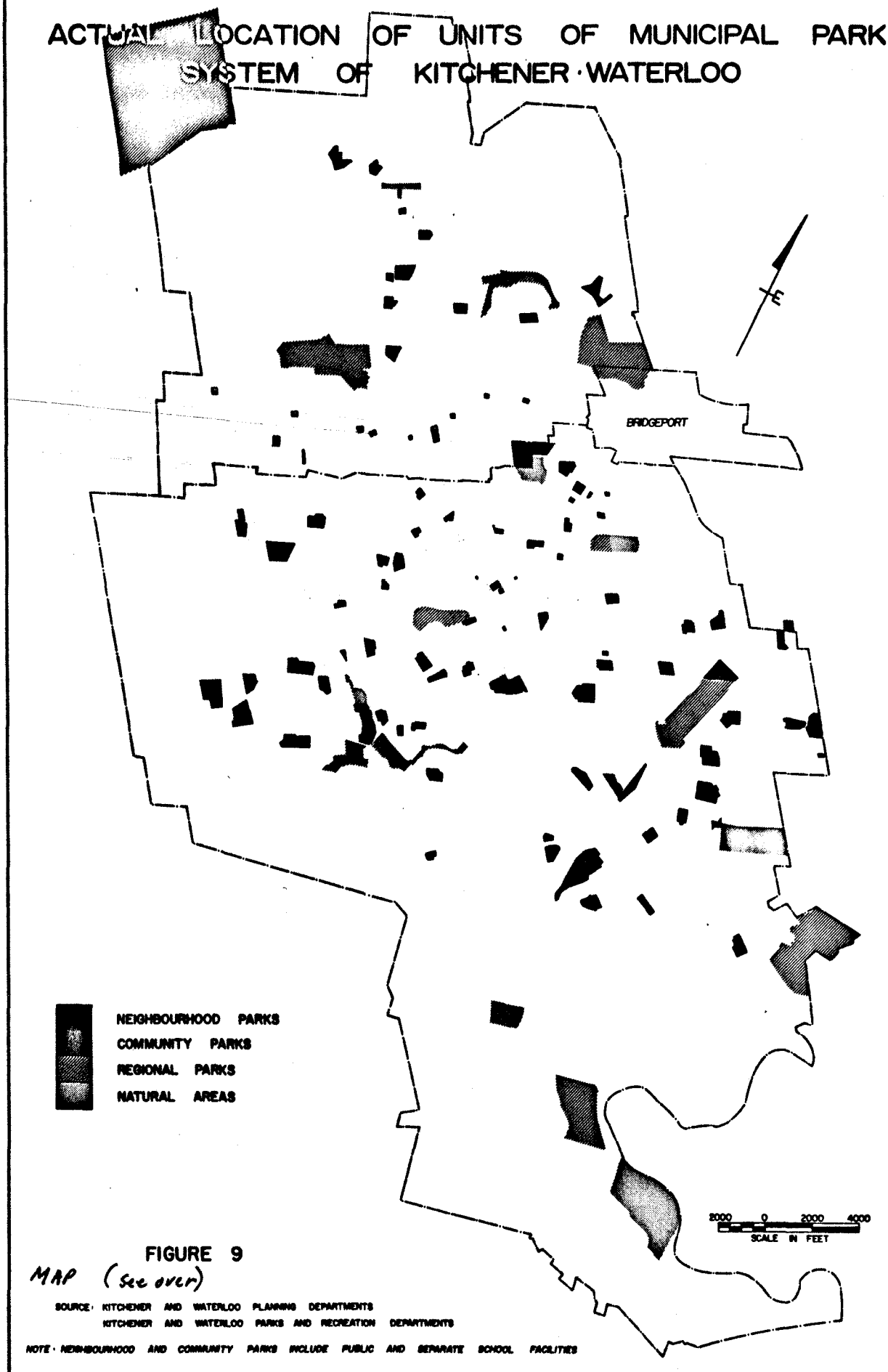


FIGURE 9

MAP (see over)

SOURCE: KITCHENER AND WATERLOO PLANNING DEPARTMENTS
KITCHENER AND WATERLOO PARKS AND RECREATION DEPARTMENTS

NOTE: NEIGHBOURHOOD AND COMMUNITY PARKS INCLUDE PUBLIC AND SEPARATE SCHOOL FACILITIES

THEORETICAL LOCATION UNITS OF MUNICIPAL PARK SYSTEM OF KITCHENER WATERLOO

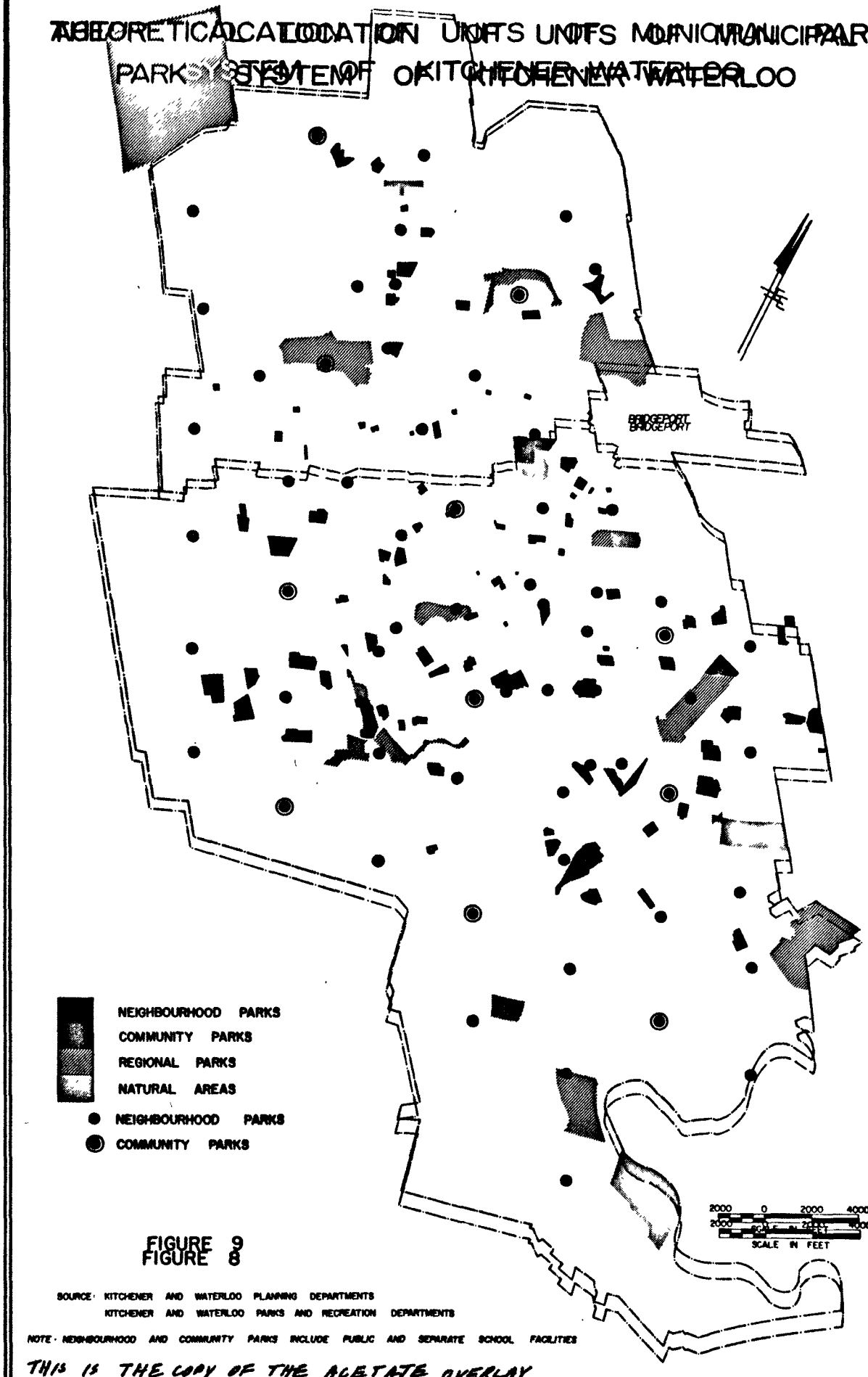


FIGURE 9
FIGURE 8

SOURCE: KITCHENER AND WATERLOO PLANNING DEPARTMENTS
KITCHENER AND WATERLOO PARKS AND RECREATION DEPARTMENTS

NOTE: NEIGHBOURHOOD AND COMMUNITY PARKS INCLUDE PUBLIC AND SEPARATE SCHOOL FACILITIES

THIS IS THE COPY OF THE ACETATE OVERLAY SHEET OVER THE MAP.

the existing system that are of smaller acreages than the standards call for, and in an effort to provide sufficient total acreage it would appear that numerous smaller units have been developed to offset the lack of larger ones. The location of these smaller units is quite good when compared to the location of the proposed units; a situation that speaks well of the Planning Departments for both cities. If these smaller units are to be produced, then the author feels that there would be more merit in locating them uniformly throughout the service area rather than clustering them as seen in the northern part of Waterloo (see Fig. 9). The foregoing serves to illustrate a major use of the model; that of assessing the extent to which an existing municipal park system measures up to a proposed system based on existing standards.

Such a model can also serve a locational function. There are two aspects involved in this use in the developed portion of the city. Once the best location for park units has been determined, land, as it becomes available, can be assessed in terms of its ability to provide recreation facilities in an area possessing a shortage. Then a decision can be made with regard to the relative merit of developing the piece of land in question as a park. It may only be large enough to contain a few playground facilities; however, its location may be such that it will help to satisfy a definite need. The ability of a piece of land to accomplish this can only be determined by comparing its

location with the location of units in the model. The second aspect of this locational function is in regard to urban renewal. Part of the land acquired by a municipality for urban renewal may be used for public purpose, which has been defined as including parks by the Planning Act of Ontario (see Appendix E). This model can be used to determine the optimum location of park facilities within the urban renewal district.

(ii) Application to New Areas

The comparison of the theoretical and actual location of park units brought to light considerable locational differences in the fringe areas of the developed parts of the city: areas of new subdivisions (see Figs. 8 and 9). It is in these sections that the locational capabilities of the model can be fully realized. By establishing a hexagonal grid similar to the one being utilized here, the optimum location of a park facility based on criteria set down in the standards can be indicated for these new subdivisions. An example of this can be seen in the peripheral areas of the northwest quadrant of Waterloo. It will be seen that there are no park facilities, as yet, in new subdivisions in this section of the study site (see Fig. 9). The map outlining the theoretical location of park units shows, what the author feels to be, a good location for these parks based on existing standards and taking into consideration other criteria as discussed earlier (see

Fig. 8).

Another possible use to which this model could be put is that of determining the size of any one park, particularly in new areas. As mentioned earlier, Kitchener-Waterloo shows a marked shortage in the acreages devoted to any one unit of any one tier. Although this part of the study is primarily concerned with the location of facilities, one must be cognizant of the problems associated with the provision of a facility of sufficient size to enable it to serve its designed function. Therefore, some method of determining the minimum size of a unit must be available. As this study involves the utilization of existing standards, the criteria for determining the size of a park would be population density. With this in mind, the following steps would be taken in determining the size of a neighbourhood park: calculate the acreage of the service area; locate major arterial traffic routes; remove areas zoned for economic functions incompatible with park development from area considered; determine the population density of the remaining "habitable" area; and calculate the area of the park based on the standards. Based on the locational model, the service area of a park is in the form of a hexagon (see Chap. II [b]). It is conceivable that any one hexagon may possess several different population densities, in which case the size of the park would be based on the average density. On this basis, a district possessing the following characteristics should have a

neighbourhood park of a minimum size of approximately ten acres (see Fig. 10).

162 acres @ 20 - 30 persons/acre	-	4,860 persons
229 acres @ 10 - 20 persons/acre	-	4,580 persons
25 acres @ less than 5 persons/acre		125 persons
416 acres	totals	9,565 persons

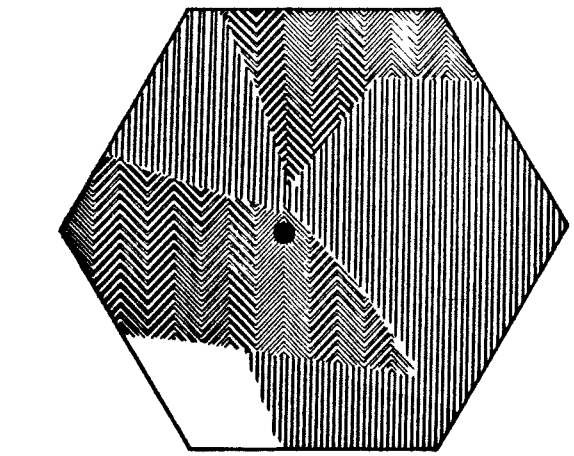
As a neighbourhood should possess a minimum of one acre for every 1,000 persons, the size of the park in this example would be determined as follows:

1 acre/1,000 persons = 1 x 9.6 = 9.6 acres

(c) Summary and Conclusions

The application of the locational model to a specific site, Kitchener-Waterloo, has served to illustrate possible uses to which such a device can be put. As an assessment device it can be used to determine to what extent an existing park system measures up to theoretical system suggested by existing standards. Such an assessment can also be used to indicate where the discrepancies are, not only in terms of location, but also in terms of the acreage devoted to any one park or any one tier of the hierarchy. As a planning device, this type of model can be used to determine the optimum location of park facilities based on existing standards. It is conceivable that the variables affecting the location of such parks may vary from municipality to municipality; therefore, the model is designed such that the major variables peculiar to any one

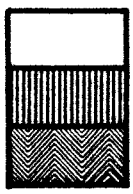
EXAMPLE OF HOW LOCATIONAL MODEL CAN BE USED TO ESTABLISH AREA FOR A PROPOSED PARK



SCALE IN FEET

FIGURE 10

POPULATION DENSITY

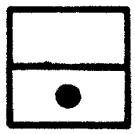


LESS THAN 5 PER ACRE

10 TO 20 PER ACRE

20 TO 30 PER ACRE

LAND USE



INDUSTRIAL OR COMMERCIAL USE

NEIGHBOURHOOD PARK

municipality can be incorporated. The variables used here are those which are believed to have a major affect on the location of parks.

In terms of the planning of parks, the locational model developed is of little value if a municipality is unable to acquire sufficient land to meet the minimum requirements as set down in the standards being utilized by the community in question. It appears that Kitchener-Waterloo has been unable to obtain land in sufficiently large enough blocks and in locations such that the standards can be satisfied.

PART C

LEGAL ASPECTS OF ACQUIRING LAND FOR OPEN SPACE

CHAPTER IV

LEGAL TOOLS AFFECTING THE ACQUISITION OF OPEN SPACE

(a) Introduction

The provision of parks within the urban locale requires more than the development of a locational model. The model developed in the previous chapter has served to point out discrepancies that exist in terms of the number of facilities, acreages of facilities and the location of parks only within Kitchener-Waterloo. The question now arises as to what obstacles must be overcome by a municipality in order that these discrepancies may be eliminated.[50] The discrepancies, for the most part, appear to result from the inability of a municipality to acquire land in large enough tracts and in proper locations to meet the requirements of existing open space standards. It would seem that there are constraints restricting the capability of a municipality to acquire land for open space. These constraints take many forms: attitudes of the municipal government such as an unwillingness to remove a segment of land from the tax rolls: lack of finances to purchase land for this purpose: opposition by persons who prefer to see

[50]Throughout this chapter a municipality will refer to an "urban municipality," as defined in Section 1(x) of the Municipal Act, R.S.O. 1960. See Appendix E(a).

the land devoted to some economic function: and the inadequacy of legislation to provide for the acquisition of open space. This chapter will deal with legislative constraints; the inability of existing legislation to provide adequate methods with which to acquire sufficient land to meet the demand for open space.

What legal tools are available to provide for the acquisition of open space and to what extent are they utilized? As pointed out in the previous chapter, little can be done to provide large park areas in the developed parts of the city. However, a great deal can be done in the urban fringe in terms of acquiring open space in advance of development in an effort to prevent the continuation of existing shortages. The legal tools will, for the most part, be discussed in terms of their application to the urban fringe.

Some of the legal means of acquiring land for open space are incorporated into the legislation of one or more of the three levels of government. In dealing with the legal methods for acquiring open space, it must be kept in mind that the legislation, which incorporates these tools, is only part of the body of law. In regard to this body of law, legislation is generally deemed to be remedial in character. Much of the problem associated with the acquisition of open space is a result of the limited powers a municipality possesses. The changes, or remedies, suggested are related to the legislation rather than to the law: changes

designed to relax the limitations on a municipality's power such that it can utilize all the legal tools available for the acquisition of open space. The legal tools already incorporated into the legislation of Ontario are only part of what is available for this purpose. They do not necessarily provide the most efficient methods of land acquisition and are often burdened by unrealistic limits in terms of the amount of money that is made available by a senior level of government for the acquisition of land or the amount of land that can be acquired. The legal tools incorporated and utilized by the municipalities of Ontario in their quest for open space include bequests, donations, gifts, expropriation, subdivision grants, zoning, official plans, urban renewal and restricted development (see Table X). As mentioned, these tools are only part of what is available and, in many instances, they have not been used to their fullest extent. For example, two major tools that could be utilized to a far greater extent are taxation and easements (see Table X). Also some of the existing tools could be expanded to incorporate additional methods that have been used with considerable success in the United States. It is the intention of the author to review the legal tools incorporated in existing legislation, suggest where they may be expanded, and to outline some of the tools utilized in the United States that could be of use here.

TABLE X

LEGAL TOOLS FOR PRESERVING OPEN SPACE

Area of Utilization	California	New York	Ontario	Municipalities (Kitchener-Waterloo
Bequests, Donations and Gifts	x	x	x	x
Purchase	x	x	x	x
Purchase and Leaseback	x	x		
Expropriation	x	x	x	x
Excess Condemnation	x	x		
Subdivision Grants				x
Official Plans and Urban Renewal	x	x	x	x
Scenic Easements and Development Rights	x	x		
Greenbelting	x			
Open Space Restrictions	x	x		
Zoning	x	x	x	x
Tax Exemptions			x	x
Preferential Assessment and Tax Deferrals	x	x		

(b) Bequests, Donations and Gifts

A municipality is empowered to accept any parcel of land bequeathed, donated or given by an individual for the purpose of providing a public park. Such land can be located within or outside the corporate city limits. In this manner, a community often acquires large sections of estates that possess valuable aesthetic qualities as well as good recreation land. An added incentive to those who wish to become a municipal benefactor in this manner is that land so dedicated is not subject to the usual death duties and inheritance taxes.

The Conservation Authorities and the Department of Lands and Forests are also empowered to accept such gifts and, in this way, often receive land in the urban fringe areas that would not normally be accessible to them.

As useful as this tool may be, urban areas cannot, and should not have to, rely on the generosity of the public to acquire land for open space. Although the dedication of such lands may place the individual, or his estate, in a favorable position with regard to inheritance taxes, it does not necessarily follow that an individual will turn his land over to a municipality. Another disadvantage to this method is that land dedicated may be in the wrong location such that it contributes to an overabundance of a particular type of open space in a specific area. As a result, a municipality may acquire land that does not satisfy the purpose for which it was intended. Restrictions placed on the use of

the land by the donor may prevent a municipality from using the parcel of land in question to acquire another parcel in a better location.

(c) Purchase

A municipality or a branch of the Provincial Government involved with the acquisition of land is empowered to purchase full title to the land necessary for the carrying out of its functions. Land purchased by municipalities for these functions is usually done under the heading of "public purpose" and the Planning Act of Ontario defines "public purpose" as including the provision of land for recreational facilities. It must be kept in mind that this definition of "public purpose" applies only to the Planning Act and it is not to be taken as a general definition that can be extended to other acts. However, this definition does give some indication of what the Legislature feels is "public purpose." The purchase of land, whether it be for "public purpose" or not, requires the consent of the owner and it is not always possible to obtain this consent. If this consent is not readily forthcoming and the purpose for which the land is required is a valid one, then expropriation proceedings can often be instituted. The institution of such proceedings will, in all probability, result in a stricter application of the definition of "public purpose" and, in many cases, the provision of open space may not qualify as a valid cause for expropriation.

Once a municipality or government department has set aside sufficient land for its purposes, it is allowed to dispose of any surplus by leasing, renting, or selling. This power of purchase and disposal probably provides sufficient authority to permit the introduction of purchase and leaseback transactions; a method of preserving open space that has been utilized in the United States with considerable success. The cost to the municipality of land acquired under this method is usually less than the cost of outright purchase and as some individual, other than the municipality, is using the land, it will remain on the tax rolls. This, in effect, is "land banking." Such a method permits a municipality to acquire land in advance of development and let someone else bear the carrying costs until such time as the land is required for development.

(i) Purchase and Leaseback

Through this method the public, in this case a municipality, makes strategic acquisitions of existing open land which it is desirable to preserve from encroachment of urbanization and leases it back to the present owners, subject to restrictions on its use. In this manner, the continued openness of golf courses, farms, stream valleys, etc. are assured. An advantage to such a method is that the land would be privately occupied in a desirable manner, it would remain on the tax rolls and it would not cost the municipality much in terms of carrying costs.

This device also provides an alternative approach to public easements, which will be discussed later, and in some ways may be a more effective means of controlling future land use development as the public owns the land. This gives rise to the question of whether or not public ownership necessarily ensures effective development. It is not the intent of the author to make a judgment regarding the merits of public land ownership as opposed to private, however, public ownership of the land in this instance will enable a municipality to devote land to open space in a manner that will best satisfy the needs and desires of the people for this particular land use.

(d) Expropriation

Expropriation is a method of land acquisition utilized by both the municipalities and the province. Despite frequent usage, it is neither an efficient method of acquiring land nor is it a popular one, particularly to those who are dislocated by this process. Expropriation is, to a certain extent, a drain on public funds. When acquiring land under this procedure, the purchase value of the land is not usually in excess of the "fair market value." However, the "legal" costs involved in instituting expropriation proceedings increases the total amount paid to acquire land. Despite this increase in cost, expropriation proceedings do have their value for highway expansion and similar projects. In terms of acquiring land for open

space they are difficult to justify. A more stringent application of the definition of "public purpose" may result in open space not being considered a valid cause for expropriation. The courts, the public and the landowner, unless they are fully cognizant of the demand for open space and are willing to recognize the fact that land to satisfy this demand is a real need, may not agree with the use of expropriation for such purposes.

The Conservation Authorities often find it necessary to institute expropriation proceedings in order to carry out a scheme.[51] As mentioned earlier, this is not an efficient method of land acquisition. With regard to conservation lands the practice has been that the Authority in question only receives a percentage of the land it is trying to obtain. There does not appear to be any rule of thumb for determining the percentage or its location within the tract.[52] As a result, the Conservation Authorities may not acquire all the land they require to permit them to carry out a scheme. Such a situation gives rise to the question of whether or not the Conservation Authorities are able to fully carry out their intended function.

[51] A "scheme" is defined in the Conservation Authority's Act as being a scheme undertaken by an Authority for the purposes of conservation, restoration and development of natural resources. (Conservation Authority's Act, R.S.O. 1960, Section 1[i].)

[52] Conversation with E. Lemp, Grand River Conservation Authority, May 8, 1968.

(e) Excess Condemnation

A possible alternative to expropriation in the urban fringe is that of excess condemnation. A form of excess condemnation is used in Canada in urban renewal schemes whereby land and buildings in excess of what is required are condemned and that which is surplus, after completion of the scheme, is disposed of by leasing, renting or selling.[53] In the United States, condemnation has been used in much the same manner, however, "condemnation is constitutional only if property is taken for 'public use.'"[54] Strict application of this concept of "public use" may result in considerable difficulty in protecting scenic areas through condemnation as such a procedure would be based primarily on aesthetic considerations. The Stanford Law Review points out that the rational in cases involving condemnation had, until recently, established that "land could be condemned for necessary and useful purposes and not for public pleasure and aesthetic gratifications."[55] As aesthetics are now accepted as a possible consideration in zoning, there appears to be a valid argument for considering aesthetics in condemnation. Due to this change in thinking, California has upheld con-

[53]Canada, "Laws, Statutes, etc.," National Housing Act, 1954, Section 23(1).

[54]Preservation of Open Space Through Scenic Easements and Greenbelt Zoning, p. 646.

[55]Ibid., p. 646.

demnation for the establishment of public parks.[56] This and similar cases in other states have resulted in the acceptance of the acquisition of land for parks and other recreational purposes by condemnation as "it is universally agreed that such acquisitions involve a proper governmental function, and so satisfy the constitutional test of 'public use.'"[57] In Canada, part of the land acquired for urban renewal, whether by condemnation or otherwise, may be used to provide outdoor recreational facilities, however, as nearly as can be determined by the author, condemnation solely for park purposes is not a legitimate exercise of this power.

The expansion of the areas in which condemnation can be exercised in the United States has led to the use of excess condemnation. Under this method, public improvements are set down in the middle of an undeveloped area in the urban fringe. "Excess" land is then acquired or condemned around these improvements to "protect" them. After sufficient land has been reserved for recreation and other public purposes, any surplus land may be sold or leased back to private interests for development. Actually, all that is involved here is that a municipality is acquiring sufficient land for its purposes in advance of development by extending the use of condemnation to include un-

[56] Preservation of Open Space Through Scenic Easements and Greenbelt Zoning, p. 646.

[57] U. S. Outdoor Recreation Resources Review Commission, Study Report No. 16, p. 8.

developed areas in the urban fringe. As the "power to condemn is coextensive with the power to purchase,"[58] the method of excess condemnation may enable a municipality to acquire land more cheaply as the "legal" costs of expropriation proceedings would, in all probability, be reduced. Utilization of this method would enable a municipality to acquire land in advance of development, and if acquired in a properly planned manner, the necessity of expropriation proceedings at some future date would be reduced, and the municipality would also save funds in that they would not have to pay the appreciated value the land would have in the future.

(f) Subdivision Grants

Section 28 of the Planning Act of Ontario provides for five per cent of the land of a registered subdivision plan to be given to the municipality for "public purpose" other than highways. If a municipality so desires, it may accept cash equal to the value of the land in lieu of the land. Also, if land so conveyed is sold by the municipality, the funds received shall be paid into a special account to be used for the purchase of land for public purpose. The Department of Municipal Affairs has adopted the policy that "public purpose" shall mean open space which provides a more specific definition than that provided

[58] U. S. Outdoor Recreation Resources Review Commission, Study Report No. 16, p. 12. In terms of Urban Renewal in Canada, this definition has generally been accepted.

under the Planning Act (see Purchase).[59] As subdivision agreements are a negotiated agreement between the developer and the municipality, the municipality can exercise some control over what land it receives. In this manner, a municipality can acquire land that requires a minimum of developmental costs before being devoted to outdoor recreation.

This five percent of the land is the only land that comes automatically to a municipality for public purpose. In a survey taken of municipalities across Canada it was found that all provinces have similar subdivision grants and, for the most part, the land conveyed to a municipality for public purpose is used for parks. The results of this survey indicate that most municipalities feel that even when the entire amount of the land conveyed is used for park purposes it is inadequate in terms of satisfying the demand for open space.[60] Another consideration with regard to subdivision grants is that such grants may be in the wrong location for good planning. Not all subdivisions will necessarily require open space and the provision of such, once again, may contribute to an overabundance of a particular facility.

(g) Official Plans and Urban Renewal

Under the Official Plan portion (Part III) of the

[59]Darker, Recreation: The Role of the Department of Municipal Affairs, p. 8.

[60]London, A Questionnaire on Land Dedication.

Planning Act of Ontario, a municipality has the power to obtain land, through purchase or otherwise, for the purpose of developing the official plan. The powers of this Act are rarely used as most Planning Departments utilize the Urban Renewal sections of the National Housing Act to acquire the land necessary to satisfy the requirements of the official plan (see Appendix E [a]). This results from the fact that these sections of the National Housing Act have stood up better in court than the Official Plan sections of the Planning Act.[61] The purposes for which land can be acquired under the Planning Act are not specific enough to enable a municipality to determine whether or not it can acquire land for open space under this Act. There are other acts, such as the Urban Renewal sections of the National Housing Act which spell this out a little more clearly and perhaps a similar approach can be adopted with regard to the Planning Act.

Section 19 of the Planning Act does provide for the acquisition of land for official plan purposes, however, this section would appear to be rarely used.[62] The apparent reluctance to use this section may stem from the fact that the section in question fails to outline the methods of acquisition that may be utilized, however, the presence of this section may provide the necessary framework within

[61]Conversation with B. Turnbull, Director of Planning, City of Waterloo, September 10, 1968.

[62]Conversation with J. R. Guy, LL.B., January 8, 1968.

which to incorporate the methods of land acquisition that should be available to a municipality. The incorporation of all the methods of land acquisition into Section 19 of the Planning Act would be unrealistic. However, a reworking of the section such that it outlines the purposes for which land could be acquired, with directives from the Department of Municipal Affairs as to which methods of land acquisition could be utilized for the various purposes, may provide a more workable method of using this section.

The Urban Renewal sections of the National Housing Act provide for the setting aside of some of the land acquired under the Act for public purpose. As outlined earlier, public purpose has been defined as including outdoor recreation. This fact enables a municipality to acquire land in downtown or developed areas for open space under the National Housing Act, a power that is not available to the municipality under the Planning Act. Here is a situation where a federal and a provincial act can be used together to provide open space. Under the National Housing Act open space can be acquired in the developed areas of a municipality and open space in the urban fringe can be acquired under the Planning Act. Utilization of the powers of acquisition made available under the National Housing Act enables a municipality to acquire land for open space that would not likely be made available to them for this purpose in any other manner. As outlined, the

redefinition of Section 19 of the Planning Act may eliminate the necessity of using the National Housing Act for land acquisition in developed areas. However, whether or not a municipality would cease to use this Act is open to question, as under the National Housing Act, the federal government provides a substantial amount of the funds necessary to acquire land for urban renewal.

(h) Restricted Development

There are two aspects to this method of preserving open space. Both are involved with restricting the erection of buildings

> . . . on land that is subject to flooding or on land where, by reason of its rocky low lying, marshy or unstable character, the cost of construction of satisfactory water works, sewage or drainage facilities is prohibitive.[63]

The first aspect is within the city limits. The Planning Act gives a city the power to restrict development on such lands, within the corporate city limits, as are deemed unfit for development. Under the official Plan sections of the Planning Act, a city can determine the use to which such land can be put.

The second aspect of this method concerns areas beyond the corporate limits. The Planning Act gives a municipality little authority to acquire land beyond these limits. However, the Act does provide for cooperation be-

[63]Ontario, "Laws, Statutes, etc.," The Planning Act R.S.O. 1960, Section 30(1)3.

tween adjacent municipalities. The Municipal Act includes within their definition of a municipality, townships which are a form of rural municipality that is usually found adjacent to an urban municipality.[64] As one municipality is urban and the other is rural, their needs and viewpoint with respect to open space will vary. As a result, the degree of cooperation that exists between them may be well short of what is necessary to preserve sufficient open space to meet the needs of the urban populace.

The Conservation Authority's Act gives an Authority, where one is in existence, the same powers beyond the corporate city limits that the Planning Act gives an urban municipality with regard to restricting development. The Conservation Authorities do not possess, however, equivalent power with which to control the use to which such land may be put once it is restricted. The restricting of structures may ensure its continued openness as farmland but this does not necessarily guarantee its use as recreation land. As farmland, the land in question would fall into the category of potential recreation land and the acquisition of full title may be necessary before it can be devoted to outdoor recreation. Perhaps the expansion of the Authorities powers is in order; powers that would enable an Authority to acquire the development rights, which will be discussed later, to land that fits into the categories outlined, thereby

[64] Ontario, "Laws, Statutes, etc.," The Municipal Act, R.S.O. 1960, Section 1(i).

making it available for recreational purposes. However, the granting of the powers to a Conservation Authority, powers that the municipality, in which the conservation lands are found, already possesses, would lead to a serious conflict of jurisdiction.

Perhaps a better alternative to granting more powers to the Conservation Authorities and a solution to the lack of cooperation between adjacent municipalities is to be found in regional government with its associated Area Planning Boards. The creation of them seems to be a step in the right direction in that the control of large areas, much of which may be beyond the corporate limits of an urban municipality, is in the hands of one central body rather than under the control of numerous smaller bodies which do not always function together. As the Area Planning Boards will possess the same powers as those granted to local planning boards by the Planning Act, a more desirable land use pattern will evolve over the larger areas.

(i) Scenic Easements and Development Rights

Easements are the acquisition of the right to "a specified limited use or enjoyment" of land owned by another. Scenic easements, as used in the United States, are the acquisition of the right to keep and maintain land in its natural state without acquiring full ownership of the land.[65] Such land is accessible to the public and per-

[65] Preservation of Open Space Through Scenic Easements and Greenbelt Zoning, pp. 641-642.

mits them to use it in a manner that would normally be classed as trespass.

Development rights are the acquisition of part of the right of ownership; that of the right to develop the land subject to governmental restrictions, such as zoning by-laws. In the manner that they are being used here such rights are similar to scenic easements in that land for which such rights are acquired can be developed to meet specific open space needs as opposed to being left in its natural state.

Scenic easements are a device that is available but are not used for the acquisition of land for park purposes by the municipalities of Ontario. Easements and development rights are utilized to some extent by the public utilities where they acquire less than full ownership to carry out their respective functions. The fact that these devices are utilized by these quasi-governmental agencies, may attest to the value of them and perhaps suggest their possible value in preserving open space.

It is neither financially possible nor socially desirable that all the open space a community wants or needs should be in public ownership.[66] Some of the desired open space is provided by private estates, private country clubs and golf courses. It is felt by some planners in the United States that a significant part of open space should

[66]Seigel, Law of Open Space, pp. 28-29.

be farmland which remains as part of the private domain.[67] There is growing interest, on the part of planners in the United States, in the device of public acquisition of development rights as a means of controlling urban sprawl. An example of this would be "greenbelting" whereby a farm landowner is given some form of compensation to restrict his land in its present low density use. The powers to accomplish this may be present in Canada but do not appear to be utilized. This power would take the form of a "freezing by-law," an extension of the zoning by-law, which would, in effect, freeze the land in its present use. In order that a landowner does not suffer any loss, some form of compensation could be given to him for permitting the restriction to be placed on his land. The acquisition of development rights to prevent urban sprawl is, in effect, the purchasing of easements over selected areas, and paying the landowner to restrict his use of the land to its present low density use.[68] As pointed out earlier, acquiring less than full title to the land is common practice for the public utilities. Easements or the acquisition of less than full ownership to the land are also acquired when a state obtains

[67]Seigel, Law of Open Space, p. 29.

[68]According to the ruling handed down by Internal Revenue of the United States in 1959, the owner would be able to defer tax proceeds of such a sale until such time as he sold the land or until the restriction was lifted. Internal Revenue Ruling, 59-121, Bull. 1959-15, April 13, 1959. Such a situation is valid only in areas where there is a capital gains tax.

the hunting and/or fishing rights to private lands. These rights are often part of an agreement with the owner to keep his land in its "natural" state, in which case, the acquisition of development rights is involved. In this instance, the public use of the land would be recreation and wildlife management and, if it was close enough to a municipality, it would help to satisfy its requirements for "natural" areas.

The problems resulting from urban sprawl led to the passage of two unique statutes by the California State Legislature.[70] Both statutes marked a major step in effective land use control. Despite the fact that within the statutes planning has been left to the countries and cities, actual control of the land is contingent upon the owner's consent. As such, they represent a major step forward in the problem of how to best use the land such that the resulting plan would reflect the desires of the people and, at the same time, provide some compensation to those owners who restrict their land to a low density use.

(i) Greenbelt Statute

This statute involves the zoning of areas as ex-

[69]An example of this can be seen in the Wisconsin Conservation Easement - Hunting and Fishing. (See U.S. Outdoor Recreation Resources Review Commission, Study Report No. 15, p. 72.) Many other states have since followed Wisconsin's lead.

[70]California, "Laws, Statutes, etc.," Greenbelt Statute, 1955, Section 35009 and Open Space Statute, 1959, Sections 6950-54 (see Appendix E[b]).

clusively agricultural ones to prevent urban sprawl. Any area that has been zoned greenbelt cannot be annexed by the city without the owner's consent and, through the acquisition of development rights, part of this land can be used for park purposes. This type of zoning differs from the traditional in that the owner's consent is required to restrict the land use. During the first five years that the statute was in force, over 50,000 acres were greenbelted in Santa Clara County, an area of exceptionally valuable farmland that has undergone industrialization and population growth.[71] It must be kept in mind that land greenbelted under this statute is not permanent. The restriction can be lifted whenever the owner desires it.

(ii) Open Space Statute

California was the first state to encourage the preservation of large open areas against urban encroachment when it adopted the statute authorizing any county or city to obtain full title, development rights, easement or other interests in "open space" land. Other states, including Wisconsin, Maryland and New York, have since followed suit with similar statutes. This statute defines "open space" as "any area of scenic beauty or whose present state either enhances the value of nearby urban development

[71] Preservation of Open Space Through Scenic Easements and Greenbelt Zoning, p. 642.

or conserves natural resources."[72] Within the confines of this definition, farmland could be considered as a natural resource and to have scenic value. This is basically the intent of the Greenbelt Statute, however, it does not define it as such. The clearer definition of the rational of the Open Space Statute provides the planners with a more meaningful alternative to "greenbelting." This statute also allows local planners to protect scenic nonfarm land. Once protected, part of the land could be devoted to the provision of outdoor recreational facilities. Two major advantages are incorporated within this statute. The restrictions imposed against subdivisions or commercial uses, other than farming, are permanent, as long as the statute is in effect, and since the limited use of the land is permanent, assessment for tax purposes is based on this limited use, thereby reducing the heavy tax burden of farmers in the urban fringe. The introduction of such a method would enable a municipality to acquire strategic blocks of land prior to development and thus assure sufficient open space to meet the needs and desires of the people.

(j) Zoning

This is the most common method of land use control. Since it does not require the owner's consent, it is a more

[72] Preservation of Open Space through Scenic Easements and Greenbelt Zoning, p. 643.

efficient method than "greenbelting" and it may be more economic as well. However, it does not provide any solution to the rural landowner's tax problem created by urban expansion as is provided under the Open Space Statute of California. Although the Ontario farmer is not under as great a tax burden as his United States counterpart, it is still great enough to cause some farmers to sell their land to developers.

As a result of the Fifth and Fourteenth Amendments of the Constitution of the United States the only justification for the use of the "police power" of zoning is to protect public health, safety and welfare.[73] Although the term "police power" is characteristic of the United States, much the same rational is used in zoning in Ontario. It is not difficult to sustain exclusive agricultural zoning as a legitimate extension of this rational. It has been used by municipalities in Ontario to restrict development on floodplains, however, specific legislation in the Planning Act was necessary to ensure its use by municipalities.[74]

A Conservation Authority also uses much the same rational in restricting development on floodplains, however, as pointed out earlier, a Conservation Authority can only effectively control the use of such land through the acqui-

[73]United States, The Constitution of the United States: Analysis and Interpretation, pp. 988, 1140-1142.

[74]Ontario, "Laws, Statutes, etc.," The Planning Act, R.S.O. 1960, Section 30(1)3.

sition of full title. The granting of the power to pass zoning by-laws to the Conservation Authorities would provide a more effective means of controlling the use of these lands and thereby assure their preservation. However, as outlined earlier, this would result in an overlap in bodies legislating an area with the associated problems.

As outlined earlier, the advent of regional government and the Area Planning Board should, in all probability, eliminate the necessity of granting the power to pass zoning by-laws to the Conservation Authorities. Despite this, the passage of zoning by-laws by an Area Planning Board will not provide any solution to the problem of the lack of compensation to the rural landowner who has his land use restricted. It must be kept in mind that this lack of compensation is not the problem here that it is in the United States. Although there are some instances where compensation has been made, the landowner whose land use has been restricted by zoning is not entitled to compensation in Ontario in the same manner that he is in the United States.

Zoning in the United States to preserve nonfarm scenic areas raises the question of whether or not zoning can be used for aesthetic purposes. Cases upholding ordinances prohibiting the erection of billboards and the like have established the rule of thumb that while aesthetic purposes alone are insufficient, they should be considered with other factors of public welfare to determine if the

power of zoning is being properly exercised.[75] In this manner, the United States are, in effect, zoning for aesthetics but are making it more acceptable, both legally and to the public, by relating this form of zoning to public welfare.

> Billboards, signs and advertising devices when erected in sections or locations chiefly of historic interest or possessing natural beauty of landscape, pleasant or agreeable situation, prospect, view and attractive or picturesque surroundings or character, are inharmonious with and disfigure the same, and affect injuriously the benefits to be derived therefrom and the enjoyment of the public therein, as also the economic value thereof.[76]

Section 379 of the Municipal Act provides a municipality with the power to pass by-laws restricting the erection of signs within any defined area or on lands abutting on highways.[77] Although not stated in so many words, it appears that aesthetic considerations were a major criterion in evolving this section.

Other cases in the United States have sustained zoning regulations which may have been considered purely aesthetic by relating them to public safety. Based on the California experience, an example of this can be seen in the regulation requiring

---

[75] Milner, Community Planning, pp. 479-483.

[76] Ibid., p. 485, quotation from General Outdoor Advertising Co. Inc. v. Department of Public Works, Massachusetts (1935), 193 N.E. 799.

[77] Ontario, "Laws, Statutes, etc.," The Municipal Act of Ontario, R.S.O. 1960, Section 379(1)122.

> . . . subdivision developers to dedicate a strip along a highway to trees and shrubbery, noting that increased public safety for pedestrians would result.[78]

The intent of this regulation has often been made a condition of re-zoning approval in Ontario, however, the legality of this is, at present, being seriously questioned.[79] In some states, cases involving outdoor advertising and restrictive lot size have been decided solely on aesthetic grounds.[80] It may well be that aesthetics may be a sufficient reason to zone for open space but, who is to determine the aesthetic value of a particular parcel of land? It is the contention of the author that aesthetic value should receive consideration with other factors in determining the value of land for open space but, a decision should not be made solely on the basis of aesthetics.

In some instances, zoning to restrict land use may be objectionable. This procedure, in effect, renders the land commercially useless, at least, to the owner. When such objections occur, some form of compensation is necessary.

> Nor shall private property be taken for public use without just compensation.[81]

---

[78] Preservation of Open Space Through Scenic Easements and Greenbelt Zoning, p. 648.

[79] Conversation with J. R. Guy, LL.B., January 27, 1969.

[80] Preservation of Open Space Through Scenic Easements and Greenbelt Zoning, pp. 648-649.

[81] Milner, Community Planning, p. 487. This is based on a mandate within the Fifth Amendment of the Constitution of the United States and is taken from a quotation in Berman V. Parker, District of Columbia (1954) 348 U.S. 26.

At this point, zoning becomes quite similar to expropriation and, as such, is a drain on public funds. As the public is to benefit from the acquisition of such land, they should pay the landowner for the privilege of using his land. However, if there is a more economic method of acquisition available and it does not deprive the landowner of his "just compensation," it should be utilized. As zoning does not involve the acquisition of full title, perhaps it is more closely related to development rights, which were discussed earlier, and which may be a more practical method of acquisition. Once again, this question of compensation to a landowner who has his land use restricted by zoning is more of a problem in the United States. In Ontario, a man only has the right to develop his land to the extent that the zoning by-law states and no compensation is involved. However, this does not necessarily eliminate the need for such compensation. In Ontario, compensation of this nature could take the form of property tax relief, which will be discussed later, to the landowner who develops his land within the confines of the zoning by-law.

Zoning appears to be a very useful tool with which to preserve open space. However, the adequacy of zoning is being seriously questioned by some planners in the United States. It has been contended, by these same planners, that "the local market place and the local zoning board have made zoning yield too readily to development pres-

sures."[82] Such a situation limits the effectiveness of zoning. Zoning in the United States is subject to pressure groups and zoning changes tend to reflect the desires of these pressure groups rather than what is in the best interests of the public. Such is not the case in Ontario. The Ontario Municipal Board is designed to act as an objective, unbiased arbitrator in the case of conflicting zoning claims and, as such, acts as a control on the development pressures that plague planners in the United States. The adequacy of zoning in Ontario should be questioned on its lack of some provision for compensating the rural landowner whose land has been restricted and whether or not a particular zoning is in the public interest. Only by a comprehensive master plan for the entire community and expert opinion as to which areas are best suited to a specific land use can judgment be made as to whether or not a particular zoning is in the public interest. This is not to be taken as the establishment of an oligarchy of experts to tell the public what is in their best interests. Such opinion is designed to determine if a specific land use is in keeping with the intent of the official plan and is representative of the needs and desires of the people. Also, such expert opinion could be used to determine which land uses are compatible in the creation of multi-purpose areas.

[82]Seigel, Law of Open Space, p. 41.

(k) Taxation as a Supplemental Method of Land Use Control

The pressure of increasing taxes are a major cause of the reduction of agricultural and open space land. A possible defense mechanism against urban expansion is property tax relief, in the form of concessions, for landowners who maintain the existing low density land use in areas where the zoning regulations have been changed to permit development. Another possible defense is that of sanctions in the form of fines or injunctions for those who do not conform with a prescribed zoning. As all plans for developing land must have the approval of the Department of Municipal Affairs, there are few instances where such sanctions would be necessary.[83] The presence of either mechanism may, however, encourage landowners to maintain open space or farmland in its present form.

Taxation promises little success as a method of comprehensive land use planning but, if used in the right place and at the right time, it offers a possible method of delaying development until such time as a municipality can acquire full ownership or a lesser interest in the land. Taxation also provides a valuable adjunct to other methods of land acquisition. In growing areas, landowners are tempted to realize greater profits by adaption to higher density land uses even though an advantageous tax position may be sacrificed. The dilemma is inherent in the method.

[83]Conversation with J. A. Darker, Research Planner, Department of Municipal Affairs, January 15, 1969.

If a farm landowner maintains a low density land use in an area where the zoning had been changed to permit development, then he should receive some form of tax relief. If this same farmer decided, at a later date, to commit his land to development, then a tax penalty, in the form of payment of the tax savings realized while the land was under voluntary restriction, could be assessed. However, the presence of such a penalty would tend to negate the possibility of a farm landowner voluntarily maintaining a low density land use in such areas.

(i) Exemptions

Exemptions from taxation is a device that is incorporated within the Assessment Act of Ontario. Section 4(4) allows for exemption from taxation on lands leased to educational institutions and section 4(18) allows for exemptions on that part of a farm holding that is devoted to forestry purposes (see Appendix E[a]). Forestry purposes have been defined within the Trees Act as including outdoor recreation and this definition has generally been accepted by other departments involved with land devoted to such purposes.[84] The policy of the Department of Education permits lands used for educational purposes to also be used for recreational purposes (see Chap. III[a]). Although the author is not aware of any instances whereby a Board of

[84]Ontario, "Laws, Statutes, etc.," Trees Act, R.S.O. 1960, Section 1.

Education for a municipality has leased land for its purposes, it does provide an indirect method of acquiring land for outdoor recreation without obtaining full title to the land. This power to lease land for educational purposes may provide sufficient authority to permit the leasing of land, by a municipality, on which to provide outdoor recreational facilities and thus enable a municipality to provide such facilities without obtaining full ownership. As long as the land was used for "public purpose," the owner could be given exemption from taxation on the parcel of land in question. An advantage to such a method is that the land would still be in private ownership and would thus remain on the tax rolls.

A slightly different situation exists with regard to land devoted to forestry purposes. The farm landowner is given an exemption from taxation on land devoted to forestry purposes but, precise limits are placed on the amount of land that can be devoted to this purpose.[85] It would appear that this may be a good device for maintaining open space, however, this section of the Assessment Act is not utilized to any great extent. This may result from the unrealistic limits that are placed on the amount of land that any one owner is allowed to devote to such purposes. Often it is not good economic judgment to devote land to

[85] One acre for every ten acres of farm but not more than 20 acres in all. Ontario, "Laws, Statutes, etc.," Assessment Act, R.S.O., 1960, Section 4(18).

such purposes and when it is, the acreage is too small to permit development such that it incorporates outdoor recreation. Perhaps an increase in the amount of land that can be devoted to this purpose plus some other form of compensation would make this more attractive to landowners. Such a device would require a specific proviso to the effect that this land must be accessible to the public for recreational purposes. In this respect, this device would be similar to the acquisition of development rights, however, as it involves an agreement between public and private interests, it more closely approximates the Wisconsin Conservation Easements (see Scenic Easements and Development Rights).

(ii) Preferential Assessment and Tax Deferrals

Essentially, preferential assessment is the assessing of farmland on its low density use, regardless of location. This raises the legal question of the equality of taxation. One man's land should be taxed the same as anybody else's; on the basis of fair market value.

Preferential assessment was first put forward in Montgomery County, Maryland. Opposition to this device to preserve open space was based on four arguments. Firstly, the tax change would not preserve open space. If the assessment does not rise, farmers are not under any pressure to sell. This ignores the basic fact that high prices, not

high taxes, induce most farmers to sell.[86] Secondly, by reducing the taxes on farms, the burden is increased for others. The validity of this argument is doubtful. Why should the farmer be taxed to support a demand for services to which he does not contribute? By maintaining the low density use of his land, he is, in effect, producing a demand for services far less than would be the case if he developed his land. Thirdly, if farmers did not hold onto their land, the price of other land, including parkland, would increase with the result that there would be less money with which to pay the inflationary price, caused by development, for open space. Lastly, the public would be unable to regain taxes lost through preferential assessment if the farmer later sold the land. Despite this opposition, the plan was implemented with the result that there has been a considerable loss in the tax base.

Another side of the argument is that the tax loss is only part of an equation. Another part of the same equation is the cost of services. With the development of subdivisions, there would be an increase in the tax base; but does a municipality necessarily gain from this? Generally, the average new subdivision does not produce enough revenue to offset the cost of the community services it demands.[87] A lower tax base would thus be offset by lower

[86] U. S. Outdoor Recreation Resources Review Commission, Study Report No. 15, p. 6.

[87] Ibid., p. 17.

service costs.[88] Due to the lack of analysis, the Maryland experiment is inconclusive, however, as stated by Blair Lee, the author of the legislation, "I am under no illusion that the tax plan is the ultimate solution. What I think it can do is buy us some time."[89]

A further refinement of the Maryland Plan is to be found in the Hawaii Land Act. Here, preferential assessment is contingent on zoning. The Act provides that land can be classified according to use and that assessment can reflect that classification.

> The Legislature finds that in order to preserve, protect and encourage the development of the lands in the State for those uses to which they are best suited for the public welfare and to create a complimentary assessment basis according to the contribution of the lands in those uses to which they are best suited, the power to zone should be exercised by the State and the methods of real property assessment should encourage rather than penalize those who would develop these uses.[90]

What assurances does the public receive that, once given preferential assessment, the land use will be maintained? Will an owner sell his land at speculative prices and reap

[88] A municipality attempts to maintain a sixty-forty ratio between industrial and residential assessment. However, this applies to the municipality as a whole and not to any one subdivision as it is vertually impossible for a new subdivision to provide sufficient revenue to offset the spiralling costs of services for that subdivision. Based on a conversation with J. A. Darker, Research Planner, Department of Municipal Affairs, January 15, 1969.

[89] U. S. Outdoor Recreation Resources Review Commission, Study Report No. 15, p. 7.

[90] Hawaii, "Laws, Statutes, etc.," Hawaii Land Act, 1961, Section 1.

the benefits from a previous preferential assessment? These questions have led to the introduction of tax deferrals. In this approach, the tax reduction received through preferential assessment must be paid back to the community when and if the land is committed to development. Tax deferrals will not prevent development if the price and development pressures are great enough. However, they will tend to inhibit premature development and in this regard "buy us some time."[91]

When dealing with preferential assessment and tax deferrals, it should be kept in mind that they are designed only to supplement other devices and are not an end unto themselves. If used correctly, they can possibly prevent development long enough to enable a community to process the necessary legislation to ensure the continued low density use of particular sections of land and also, provide a municipality enough time in which to find sufficient funds with which to obtain full ownership or a lesser interest in the land.

The concept of preferential assessment is partially incorporated into the Assessment Act. Section 39 of this Act allows for a fixed negotiated assessment to be placed on golf courses.[92] A similar type of assessment or assess-

[91]U. S. Outdoor Recreation Resources Review Commission, Study Report No. 15, p. 7.

[92]Ontario, "Laws, Statutes, etc.," The Assessment Act, R.S.O., 1960, Section 39(1).

ment based on the existing economic activity of the land would assist in keeping land in its present low density use, particularly in the urban fringe. Section 35 points out that the sale value of land is to be part of the equation to determine the assessment.[93] Land in areas undergoing urban expansion will have a higher sale value than land not experiencing this phenomena. This will tend to increase the assessment value of the property and the taxes will also increase. An assessment based solely on economic function and not on the "highest and best use" of the land may well deter premature development of the urban fringe, thus allotting a municipality sufficient time to set aside or acquire the required open space.

(1) Conclusion

> The legal aspects of park and master planning are the most important determinants of the success or failure of long-range master plans.[94]

The implications of this statement are far reaching. As outlined earlier, parks are an integral part of the urban structure and, as such, they should receive the same consideration as any other land use outlined in the master plan. The lack of adequate legislation to set aside sufficient land for parks as outlined in the master plan result in the plan becoming meaningless. To become an ef-

[93] Ontario, "Laws, Statutes, etc.," The Assessment Act, R.S.O., 1960, Section 39(1).

[94] Stelling and Dean, Profit, Law and Master Planning of Parks, p. 227.

ficient planning tool, the master plan must be accepted and implemented in its entirety. Stelling and Dean point out some of the problems facing planners in terms of incorporating and gaining acceptance for parkland within the master plan.[95] They state that planners are rarely consulted during the decision making process and the demand for outdoor recreation carries, too often, little weight when set off against the interests of those who would prefer to see the land serve some economic functions. The acceptance and implementation of the entire plan is a basic requirement to the provision of open space. It is imperative that decision makers be made fully aware of this necessity. Assuming they accept this premise, it then becomes necessary that the legislation be adequate to permit the evolution of the land uses of the master plan. In order to acquire sufficient land for open space, the planner must have at his disposal, any and all legal tools that provide for the acquisition of land for this purpose: something that he does not have at present.

The foregoing has been an attempt to review the legal tools available under existing legislation and also to outline how these tools may be expanded or new ones incorporated. The additions to the existing tools are based largely on the American experience but it is felt that they can be applied here. Some modification may be necessary

[95]Stelling and Dean, Profit, Law and Master Planning of Parks, pp. 227-228.

but, for the most part, the basic idea behind these tools is valid.

> Once the "end" is constitutionally valid, the "means" which the legislature may adopt to serve the end--if reasonably calculated to have such an effect--is beyond judicial scrutiny. If it is established as a public use and purpose to maintain open space, whether this is done by acquiring the fee, by acquiring public easements to private development, by the taxing power or otherwise, is immaterial, legally speaking.[96]

A basic prerequisite to the implementation of any of these tools would appear to be a Provincial Land Use Plan. Why is such a plan necessary? The factors that tend to cause injurious urban expansion, such as land assembly by speculative interests, may also, to some extent, prevent a community from acting under enabling legislation. Also, some municipalities may be reluctant to implement such tools as the purchase of easements. They feel that the resulting loss of tax revenue from restricting the land use may be more serious than permitting unrestricted development in open areas. Overall land use control in the hands of the Provincial Government would appear to be a possible solution. Under such a scheme, the local municipality would be responsible for the detail of their part of the plan, but the responsibility of ensuring the implementation of the plan would be left to the province. This would assure comprehensive planning, free from local boundaries and pressures and, at the same time, leave some con-

[96]Seigel, Law of Open Space, p. 32.

trol in the hands of persons acquainted with local conditions.

A major disadvantage to placing the control of land use in the hands of the Provincial Government is that, based on past experience, the tremendous amount of "red tape" that would have to be overcome and the inability of government officials to make decisions would delay the application of a master plan to such an extent that the plan may become meaningless in terms of the requirements of the municipality. A more meaningful and, in all probability, more practical solution to this problem has become available with the advent of regional government and the Area Planning Board. The development of a master plan for an area as opposed to the entire province would result in a plan that would be more representative of local conditions and, at the same time, permit the various segments of the area to assume a certain degree of homogeneity. Also, the amount of "red tape" that would require unravelling would be considerably less than that which would be experienced in evolving a Provincial Land Use Plan.

The advent of regional government makes a review of the methods of land acquisition for open space purposes imperative. The Area Planning Board will be dealing with a larger area of land possessing a more varied land use pattern than is the case with the local Municipal Planning Board. Therefore, the Area Planning Board must have at its

disposal all the legal tools available for acquiring land for open space if this part of the official plan is to become the integral part of the urban structure that it must be.

PART D

CONCLUSION

CHAPTER V

SUMMARY AND CONCLUSIONS

(a) Standards, Model and Legislation: An Evaluation

The increasing demand for outdoor recreation in the urban community has contributed to the overcrowded conditions of existing open space facilities. The existence of such a situation has led to a deterioration in the quality of many of these facilities and has pointed out the need for a complete reassessment of municipal park systems and the standards under which they are created. Are ten acres of developed parkland per 1,000 persons adequate in view of the expanding urban population and its increased leisure time? As this figure has not, as yet, been subjected to academic research its validity is questionable, however, the inflexible nature of these standards is such that they may not be truly representative of the needs and desires of the people.

The standards set down by the Community Programs Division of the Department of Education form the basis of open space standards used by many municipalities throughout Ontario. In an effort to assess the degree to which a municipal park system for a specific municipality coincides with a system based solely on existing standards, a

locational model based on these standards was developed and applied to the cities of Kitchener-Waterloo. The application of these standards to the "Twin Cities," in the form of a locational model, has served to illustrate that the municipal park systems that have evolved over the years compare favorably with a theoretical system, based solely on existing standards, in terms of location. However, with regard to the actual size of any one unit in a tier, or the total acreage of any one tier, the existing park systems are well short of minimum standards as represented in the model. The fact that a municipality has been unable to acquire land in large enough parcels to provide parks of sufficient size to meet the standards does not result in condemnation of the existing standards. Rather, it tends to result in the condemnation of the methods available for the acquisition of land for this purpose. It may well be, that the standards as they exist, with the addition of some degree of flexibility, are adequate to meet the demands for open space; but it is obvious that the methods available to the municipality for the acquisition of open space are inadequate.

The model developed in this thesis has many uses both as an assessment device and as a planning tool. It must be kept in mind that a model of this nature is limited in its uses by the criteria on which it is based; in this case, existing open space standards. If used as a tool or device to supplement planning rather than as an end unto

itself, this model has as a major potential use, using these standards; the determination of where best to acquire or preserve land for open space in the urbanizing areas. It is in this area of locational analysis that this piece of research contributes to the body of Geographic knowledge. The techniques developed and utilized throughout this study are methods that could be used to determine the optimum location of a particular phenomena. Once the best location has been determined an assessment can be made to determine the extent to which present and proposed land use patterns agree with the theoretical locations determined by means of the locational model.

As outlined, Kitchener-Waterloo has been unable to acquire parcels of land of sufficient size to meet existing open space standards. In order that existing shortages are not allowed to continue and in an effort to meet the real and potential demand of urban dwellers for outdoor recreation, land in the urban fringe must be acquired in advance of development. The question of how to acquire or preserve such land now arises. The methods of acquiring open space presently available to the municipalities have been discussed and it has been pointed out that these methods are incorporated in existing legislation. The incorporation into this legislation of the new legal tools suggested would require a considerable amount of time. As time is of the essence, some temporary measure must be found that can be used until the necessary legislation is passed.

Such a measure is already available in the Conservation Authority's Act.

When the Conservation Authorities were created in 1946, their purpose was clearly defined as the

> . . . conservation, restoration and development of natural resources, other than gas, oil, coal and minerals, and the control of water in order to prevent floods and pollution, or for any of such purposes.[97]

From a review of the land under the control of the Grand River Conservation Authority, it appears that the Authority has restricted itself, for the most part, to land that is riverine.[98] Also, a study conducted by the Conservation Authorities Branch of the Department of Energy and Resources Management in 1964 concerned with conservation lands in the Grand Valley dealt only with lands that were riverine.[99] A rather interesting development, that illustrates the emphasis being placed on water oriented land, is that in 1964, what is now the Grand River Conservation Authority was known as the Grand Valley Conservation Authority. There are, no doubt, many areas not adjacent to water that are worthy of the attention of an Authority and as it was the intended purpose that an Authority should have jurisdiction over "a watershed or

[97]Ontario, "Laws, Statutes, etc.," Conservation Authority's Act, R.S.O. 1960, Section 1(1).

[98]A Guide to Recreation Areas Operated by the Grand River Conservation Authority (Galt, Ontario: Grand River Conservation Authority, 1968).

[99]Ontario, Grand River Conservation Lands Study.

any part thereof,"[100] it is the contention of the author that a restatement of the Authorities' function would provide the necessary measure that would preserve open space land. The Conservation Authorities, by exercising all the powers with which they are empowered, could restrict development in areas of exceptional topographic or scenic value in the urban fringe or anywhere in the watershed to low density use until such time as the necessary legislation is passed enabling a municipality, or an Authority, to actually control the land use of these places.

The creation of an Area Planning Board will, in all probability, result in some conflict between it and the local Conservation Authority as to which one has jurisdiction over a specific parcel of land. The question arises as to just what role an Authority can play within the framework of regional government. As seen throughout the discussion dealing with the legal aspects of land acquisition (see Chap. IV), the function of the Conservation Authorities is a valid one, however, the lack of specific powers, such as the power to pass zoning by-laws, often results in considerable difficulty in the carrying out of this function. It seems that the Area Planning Board, which possesses such powers, could carry out this function more efficiently and, in all probability, more economically than a Conservation Authority. Therefore, it seems that

[100] Ontario, "Laws, Statutes, etc.," Conservation Authority's Act, R.S.O. 1960, Section 2(1).

there are two alternatives open. First, the function of the Conservation Authorities could be redefined such that it compliments that of the Area Planning Board, or the Conservation Authorities could cease to exist as a separate body and their functions incorporated into that of the Area Planning Board.

Whether a municipality obtains the necessary open space through the acquisition of full title or by acquiring some lesser interest in the land is irrelevant at this point. What is relevant is that a municipality must be given the power to utilize every possible means of land acquisition if it is going to be in a position to provide sufficient open space to meet an ever increasing demand for such space. As the primary objectives of deriving a locational model for outdoor recreation facilities, using existing standards, in the urban community and an assessment of the existing legal methods of acquiring land on which to provide these facilities have been achieved, the study will be of use to municipal planners who determine where outdoor recreation facilities are to be located and the most suitable method of land acquisition; legislators whose responsibility it is to provide the means whereby a municipality can acquire sufficient open space; and recreationists who are involved with determining the needs of the people for outdoor recreation and converting these needs into standards.

(b) Lines of Further Research

Research should be conducted into the demand and need for open space within the urban community and its immediate environs. Regional government reiterates the need for this type of research to be very extensive. Regions are such that any one, except in the case of large metropolitan areas such as Toronto, will incorporate urban and rural land uses. Due to this, demand studies should not be restricted to the urban community, as such is an integral part of the entire region. Research should be conducted into the demand for open space by the inhabitants of the entire region so that the resulting demand patterns reflect the needs and desires of the people of this larger area. Granted, urban demands for particular types of open space may well vary from that of rural demands, however, as the region is a relatively homogenous unit, demand studies can only be truly representative when all sectors of the region are taken into consideration.

Secondly, research should be conducted into the open space standards being used by the municipalities of Ontario. A municipal park system can only satisfy the needs and desires of the people when the standards under which it is developed are based on the needs of the inhabitants for outdoor recreation. Again, regional government makes it necessary to look at both the urban and rural situation. It is obvious that the standards that apply to an urban community will not apply to the rural areas be-

cause of the lower population density and their close proximity to "open space." However, as a region is relatively homogenous and rural land can be considered as potential urban land, particularly in the urban fringe, standards that will satisfy the demand, real and potential, for open space within the entire region must be established.

Finally, research should be conducted into all methods of acquiring open space. There is little point in studying the demand for open space and creating standards to satisfy this demand if a municipality is unable to acquire sufficient land for open space with which to meet the requirements of these standards. As pointed out earlier, the advent of regional government emphasizes the need for research into the methods of land acquisition. The methods for preserving open space in the rural areas need not, necessarily, be as extensive as those required for setting aside such land in the urban community. However, as rural land is potential urban land, the Area Planning Board must have at its disposal adequate methods to enable it to acquire sufficient open space anywhere within the region.

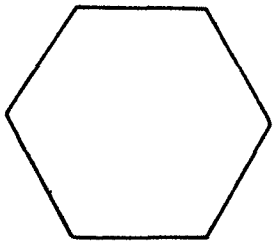
The aforementioned areas of research will place municipalities, or regional governments, in a better position to meet the needs and desires, for open space, of an ever increasing urban populace.

APPENDICES

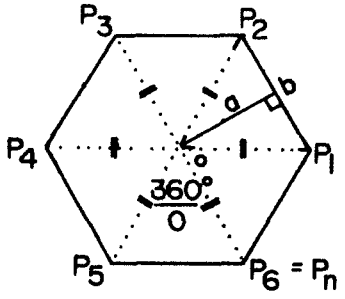
APPENDIX A

DETERMINATION OF HEXAGONAL GRID USED IN MUNICIPAL PARK SYSTEM

A hexagon is a regular polygon inscribed in a circle with all of its vertices lying on the circle.[101] This is the basis that was used in the construction of the hexagonal grid for the municipal park system. The method used to construct this grid is illustrated below.



In determining the area of the hexagon, the following method was used.[102]



The convex polygon P_1 P_2 . . . P_6 in figure is a regular polygon (hexagon) inscribed in the circle with centre O.

[101] Beesack, et al., Secondary School Mathematics, Grade Twelve, p. 248.

[102] Ibid., pp. 248-249.

Definition:

A convex polygon is regular if all its sides are equal and all its angles are equal.

A polygon is inscribed in a circle if all of its vertices lie on the circle.

A regular polygon, (n-gon), $P_1\ P_2\ \ldots\ P_n$ inscribed in a circle, centre O, has

$$\Delta OP_1P_2 \cong \Delta OP_2P_3 \cong \Delta OP_3P_4 \cong \cdots \cong \Delta OP_{n-1}P_n \cong \Delta OP_nP_1$$

each triangle has the same base length, 'b' units;

each triangle has the same altitude, 'a' units;

each triangle has the same area, 1/2 ab square units

the perimeter of the polygon, P_n units, is given by the formula

$$P_n = nb$$

and the area of the polygon, A_n square units, is given by the formula

$$A_n = n(\tfrac{1}{2}ab)$$

$$\text{or} \quad A_n = \frac{nab}{2}$$

which may be expressed:

$$A_n = \frac{P_n a}{2}$$

APPENDIX B

INVENTORY OF EXISTING PARK AND OPEN SPACE FACILITIES IN KITCHENER

Neighbourhood Parks	Area (acres)
Admiral Park	0.50
Arnold Street Park	0.50
Ash Street Park	0.75
Belmont Park	3.00
Cherry Park	6.72
Cloverdale Park	5.00
Crosby Park	4.00
Duke Street Park	0.50
Forest Hill Park	6.00
Franklin Park	9.50
Glendale Park	1.00
Guelph Street Park	2.99
Hibner Park	0.50
Hillside Park	2.60
Huron Park	2.90
Kaufman Park	15.00
Knollwood Park	8.90
Lakeside Park	10.00
Major Park	1.00
Midland Park	6.00
Montgomery Park (part only)	2.00
Prospect Park	3.00
Queensmount Park	5.50
Shantz Park	21.20
Shoemaker Park	11.50
Tomahawk Park	5.00
Union Park	19.53
Weber Park	5.50
Woodside Park (part only)	10.00
Total	170.59

Elementary Public and Separate Schools Used as Neighbourhood Parks	Area (acres)
Carmichael Public School	4.23
Canadian Martyr's Separate School	5.00

Courtland Public School	2.56
Crestview Public School	6.61
Forest Hill Public School	5.69
Franklin Public School	4.75
Howard Robertson Public School	7.58
King Edward Public School	1.90
Margaret Avenue Public School	2.96
Nine Pines Public School	1.21
Notre Dame Separate School	2.00
Preuter Public School	4.18
Queen Elizabeth Public School	4.40
Queensmount Public School	6.31
Rockway Public School	5.42
Rosemount Public School	5.94
Sacred Heart Separate School	1.00
St. Anne Separate School	3.00
St. Aloysius Separate School	3.00
St. Bernadette Separate School	2.00
St. Boniface Separate School	2.00
St. Daniel Separate School	5.00
St. Francis Separate School	3.00
St. John Separate School	2.00
St. Leo Separate School	3.00
St. Mary Separate School	1.00
St. Paul Separate School	4.00
St. Teresa Separate School	3.00
Sheppard Public School	2.73
Smithson Public School	6.23
Southridge Public School	6.85
Stanley Park Public School	3.82
Suddaby Public School	1.95
Sunnyside Public School	4.60
Victoria Public School	1.99
Westmount Public School	6.75
Wilson Avenue Public School	6.65
Total	149.26

Community Parks	Area (acres)
Breithaupt Park	20.00
Wilson Park	30.00
Total	50.00

Public and Separate High Schools Used as Community Parks	Area (acres)
Cameron Heights Collegiate	3.00
Eastwood Collegiate	4.00

Forest Heights Collegiate	8.00
Grand River Collegiate	7.00
Kitchener-Waterloo Collegiate	1.00
St. Jerome's High School (Separate)	1.00
Total	24.00

Regional Parks	Area (acres)
Borden Parkway	500.00
Chicopee Park	154.00
Eastside Conservation Area	200.00
Homer Watson Park	35.50
Kiwanis Centennial Park	119.00
Victoria Park	59.50
MacKenzie King Memorial Park	12.00
Total	980.00

Natural Areas	Area (acres)
Breithaupt Park (part only)	65.00
Greenbrook Drive	25.00
Idlewood Park	64.54
Kitchener Water Pollution Control Centre	121.00
Montgomery Park (part only)	21.90
Springwood Park	24.00
Steckle Park	32.50
Woodside Park (part only)	5.00
Total	315.74

INVENTORY OF EXISTING PARK AND OPEN SPACE

FACILITIES IN WATERLOO

Neighbourhood Parks	Area (acres)
Margaret Avenue Park	0.90
Moses Springer Park (part only)	5.00
Waterloo Park (part only)	5.00
Weber Street Park	1.10
Peter Roos Memorial Park	1.31
Total	13.31

Elementary Public and Separate Schools Used as Neighbourhood Parks	Area (acres)
Alexandra Public School	2.00
Centennial Senior Public School	5.30
Brighton Public School	2.40
Elizabeth Ziegler Public School	5.20
Empire Public School	4.60
Harold Wagner Public School	4.40
Lincoln Heights Public School	2.50
MacGregor Public School	5.50
Northdale Public School	4.70
Our Lady of Lourdes Separate School	3.00
St. Agnes Separate School	2.90
St. David's Separate School	7.00
St. Louis Separate School	2.00
St. Michael Separate School	2.90
Sir Winston Churchill Public School	5.20
Total	59.60

Community Parks	Area (acres)
Moses Springer Park (part only)	14.00
Waterloo Park (part only)	25.00
Total	39.00

Public and Separate High Schools Used as Neighbourhood Parks	Area (acres)
Laurel Vocational School	9.00
Waterloo Collegiate	9.00
Total	18.00

Regional Parks	Area (acres)
Hillside Park	40.00
Laurel Creek Conservation Area	734.00
Waterloo Park (part only)	70.00
Total	844.00

Natural Areas	Area (acres)
Sugar Bush Park	37.60
Total	37.60

SOURCES: Parks and Recreation Departments for the cities of Kitchener and Waterloo.

NOTES: Inventory includes only neighbourhood, community and regional parks, and natural areas of the municipal park system.

Area of all school facilities is exclusive of buildings and parking lots.

Kitchener:

Borden Parkway--although this facility is listed as having 500 acres, a large portion of it has been lost to the K-W Expressway.

Kitchener Water Pollution Control Centre--in the mind of the author, this facility requires considerable improvement before it can be utilized.

APPENDIX C

The following are the uses to which land zoned as commercial or industrial can be put as outlined within City of Waterloo Zoning By-law 1108. Similar uses are outlined in the commercial and industrial sections of City of Kitchener Zoning By-law 1043.

Commercial One

21A (1) No person shall erect, alter, enlarge or use any building or structure in whole or in part, nor use any land in whole or in part within the Commercial One Zone for any purpose other than one or more of the uses herein set out:

Apartment
Art Gallery, Museum
Hotels
Hospitals
Offices - business and professional
Bank or Trust Company
Office Services
Clinics (Medical, Dental, Therapeutic)
Dental Laboratories and Supplies
Barber Shops, Beauty Parlours, Steam Baths
Massage Establishments
Newspaper or Commercial Printing Office, Engravers
Private Clubs, Lodges
Churches
Schools (Public or Commercial, but not trade school)
College or University
Wholesale showrooms but only where no warehousing, manufacture or retail sale is conducted
Business Machines (Sales and Service)
Photographic Studios
Travel Agency
Parking lots or parking building (Not a public garage)
Funeral Homes
Motels
Radio or Television Studios

Industrial

32. No person shall erect, alter, enlarge or use any building or structure in whole or in part, nor use any land in whole or in part within the "I" Zone for any purpose other than one or more of the following uses:

(i)
Animal Hospital
Bakery
Billiard Parlors
Bedding Works
Bottling Works
Bowling Alleys
Car Equipment Sales Rooms
Commercial Offices
Contractors' Equipment and Supplies
Curling Rinks
Dairies
Dry Cleaning and Laundry
Automobile Service Station
Painters' Shops and Offices
Plumbing and Tinsmithing Shops
Service Garages
Taxi Stands
Transport Depots and Offices
Marine Equipment Sales and new and used Motor Vehicle Sales
Warehousing
Wholesale Offices and Warehouses offices
Breweries and Distilleries
Flour Milling
Metal Fabrication and Forming
Woodworking and Lumber
Banks
Trust Companies

(ii) The manufacturing of:

Boots and Gloves
Brooms, Whisks and Brushes
Ceramics and refractories
Clothing
Electrical and electronic components, appliances and equipment
Felts
Furniture
Leather Goods
Machinery and Equipment
Musical Instruments
Paper and Fibrous Boxes and Containers
Plastics, Porcelain, Pottery
Rubber Products
Sheet Metal and Plating
Textile and Knitting.

APPENDIX D

POPULATION DENSITY MAP

Population density and distribution are major criteria in developing a municipal park system based on existing standards. Population density is used to determine the size of a facility (see Chapter III [d]), and the distribution can be used to help determine the location, particularly in terms of neighbourhood and community parks.

A population density map, per se, is nonexistent for Kitchener-Waterloo. There is one for Waterloo but Kitchener is, at present, in the process of developing such a map. Even at that, the finished product will be two separate maps, rather than one map for the entire area. Therefore, it was necessary, for purposes of this study, to develop a population density map that would treat Kitchener-Waterloo as one unit. In developing the map bias, in the form of assumptions made regarding the distribution of population, was introduced. These assumptions were made because of insufficient data regarding the actual distribution of the population within the basic unit used. Also, only a general indication of density and distribution were necessary at this time.

The basic unit used in determining the population density for the study site was the traffic zones used in

the K-W Urban Traffic Study.[103] These zones were used as they were the smallest areal units for which population data was available. In their study, Read and Vorhees used the 1965 population figures and the city limits shown on their maps were also those of 1965. It was found that the boundaries of several zones on the periphery of the Twin Cities did not correspond with these city limits. However, when the city limits on their map were extended to those of today, it was found that a closer correlation existed between these limits and the boundaries of the traffic zones. This reduced the number of partial zones it was necessary to consider. However, one major exception to this was the southern periphery of Kitchener. In order that the entire Kitchener-Waterloo area as it exists now could be considered, it was necessary to increase the size of the traffic zones in that area so that the village of Doon and the surrounding area were included, as the traffic zones were not established for this area. The necessary population adjustments were based on the 1966 census, as 1965 data was not available for this extended area.[104]

To determine the population density of a zone, the area of a zone was measured and then the existing open space areas, public and private, were subtracted to determine what the author refers to as the "habitable" area of

[103] Read and Vorhees, K-W Urban Traffic Study.

[104] Canada, 1966 Census, Bulletin C-12, Dominion Bureau of Statistics.

the zone. It was then assumed that there was a uniform population distribution throughout this habitable area and the density in terms of the number of persons per acre was established. Commercial and industrial areas were included in this habitable area because it was found that people were distributed fairly uniformly throughout them. However, in working with the peripheral zones that are divided by the city limits, it was necessary to determine the number of persons in the part of the zone that is inside the city limits. The procedure followed here was to determine if there were any subdivisions in the part of the zone inside the city limits that are either occupied or in the process of being occupied. If so, then it was assumed that the population for that zone was within these urbanized areas and the density was established accordingly, using the area of the subdivision as the basic unit. If, however, there were no such subdivisions present, then it was assumed that the inhabitants were distributed uniformly throughout the zone. In such a case, the population density of the part of the zone within the city limits would be of the same percentage as the area of the zone within these limits. The same procedure was applied to those zones on the periphery that are not completely built up and are not divided by the city limits.

The elimination of existing open space areas and the assumption that the population on the periphery is restricted to urbanized areas enables some indication of the

population distribution to be shown on the population density map (see Figure 7).

Once the densities were determined, they were plotted on semi-log paper.[105] A study of the graph (see Figure 11) resulted in the following pattern of population density and distribution throughout Kitchener-Waterloo (see Figure 7).

Less than 5 persons per acre,

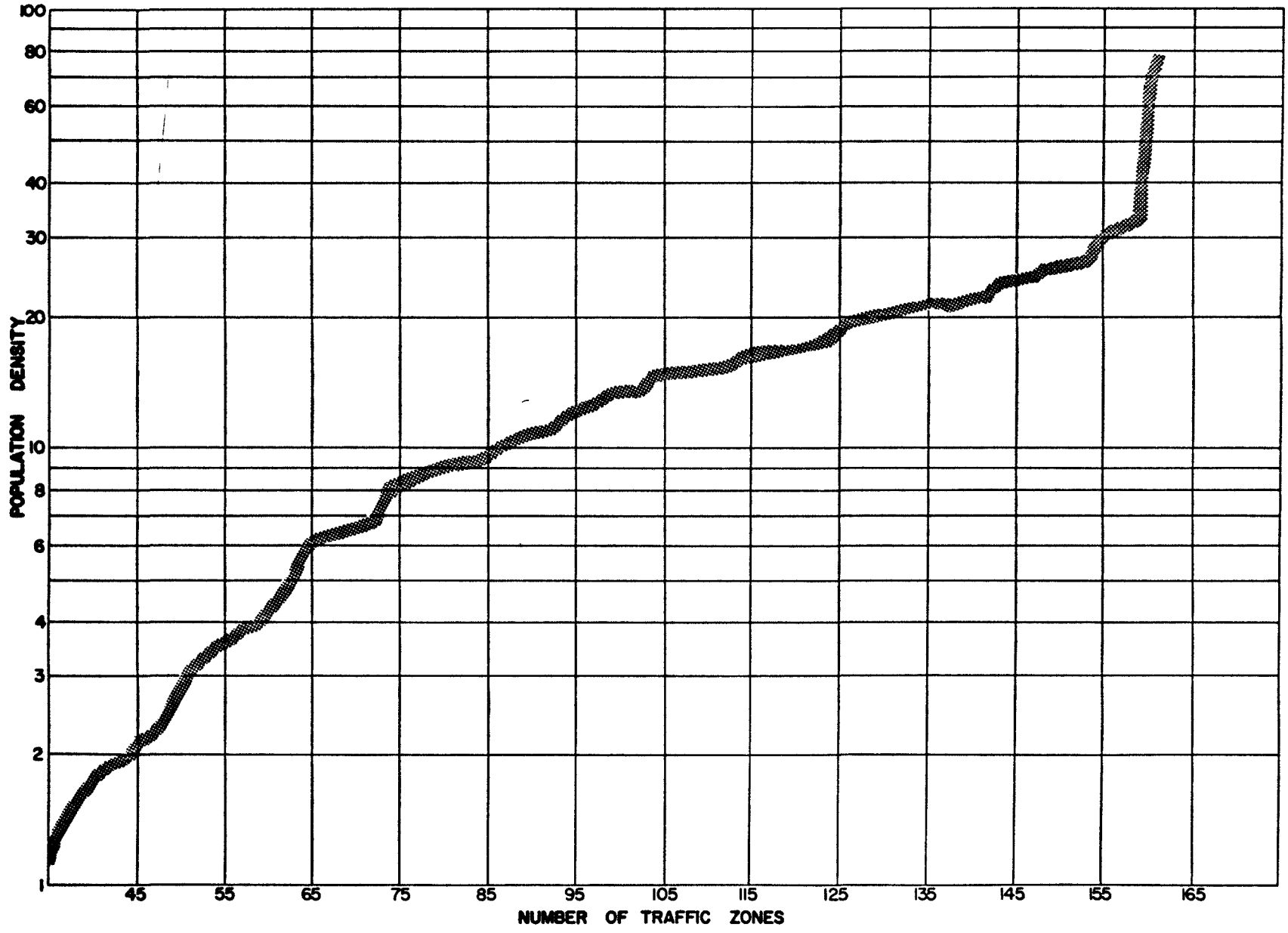
5 - 10 persons per acre,

10 - 20 persons per acre,

20 - 30 persons per acre,

30 persons or more per acre.

[105]Figures developed and used to determine the population densities are seen in Table XI.



GRAPH OF POPULATION DENSITIES ON SEMILOG. PAPER

NOTE· TRAFFIC ZONES WITH A POPULATION DENSITY OF LESS THAN 1 ARE NOT INCLUDED

FIGURE 11

TABLE XI

POPULATION STATISTICS FOR KITCHENER-WATERLOO

District	Zone	Area (Acres)	Population	Density (per acre)
1	Wat. CBD	165.76	1590	11.80
2	16	51.84	779	15.63
	17	32.00	577	16.78
	18	21.76	175	8.76
	46	58.24	861	14.78
3	10	32.00	196	6.13
	19	113.92	1602	14.06
	20	81.92	1563	19.81
	114	58.24	99	1.70
	116	25.60	644	25.16
	117	19.20	58	3.02
	177	150.40	1193	8.32
4	21	48.64	209	6.61
	22	117.12	578	6.63
	48	206.08	1691	9.92
	49	215.68	340	1.65
	50	290.56	314	1.11
	178	247.68	236	23.68
	204	67.24	0	0
5	23	87.04	539	7.59
	24	77.44	303	3.91
	51	277.12	184	.66
	52	273.28	609	2.23
6	53	350.08	0	0
	54	702.72	0	0
	55	184.96	77	.42
	56	479.36	0	0
	57	163.84	1244	9.14
	58	128.64	340	3.22
	59	807.68	72	.09
7	25	8.32	383	46.03
	26	38.40	569	16.03
	27	117.12	2488	24.29
	28	30.08	594	19.75
	29	45.44	414	9.11
	30	48.64	150	3.08
	35	77.44	1110	14.99
8	31	85.76	8	.11
	32	32.00	67	2.09
	33	76.40	782	10.24
	34	90.24	616	8.48
	39	140.16	347	2.48
	60	66.56	85	1.28
	61	109.44	32	.33
	62	90.88	0	0
	63	500.48	0	0
	64	277.76	600	2.16
	65	200.32	0	0
	68	257.92	0	0
9	36	28.16	44	1.74
	37	34.50	160	5.81
	38	40.96	613	14.97
	41	32.00	649	20.28
	42	71.04	1141	16.06
	44	53.76	455	9.57
	45	83.84	1516	18.08
10	40	178.56	611	3.50
	43	53.76	667	12.41
12	Kit. CBD	158.72	2645	17.04
13	96	42.88	1093	25.49
	97	19.20	282	14.59
	98	21.76	586	33.00
	137	32.00	654	20.24
	138	49.28	1553	31.51
	140	79.36	2324	29.28
	141	49.28	473	9.60

TABLE XI (Cont'd.)

District	Zone	Area (acres)	Population	Density (per acre)
14	99	19.20	459	23.91
	100	44.80	711	15.87
	102	10.88	351	32.26
	103	15.36	134	56.78
	144	77.44	1939	25.04
	145	49.28	686	15.85
	147	53.76	428	10.25
	148	32.00	692	21.63
	149	79.36	166	3.36
	150	45.44	696	15.32
	151	99.20	1416	14.27
	154	36.48	218	5.98
	163	268.88	1732	8.71
	165	49.28	314	6.37
	166	40.96	154	3.76
15	104	66.56	1175	20.77
	105	62.08	1640	26.40
	106	96.00	803	14.87
	107	40.96	585	34.50
	108	19.20	314	16.35
	109	45.44	212	4.67
	110	83.20	663	8.17
	111	58.24	577	11.72
16	112	28.16	58	2.06
	113	28.16	664	26.39
	115	19.20	399	20.78
	118	19.20	468	24.38
	119	51.84	368	7.86
	120	32.00	677	24.62
	121	39.04	451	11.55
	122	71.04	1819	25.61
17	47	32.00	124	3.88
	123	42.88	861	20.08
	124	32.00	907	30.23
	125	32.00	388	12.13
	126	32.00	404	13.47
	127	90.24	1294	14.92
	128	66.56	1272	19.26
	129	227.84	1875	16.54
18	130	64.64	1114	19.00
	131	45.44	602	14.70
	132	84.48	1089	13.20
	133	96.64	163	2.64
	134	39.04	240	6.15
	135	36.84	34	.93
	136	40.46	35	.85
	179	105.60	37	.35
	180	83.84	22	.26
	181	49.28	6	.12
19	139	45.44	365	8.92
	142	32.00	163	5.09
	143	113.28	2776	25.64
	146	120.32	1828	20.47
	152	145.92	1325	20.10
	182	21.76	275	12.64
	183	154.88	1598	10.70
21	153	366.08	1784	7.65
	189	416.64	33	.34
22	155	39.68	2350	79.18
	156	275.20	764	3.81
	157	113.92	1180	10.36
	158	45.44	69	1.52
	159	40.96	445	10.86
	160	396.16	4675	13.13
	161	45.44	397	8.74
	162	264.32	1060	4.14
	192	219.52	386	1.76
	193	195.84	28	.14
	194	99.20	7	.07
23	191	384.64	104	.46
24	198	1696.00	4720	3.51
25	169	385.28	0	0
	170	483.84	67	.14
	197	885.12	76	.08
	200	85.42	40	.47

TABLE XI (Cont'd.)

District	Zone	Area (acres)	Population	Density (per acre)	District	Zone	Area	Population	Density (per acre)
	210	93.64	26	.28		176	83.20	515	6.19
						203	134.23	20	.15
26	164	49.28	700	14.20		205	222.72	178	.83
	167	140.16	868	6.19		206	225.92	65	.29
	168	417.92	4001	10.70		207	67.20	51	.76
	171	140.16	1950	19.47					
	172	269.44	3425	16.12	28	201	73.96	1864	26.29
	173	68.52	1396	21.31		202	136.96	104	.76
	174	902.40	1286	1.44		208	87.68	1627	18.56
	209	137.60	1363	21.77					
					29	195	622.08	271	.44
27	175	103.04	2077	20.66		196	374.40	94	.25

SOURCES: Districts and Zones, Read and Vorhees, K-W Urban Traffic Study.

Population, Read and Vorhees, K-W Urban Traffic Study and 1966 Census, Dominion Bureau of Statistics.

NOTE: The area is exclusive of existing open space areas, public and private.

APPENDIX E

(a) Canadian Legislation Affecting the Acquisition of Land for Open Space

(i) Federal Legislation

The National Housing Act

	1954,	c.	23
amended	1956,	c.	9
	1957-58,	c.	18
	1958,	c.	3
	1959,	c.	6
	1960,	c.	10
	1960-61,	c.	61
	1962-63,	c.	17
	1964-65,	c.	15
	1965,	c.	3
	1966-67,	c.	53

Part III

Urban Renewal

23. In this Part
(a) "urban renewal area" means a blighted or substandard area of a municipality for which the government of the province in which the area is located has approved the implementation of an urban renewal scheme; and
(b) "urban renewal scheme" means a scheme for the renewal of a blighted or substandard area of a municipality that includes
(ii) a plan describing the proposed street pattern and land use for the construction or improvement in the area of municipal services, schools, parks, playgrounds, community buildings and other public facilities.

(1) In order to assist in the clearance, replanning, rehabilitation and modernization of blighted or substandard areas in any municipality the Minister, with the approval of the

Governor in Council, may enter into an agreement with the municipality providing for the payment to the municipality, contributions in respect to the costs to the municipality of acquiring and clearing, whether by condemnation proceedings or otherwise, an area of land in the municipality.

(2) An agreement entered into under subsection (1) shall provide;
(a) that the area will be developed in accordance or in harmony with an official community plan satisfactory to the Minister.

(3) No grant shall be paid to a municipality under this section unless;
(d) a substantial part of the area at the time of acquisition was, or after redevelopment will be, used for residential purposes.

(ii) Provincial Legislation (Ontario)

The Agricultural Rehabilitation and Development Act (Ontario), 1962-63, c. 1

1. In this Act,
(c) "project" means a project for,
(i) the more efficient use and economic development of lands,
(iii) the development and conservation for agricultural purposes of water supplies and for soil improvement and conservation that will improve agricultural efficiency;

3. - (1) Subject to the approval of the Lieutenant Governor in Council, the directorate has power,
(a) to acquire or lease lands for the purpose of projects;
(b) to equip and develop lands for projects;
(c) enter into agreements with persons in the use of things or services provided under projects;
(d) carry out projects in respect of agreements that have been entered into by the minister under this act;
(e) to do such acts as are necessary or expedient for the carrying out of its operations and undertakings.

(2) The directorate may, in respect to any project, delegate to any department of the government of Ontario, or to any municipal council, or to any authority under the Conservation Authority's Act, to any board or commission the members of which are appointed by the Lieutenant Governor in Council, any or all of the powers of the directorate under subsection (1).

The Assessment Act

R.S.O. 1960, c. 23
amended 1960-61, c. 4
1961-62, c. 6
1962-63, c. 7
1965, c. 6
1966, c. 10
1967, c. 4

EXEMPTIONS

4. All real property in Ontario is liable to assessment and taxation, subject to the following exemptions from taxation:

1. Lands or property belonging to Canada or any province.

4. The buildings and grounds of and attached to otherwise "bona fide" used in connection with and for the purposes of a university, high school, public or separate school whether vested in a trustee or otherwise, so long as such buildings and grounds are actually used and occupied by such institution, but not if otherwise occupied.

(a) The exemption from taxation under this paragraph does not apply to lands rented or leased to an educational institution mentioned in this paragraph by any person other than such institution or a person already exempt from taxation in respect of the property rented or leased.

18. One acre used for forestry purposes for every 10 acres of the farm in one municipality under a single ownership but not more than 20 acres in all, and, where the total acreage consists of more than one separately assessed parcel, the assessor shall treat all such parcels as one parcel for the purpose of determining the exemptions under this paragraph and shall apportion the exemption to each parcel in the ratio of the acreage of each parcel used or partly used for forestry purposes to the total acreage of all parcels used or partly used for forestry purposes.

VALUATION OF LAND

35. - (1) Subject to this section, land shall be assessed at its actual value.

(2) Subject to subsection (3), in ascertaining the actual value of land and out buildings thereon, consideration shall be given to the present use, location, rental value, sale value and any other circumstances affecting the value.

29. - (1) Any local municipality may enter into an agreement with the owner of a golf course for providing a fixed assessment for the land occupied as a golf course, but not including the part of the land actually occupied by any building or structure or such buildings or structure, to apply to taxation for general, school and special purposes, but not to apply to taxation for local improvements.

The Conservation Authority's Act

R.S.O. 1960, c. 62
amended 1960-61, c. 10
1961-62, c. 16
1962-63, c. 20
1966, c. 22

1. In this Act,
(c) "authority" means a conservation authority established under this act;
(f) "land" includes buildings and any estate, term, easement, right or interest in, to, over or affecting land;
(i) "scheme" means a scheme undertaken by an authority for the purposes of the conservation, restoration and development of natural resources, other than gas, oil, coal, minerals, and the control of water in order to prevent floods and pollution, or for any such purposes.

17. For the purposes of carrying out a scheme, an authority has power,
(c) to acquire by purchase, lease or otherwise and without the consent of the owner to enter upon, take or expropriate any land that it may require, and subject to the approval of the Lieutenant Governor in Council, to sell, lease or otherwise dispose of land acquired under this clause or under clause (i);
(d) to purchase or acquire any personal property that it may require and sell or otherwise deal therewith;

(h) to use lands that are owned or controlled by the authority for such purposes, not inconsistent with its objects, as it deems proper;
(i) to acquire lands, with the approval of the minister and to use lands acquired in connection with a scheme, for park or other recreational purposes, and to erect, or permit to be erected, buildings, booths and facilities for such purposes and to make charges for admission thereto and the use thereof;

23. If the chairman of an authority is of opinion that it can obtain the whole of any lot or parcel of land of which any part may be expropriated by it at a more reasonable price or to greater advantage than by acquiring such part only, it may expropriate the whole of such lot or parcel and may afterward sell and convey any part of it as it deems expedient.

42. Grants may be made to any authority, out of moneys appropriated therefore by the Legislature, by the Lieutenant Governor in Council and by the minister, provided that the grants made to an authority by the minister in any year for any one purpose shall not exceed $10,000.

Department of Education Act

R.S.O. 1960, c. 94
amended 1961-62, c. 31
1962-63, c. 32
1964, c. 20
1965, c. 28
1966, c. 40
1967, c. 20

12. - (4) Subject to the approval of the Lieutenant Governor in Council, the minister may make regulations with respect to adult education, recreation, camping and physical education.

The Municipal Act

R.S.O. 1960, c. 249
amended 1960-61, c. 59
1961-62, c. 86
1962-63, c. 87
1964, c. 68
1965, c. 77
1966, c. 93

1. In this Act,
(i) "local municipality" means a city, town, village

and townships;

(x) "urban municipality" means a city, town and village.

PART XIX

POWERS TO PASS BY-LAWS

377. By-laws may be passed by the councils of all municipalities:

30. For the carrying on of any community or joint community program of recreation within the meaning of the regulations under the Department of Education Act, and for expending money or granting money in aid for such purposes.

63. For acquiring land for establishing and laying out parks, squares, avenues, boulevards, and drives in the municipality or in any adjoining local municipality and, in respect of lands acquired for such purposes that are not under the general management, regulation and control of a board of park management, for exercising all or any of the powers that are conferred on the boards of park management by the Public Parks Act.

(a) The corporation that expropriates land in another municipality under the powers conferred by this paragraph shall put the land in an efficient state to be used and open it to the general public for the purpose for which it was acquired within a reasonable time of such expropriation, and shall maintain and keep the land in an efficient state of repair and shall provide police protection thereof.

(b) Where land is acquired under this paragraph, the cost of acquisition and maintenance thereof or any part thereof may be levied against a defined area in the municipality that in the opinion of the council derives special benefit therefrom.

64. For accepting and taking charge of land within or outside the municipality, dedicating as a public park for the use of the inhabitants of the municipality.

65. For entering into agreement with one or more municipalities for the purpose of,

(i) acquiring land for and establishing and laying out a park within the municipality or within any other municipality; and

(ii) maintaining or operating a public park within the municipality or within any other municipality.

379. - (1) By-laws may be passed by the councils of local municipalities:

122. For prohibiting or regulating the erection

of signs or other advertising devices and the posting of notices on buildings or vacant lots within any defined area or areas or on land abutting on any defined highways or part of a highway.

The Ontario Municipal Board Act

R.S.O. 1960, c. 274
amended 1960-61, c. 68
1961-62, c. 96
1962-63, c. 97
1964, c. 81
1965, c. 89
1966, c. 105
1967, c. 68

53. - (1) The Board has jurisdiction and power in relation to municipal affairs,

(b) to approve any by-law or proposed by-law of a municipality, which the municipality voluntarily applies for or is required by law to obtain.

The Ontario Parks Integration Board Act

R.S.O. 1960, c. 277
amended 1961-62, c. 98

1. - (1) There is hereby constituted on behalf of her Majesty in right of Ontario a corporation without share capital under the name "Ontario Parks Integration Board," herein called the board.

(2) The board shall be composed of the chairman of the Niagara Parks Commission, the chairman of the Ontario St. Lawrence Development Commission, or a vice-chairman of that commission designated by the commission, the Treasurer of Ontario, the minister of Lands and Forests, the minister of Planning and Development, and their successors in office from time to time.

7. It is the function of the board and it has power to establish integrated policies of management and development of provincial parks, parks under the Conservation Authority's Act, parks under the Parks Assistance Act, 1960, parks under the Niagara Parks Act, and parks under the Ontario St. Lawrence Development Commission Act, 1955.

The Parks Assistance Act

R.S.O. 1960, c. 285
amended 1961-62, c. 102
1962-63, c. 101
1966, c. 109
1967, c. 70

2. The parks established under this act shall be maintained and operated for the use and enjoyment of the public in such a manner as will be complimentary to the use and enjoyment of provincial parks.

2. - (1) The minister, upon the recommendation of the board and with the approval of the Lieutenant Governor in Council, may make such grants out of monies appropriated therefore by the Legislature to any municipality to assist in;

(a) the acquisition of land for an approved park;
(b) the development of an approved park; and
(c) the conversion of a provincial or public park into an approved park.

4. - (1) The council of any municipality may by by-law provide for the establishment of an approved park in the municipality or in territory without municipal organization in accordance with this act, and may acquire by purchase or otherwise real and personal property for that purpose.

6. - (1) The board in dealing with an application for assistance under this act shall determine the need for the proposed park, having regard to its location in relation to other parks in Ontario and the camping, picnicing and other facilities to be provided therein for the accommodation and enjoyment of the public.

8. Where aid has been granted under this act to assist in the establishment and development of a park, the park or any part thereof will not be sold or disposed of without the approval of the board.

The Planning Act

R.S.O. 1960, c. 296
amended 1960-61, c. 76
1961-62, c. 104
1962-63, c. 105
1964, c. 90
1965, c. 98
1966, c. 116
1967, c. 75

1. In this Act,
   (h) "official plan" means a program any policy, or any part thereof, covering a planning area or any part thereof, designed to secure the health, safety, convenience or welfare of the inhabitants of the area, and consisting of the texts and maps, describing such a program and policy, approved by the minister from time to time as are provided in this act;
   (i) "planning area" means a planning area defined by the minister under this act, and includes a joint planning area and a subsidiary planning area.

PART I

OFFICIAL PLANS

2. - (1) The minister, upon the application of the council of a municipality or the councils of two or more municipalities, or upon his own initiative where in his opinion it is in the interest of any area, may define and name a planning area.

10. - (1) Every planning board shall investigate and survey the physical, social and economic conditions in relation to the development of the planning area and may perform such other duties of a planning nature as may be referred to it by any council having jurisdiction in the planning area, and without limiting the generality of the foregoing it shall,
   (d) prepare a plan for the planning area suitable for adoption as the official plan thereof and forward it to the councils of the municipalities affected thereby, and recommend such plans to the council of the designated municipality for adoption.

19. - (1) For the purpose of developing any feature of the official plan, a municipality, with the approval of the minister, may at any time and from time to time;
   (a) acquire land within the municipality;
   (b) hold land heretofore or hereafter acquired within the municipality; or
   (c) sell, lease or otherwise dispose of land so acquired or held when no longer required.

(2) For the purpose of developing any feature of the official plan, the designated municipality in the case of a joint planning area, with the approval of the minister, may exercise any of the powers mentioned in subsection (1), in respect of land within the planning area.

PART II

SUBDIVISIONS

28. - (4) In considering a draft plan of subdivisions, regard shall be had, among other matters to the health, safety, convenience and welfare of the future inhabitants and to the following:

(g) conservation of natural resources and flood control;

(j) the area of land, if any, within the subdivision that, exclusive of highways, is to be conveyed or dedicated for public purposes.

(5) The minister may impose such conditions to the approval of a plan of a subdivision as in his opinion are advisable and, in particular but without restricting in any way the generality of the foregoing, he may impose as a condition,

(a) that land to an amount determined by the minister but not exceeding 5% of the land included in the plan shall be conveyed to the municipality for public purposes other than highways or, if the land is not in the municipality, shall be dedicated for public purposes other than highways.

(8) Where the land is in a municipality and an official plan indicating the amount and location of the land to be ultimately provided for public purposes, is, in effect, in the municipality, the Minister may authorize, in lieu of the conveyance for public purposes other than highways required under subsection 5, the payment to the municipality of a sum of money not exceeding the value of 5 per cent of the land included in the subdivision.

PART III

RESTRICTED AREA AND BUILDING BY-LAWS

30. - (1) By-laws may be passed by the councils of municipalities:

1. For prohibiting the use of land, for or except for such purposes as may be set out in the by-law within the municipality or within any defined area or areas or abutting on any defined highway or part of a highway.

3. For prohibiting the erection of any class or classes of structures on land that is subject to flooding or on land where, by reason of its rocky low lying, marshy or unstable character, the cost of construction of satisfactory water

works, sewage or drainage facilities is prohibitive.

(6) The council may acquire any land, building or structure used or erected for a purpose that does not conform with a by-law passed under this section, and any vacant land having a frontage or depth less than the minimum prescribed for the erection of a building or structure in the defined area in which such land is situate, and the council may dispose of any such land, building or structure or may exchange any of such land for other such land within the municipality.

The Provincial Parks Act

R.S.O. 1960, c. 314
amended 1960-61, c. 79
1961-62, c. 112
1962-63, c. 110
1966, c. 122

1. In this Act,
   (b) "provincial park" includes provincial camp grounds, provincial picnic grounds and provincial camp and picnic grounds;
   (c) "public lands" means lands belonging to her Majesty in right of Ontario, whether or not covered with water.

2. All provincial parks are dedicated to the people of the province of Ontario and others who may use them for their healthful enjoyment and education, and the provincial parks shall be maintained for the benefit of future generations in accordance with this act and the regulations.

3. - (3) Land may be acquired under the Public Works Act for the purposes of this act.

5. For municipal purposes, any land set apart as a provincial park or added thereto, so long as it remains part of the provincial park, be deemed to be separated from any municipality of which it formed a part immediately before it became a provincial park or a part thereof.

6. - (1) The minister may receive and take from any person by grant, gift, devise, bequest, or otherwise, any property, real or personal, or any interest therein for the purposes of a provincial park.

The Public Lands Act

R.S.O. 1960, c. 234
amended 1960-61, c. 81
1961-62, c. 117
1962-63, c. 114
1965, c. 108
1966, c. 127
1967, c. 81

1. In this Act,
(d) "public lands" means lands heretofore designated crown lands, school lands and clergy lands.

12. - (1) The Lieutenant Governor in Council may set apart and appropriate such of the public lands he deems expedient for roads and for the sites of roads, wharves or peers, market places, jails, court houses, public parks or gardens, town halls, hospitals, places of public worship, burying grounds, schools, and for purposes of agricultural exhibition, and for other like public purposes, and for model or industrial farms; and may make free grants for such purposes, and the trusts and uses to which they are to be subject shall be expressed in the letters patent; but no grants shall be for more than 10 acres in any one case, and for any one of such purposes, except for a model or industrial farm, in which case the grant shall not be for more than 100 acres.

(2) The Lieutenant Governor in Council at any time before the issue of the letters patent may revoke any such appropriation.

14. - (1) The Lieutenant Governor in Council may set apart areas of public lands for any purpose that will benefit research in, and the management, utilization and administration of, the public lands and forests.

(2) The whole or part of any area of public lands covered with water that is set apart for the purposes of a harbour under subsection (1) shall order on public lands not covered with water and such lands or such part thereof as is deemed proper shall be set apart concurrently with public land covered with water.

(a) Where 25% or more of the frontage of lands fronting on a body of water are public lands, lands comprising at least 25% of the frontage and to such depth as the minister deems appropriate shall be set apart for recreational and access purposes and where less than 25% of the frontage of lands fronting on a body of water are public lands, all public lands fronting thereon and to such depth as the minister deems appropriate shall be set apart for such purposes.

The Public Parks Act

R.S.O. 1960, c. 329
amended 1961-62, c. 119

1. - (1) A park, or a system of parks, avenues, boulevards and drives, or any of them, may be established in any municipality, and the same, as well as existing parks and avenues, may be controlled and managed in the manner hereinafter provided.

12. Real and personal property may be devised, bequeathed, granted, conveyed or given to the municipal corporation for the establishment or formation of a park, or for the purpose of the improvement or ornamentation of any park of a municipality, and of the avenues, boulevards and drives and approaches thereto, and of the streets connecting therewith, and for the establishment and maintenance on park property of museums, zoological or other gardens, natural history collections, observations, monuments or works of art, upon such trust and conditions as may be prescribed by the donor.

13. - (1) The board may acquire by purchase, lease or otherwise the land, rights and privileges required for park purposes under this act.

(4) The board has power to let any land not immediately required for park purposes.

14. - (1) The council of the municipal corporation may by by-law provide that any land acquired by the corporation not immediately required for any other purposes shall be under the management and control of the board, and the board may set apart the land or any part thereof for athletic purposes or for the purposes of sport exhibitions or other lawful amusements or entertainments, and may lease it for such purposes for such times and on such terms as the board may see fit.

15. The board, its engineers, surveyors, servants and workmen may enter upon the land of any person in the municipality, or, in the case of a city within ten miles, and in the case of a town within five miles thereof, and may survey, set out and ascertain such parts thereof as are required for parks, avenues, boulevards, and drives and approaches thereto, or for any other purposes of the board, including the supply of water for artificial lakes, fountains and other park purposes, and with the consent of all parties interested capable of consenting, may divert and expropriate any river, ponds of water, springs or streams of water therein that the engineer, surveyor, or person authorized by the board may deem suitable for such purposes, and the board may contract with the owner or occupier of

the land and with those having a right or interest in the water, for the purchase or renting thereof or of any part thereof, or of any privilege that may be required for the purposes of the board; but the board shall not interfere with the water works or water supply of any municipal corporation or of any water works company.

The Public Works Act

R.S.O. 1960, c. 338

1. In this Act,
(c) "land" includes any estate, term, easement, right or interest in, to, over or affecting land.

13. The minister may for and in the name of her Majesty purchase or acquire and, subject as hereinafter mentioned, may without the consent of the owner thereof enter upon, take and expropriate any land that he deems necessary for,
(a) the public purposes of Ontario; or
(b) the use or purposes of any department of the government thereof.

The Trees Act

R.S.O. 1960, c. 406
amended 1964, c. 118
1967, c. 103

1. In this Act, "forestry purposes" includes the production of wood and wood products, provision of proper environmental conditions for wild life, protection against floods and erosion, recreation, and the protection and production of water supplies.

The Wilderness Areas Act

R.S.O. 1960, c. 432

1. In this Act,
(b) "public lands" means the lands belonging to her Majesty by right of Ontario, whether or not covered with water.

2. The Lieutenant Governor in Council may set apart any public land as a wilderness area for the preservation of the area as nearly as may be in its natural state in which research and educational activities may be carried on, for the protection of the flora and fauna, for the improvement

of the area, having regard for its historical, esthetic, scientific or recreational value, or for such other purposes as may be prescribed.

4. Land may be acquired under the Public Works Act for the purposes of this act.

(iii) Municipal Legislation

City of Waterloo Zoning By-Law 1108[106]

Green Zone

22. No person shall erect, alter, enlarge or use any building or structure in whole or in part, nor use any land in whole or in part within the "G" Zone for any purpose other than one or more of the following uses:
(i) Institutions, public schools, sewage treatment plant, separate schools, private schools, hospitals, private hospitals, under the meaning of the Private Hospitals Act, churches, church halls and Sunday Schools.
(ii) The following recreational uses: parks, playgrounds operated by the City of Waterloo, community centre, tennis courts, bowling greens, stadia, swimming pools, golf courses.

23. The following regulations shall apply to each use in the "G" Zone:
(iv) "lot area" - the minimum lot area shall be one (1) acre.

City of Kitchener Zoning By-law 4830

Agricultural Zone

13-1 No person or persons shall erect or use any building or structure, or use any land in whole or in part, within any Agricultural Zone for any purpose other than one or more of the following uses:
(i) Any use permitted in R1 and R2 zones, including a multiple dwelling where water and sewers are available. In an Agricultural Zone a Doctor may establish an office in his residence.

[106]City of Kitchener Zoning By-law 1043 lists similar uses for Park, "P" Zone.

(2) The following uses:
(a) A church, convent or monastery
(b) A school, college or university
(c) An art gallery, auditorium, public library, museum, community centre or similar public use
(f) A park or recreational use. No recreational use or facility shall be established within two hundred (200) feet of any residential zone or dwelling.

(b) United States Legislation Affecting the Acquisition of Land for Open Space

(i) Federal Legislation

Federal Housing Act, 1961 (75 statute 149)

OPEN SPACE PROVISIONS

703 Planning Requirements:
(a) The administrator shall enter into contracts to make grants for the acquisition of land under this title only if he finds that
(1) the proposed use of the land for permanent open space is important to the execution of a comprehensive plan for the urban area meeting criteria he has established for such plans, and
(2) a program of comprehensive planning is being actively carried on in the urban area.
(b) In extending financial assistance under this title, the administrator shall take such action as he deems appropriate to assure that local governing bodies are observing a maximum of open space, with a minimum of cost, through the use of existing public lands; the use of a special tax; zoning; and subdivision provisions; and the continuation of appropriate private use of open spaced land through acquisition and leaseback; the acquisition of restrictive easements; and other available means.

706 Definitions: As used in this title:-
(1) The term "open spaced land" means any undeveloped or predominantly undeveloped land in an urban area which has value for (a) park and recreational purposes, (b) conservation of land and other natural resources, or (c) historic or scenic purposes.

(ii) State Legislation

New York

New York Open Space Act, 1960

The people of the State of New York, represented in Senate and Assembly, do enact as follows:

(1) The Legislature hereby finds and declares that:
(a) the present and future needs of the growing population of the State acquire the immediate acquisition of predominantly open or natural lands for conservation and outdoor recreation purposes, particularly near rapidly growing urban and suburban areas.
(b) The people at the next general election, will vote upon a proposition authorizing the creation of a State debt in the amount of $75,000,000 to provide moneys for the acquisition of such lands.

877 Park and Recreation Land Acquisition Account: All revenues derived by the State from fees and other charges of any nature made for the use of State parks and other State recreational facilities within the jurisdiction of any general state park commission or the division of lands and forests shall be paid by the state controller into a special account, to be known as the "park and recreation land acquisition account," and shall be used for the payment of, interest on, and the authorization on discharge of any indebtedness incurred by the State resulting from the bonds sold pursuant to the park and recreational land act including the cost of preparing and selling such bonds.

879 Location of Monies
(1) The monies received by the State from the sale of bonds pursuant to the parks and recreation land acquisition act shall be expended for the following purposes in the following amounts:
(a) for the acquisition of lands for state parks purposes, $1,000,000
(b) for the acquisition of lands for other than state park or municipal purposes to provide additional opportunity for outdoor recreation, public camping, fishing, hunting, boating, winter sports, and wherever possible, to also serve multiple purposes involving the conservation and development of natural resources, including the preservation of scenic areas, watershed protection, forestry and reforestry, $15,000,000.
The remainder of the monies for state aid in the amount of 75% of the cost of the acquisition of land

for parks in cities, counties, towns, villages and improvement districts.

881 Standards for Acquisition

1. (1) Lands acquired for state park purposes shall be for additions to existing state parks, for the establishment of new state parks of substantial acreage.
(2) Lands acquired for state municipal parks shall consist of predominantly open or natural lands, including lands under water, forested lands, or near urban or suburban areas, or suitable to serve the recreation needs of the expanding populations of growing metropolitan regions, where desirable to preserve the scenery or natural resources thereof.
(3) Lands acquired by a municipality shall be for establishing new parks not less than 50 acres in area, or for expanding existing parks to not less than 50 acres each by the addition of not less than 25 acres to such a park.
(4) Lands acquired for other than state or municipal park purposes shall consist of lands desirable for outdoor recreation, including public camping, fishing, boating, winter sports, hunting, and wherever possible to also serve multiple purposes involving conservation and development of natural resources, including the preservation of scenic areas, watershed protection, forestry and reforestation.

California

California Government Code

35009 Greenbelt Statute, 1955

Any territory which is by consent of the owners zones and restricted for agricultural purposes exclusively pursuant to a master plan for land use in any county shall not, while it is so zoned, be annexed to a city pursuant to Article 2 or 5, without the consent of the owners of the land in the territory which is proposed to be annexed.

6950-54 Open Space Statute, 1959

6950: It is the intent of the Legislature in enacting this chapter to provide a means whereby any county or city may acquire, by purchase, gift, grant, bequest, devise, lease, or otherwise, and through the expenditure of public funds, the fee or any lesser interests or right in real

property in order to preserve, through limitation of their future use, open spaces and areas for public use and enjoyment.

6951: The Legislature finds that the rapid growth and spread of urban development is encroaching upon, or eliminating, many open areas and spaces of varied size and character, including many having significant scenic or esthetic values, which areas and spaces if preserved and maintained in their present open state would constitute important physical, social, esthetic or economic assets to existing or impending urban and metropolitan development.

6952: The Legislature hereby declares that it is necessary for sound and proper urban and metropolitan development and in the public interest of the people of this State for any country or city to expend or advance public funds for, or to accept by, purchase, gift, grant, bequest, devise, lease or otherwise, the fee or any lesser interest or right in real property to acquire, maintain, improve, protect, limit the future use of or otherwise conserve open spaces and areas within their respective jurisdictions.

6953: The Legislature further declares that the acquisition of interest or rights in the real property for the preservation of open spaces and areas constitutes a public purpose for which public funds may be expended or advanced, and that any county or city may acquire, by purchase, gift, grant, bequest, devise, lease or otherwise, the fee or any lesser interest, development right, easement, covenant or other contractual right necessary to achieve the purposes of this chapter. Any country or city may also acquire the fee to any property for the purpose of conveying or leasing said property back to its original owner or other person under such covenants or other contractual arrangements as will limit the future use of the property in accordance with the purposes of this chapter.

6954: For the purposes of this chapter an 'open space' or area characterized by (1) great natural scenic beauty or (2) whose existing openness, natural condition, or present state of use, if retained, would enhance the present or potential value of abutting or surrounding urban development, or would maintain or enhance the conservation of natural or scenic resources.

BIBLIOGRAPHY

BIBLIOGRAPHY

Articles and Periodicals

Andrews, Ralph. "Planning is Basic to Recreation Philosophy," Parks and Recreation, vol. LVIII, No. 2, Washington, D.C.: February, 1965.

Blohm, Ernest V. "Crowds Crowding Public Open Space," Parks and Recreation, vol. 44, No. 11, Washington, D.C.: November, 1961.

Dymond, J. R. "Land Use Planning," Recreation, vol. LIV, No. 10, New York: December, 1961.

Eppley, D. Garrett. "What are the Greatest Needs in Parks and Recreation," Parks and Recreation, vol. 44, No. 8, Washington, D.C.: August, 1961.

Farina, Albert. "Legal Aspects of Recreation," Parks and Recreation, vol. II, No. 3, Washington, D.C.: March, 1967.

Hewitt, John P. "Unique Answer to Urban Sprawl," Parks and Recreation vol. I, No. 6, Washington, D.C.: June, 1966.

"Preservation of Open Space Through Scenic Easements and Greenbelt Zoning," Stanford Law Review, vol. 12, Stanford, California: Leland Stanford Junior University, May, 1960.

Rettic, Dwight F. "Let's Save the Most Important Open Space Now," Parks and Recreation, vol. II, No. 5, Washington, D.C.: May, 1967.

Stelling, A. Carl and Dean, Lois. "Profit, Law and Master Planning for Parks," Traffic Quarterly, vol. 20, New York: Columbia University Press, April, 1966.

Strong, Ann Louise. "Factors Affecting Land Tenure in the Urban Fringe," Urban Land, Washington, D.C.: Urban Land Institute, November, 1966.

_____. "Preserving Urban Open Space," Urban Renewal Administration, Washington, D.C.: Housing and Home Finance Agency, 1965.

Whyte, William H., Jr. "Securing Open Space for Urban America: Conservation Easements," Urban Land Institute, T.B. 36, Washington, D.C.: December, 1959.

Books

Babcock, Richard F. The Zoning Game: Municipal Practices and Policies, Madison, Wisconsin: University of Wisconsin Press, 1966.

Barlowe, Raleigh. Land Resource Economics, Englewood Cliffs, New Jersey: Prentice-Hall, 1958.

Beesack, et al. Secondary School Mathematics, Grade Twelve, Toronto, Ontario: Copp Clark Co. Ltd., 1965.

Berry, Brian J. L. Commercial Structure and Commercial Blight, Chicago: University of Chicago Research Paper No. 85, 1963.

Chapin, F. Stuart, Jr. Urban Land Use Planning, 2nd. ed., Urbana, Illinois: University of Illinois Press, 1965.

Chorley, Richard J. "Geography and Analog Theory," Spatial Analysis: A Reader in Statistical Geography, edited by Brian J. L. Berry and Duane F. Marble, New Jersey: Prentice-Hall, Inc., 1968.

_____, and Haggett, Peter, eds. Models in Geography, London: Metheun and Co. Ltd., 1967.

Clawson, Marion. Statistics in Outdoor Recreation, Washington, D.C.: Resources for the Future, 1958.

_____, and Knetsch, Jack L. Economics of Outdoor Recreation, Baltimore: John Hopkins Press for Resources for the Future, 1966.

Doell, Charles E. Elements of Park and Recreation Administration, Minneapolis: Burgess Publishing Co., 1968.

Haggett, Peter. Locational Analysis in Human Geography, London: Edward Arnold (Publishers) Ltd., 1965.

Makielski, Stanislaw J. The Politics of Zoning: The New York Experience, New York: Columbia University Press, 1966.

Milner, J. B. Community Planning: A Casebook on Law and Administration, Toronto, Ontario: University of Toronto Press, 1963.

Murphy, Raymond E. The American City, New York: McGraw-Hill, Inc., 1966.

United States. The Constitution of the United States of America: Analysis and Interpretation, Washington, D.C.: 1964.

Public Documents

California, "Laws, Statutes, etc.," California Government Code 35009, Greenbelt Statute, 1955, Sacremento, California.

_____, "Laws, Statutes, etc.," California Government Code 6950-54, Open Space Statute, 1959, Sacremento, California.

Canada, "Laws, Statutes, etc.," National Housing Act, 1954, c. 23, as amended 1956, c. 9, 1957-58, c. 18, 1958, c. 3, 1959, c. 6, 1960, c. 10, 1960-61, c. 61, 1962-63, c. 17, 1964-65, c. 15, 1965, c. 3, 1966-67, c. 53: Ottawa, Canada.

_____, 1966 Census, Bulletin C-12, Ottawa: Dominion Bureau of Statistics, 1968.

Hawaii, "Laws, Statutes, etc.," Hawaii Land Act, 1961, Honolulu, Hawaii.

Kitchener, Municipal Zoning By-Laws for the City of Kitchener, Kitchener, Ontario.

New York (state), "Laws, Statutes, etc.," Open Space Act, 1960, Albany, New York.

Ontario, "Laws, Statutes, etc.," The Agricultural Rehabilitation and Development Act, 1962-63, c. 1, Toronto, Ontario.

_____, "Laws, Statutes, etc.," The Assessment Act, R.S.O. 1960, c. 23, as amended 1960-61, c. 4, 1961-62, c. 6, 1962-63, c. 7, 1965, c. 6, 1966, c. 10, 1967, c. 4: Toronto, Ontario.

_____, "Laws, Statutes, etc.," The Conservation Authority's Act, R.S.O. 1960, c. 62, as amended 1960-61, c. 10, 1961-62, c. 16, 1962-63, c. 20, 1966 c. 22: Toronto, Ontario.

_____, "Laws, Statutes, etc.," Department of Education Act, R.S.O. 1960, c. 94, as amended 1961-62, c. 31, 1962-63, c. 32, 1964, c. 20, 1965, c. 28, 1966, c. 40, 1967, c. 20: Toronto, Ontario.

_____, "Laws, Statutes, etc.," The Municipal Act, R.S.O. 1960, c. 249, as amended 1960-61, c. 59, 1961-62, c. 86, 1962-63, c. 87, 1964, c. 68, 1965, c. 77, 1966, c. 93: Toronto, Ontario.

_____, "Laws, Statutes, etc.," The Ontario Municipal Board Act, R.S.O. 1960, c. 274, as amended 1960-61, c. 68, 1961-62, c. 96, 1962-63, c. 97, 1964, c. 81, 1965, c. 89, 1966, c. 105, 1967, c. 68: Toronto, Ontario.

_____, "Laws, Statutes, etc.," The Ontario Parks Integration Board Act, R.S.O. 1960, c. 277, as amended 1961-62, c. 98: Toronto, Ontario.

_____, "Laws, Statutes, etc.," The Parks Assistance Act, R.S.O. 1960, c. 285, as amended 1961-62, c. 102, 1962-63, c. 101, 1966, c. 109, 1967, c. 70: Toronto, Ontario.

_____, "Laws, Statutes, etc.," The Planning Act, R.S.O. 1960, c. 296, as amended 1960-61, c. 76, 1961-62, c. 104, 1962-63, c. 105, 1964, c. 90, 1965, c. 98, 1966, c. 116, 1967, c. 75: Toronto, Ontario.

_____, "Laws, Statutes, etc.," The Provincial Parks Act, R.S.O. 1960, c. 314, as amended 1960-61, c. 79, 1961-62, c. 112, 1962-63, c. 110, 1966, c. 122: Toronto, Ontario.

_____, "Laws, Statutes, etc.," The Public Lands Act, R.S.O. 1960, c. 234, as amended 1960-61, c. 81, 1961-62, c. 117, 1962-63, c. 114, 1965, c. 108, 1966, c. 127, 1967, c. 81: Toronto, Ontario.

_____, "Laws, Statutes, etc.," The Public Parks Act, R.S.O. 1960, c. 329, as amended 1961-62, c. 119: Toronto, Ontario.

_____, "Laws, Statutes, etc.," The Public Works Act, R.S.O. 1960, c. 338, Toronto, Ontario.

_____, "Laws, Statutes, etc.," The Trees Act, R.S.O. 1960, c. 406, as amended 1964, c. 118, 1967, c. 103: Toronto, Ontario.

_____, "Laws, Statutes, etc.," The Wilderness Areas Act, R.S.O. 1960, c. 432: Toronto, Ontario.

United States, "Laws, Statutes, etc.," The Federal Housing Act, 1961, 75 statute 149: Washington, D.C.

Waterloo, Municipal Zoning By-Laws for the City of Waterloo, Waterloo, Ontario.

Reports

Canada. Land Capability Classification for Outdoor Recreation, Ottawa: A Field Manual prepared by the Canada Land Inventory (ARDA), Department of Forestry and Rural Development, 1967.

_____. National Survey of Recreation in Canadian Communities, Ottawa: A survey sponsored jointly by: The National Council on Physical Fitness; The Canadian Federation of Mayors and Municipalities; and The Parks and Recreation Association of Canada, 1951.

Darker, John A. Recreation: The Role of the Department of Municipal Affairs, paper presented to the Recreation Liaison Committee, Toronto: January 23, 1968.

Kitchener. Recreation Facility Standards for the City of Kitchener, Kitchener, Ontario: prepared by the Parks and Recreation Department for the City of Kitchener, 1967.

_____. Ten Year Plan, Kitchener, Ontario: a master plan of parks prepared by the Board of Parks Management for the City of Kitchener, 1964.

Nashville. Recreation Space 1980: A Community Facilities Plan for Parks and Recreation Areas, Nashville, Tennessee: prepared by the Metropolitan Planning Commission, Metropolitan Government of Nashville and Davidson County, Nashville, Tennessee, 1965.

Ontario. Grand River Conservation Lands Study, Toronto: prepared by the Department of Energy and Resources Management, Conservation Authorities Branch, 1964.

_____. Standards and Definitions and Terms Used in the Planning of Public Parks, Public Recreation Areas and Public Recreation Structures, Toronto: prepared by the Community Programs Division of the Department of Education for the Province of Ontario.

"Open Space Easements," National Capitol Open Space Program, T.R. 4, Arlington Virginia: prepared by the National Regional Planning and Economic Development Commission, Arlington, Virginia, 1965.

Perloff, Harvey S. and Wingo, Lowden, Jr. "Urban Growth and the Planning of Outdoor Recreation," Trends in American Living and Outdoor Recreation, O.R.R.R.C. Study Report No. 22, Washington, D.C.: 1962.

Read and Vorhees. K-W Urban Traffic Study, Toronto, Ontario: prepared by Read, Vorhees and Associates Ltd., 1967.

Seigel, Shirley Anderson. The Law of Open Space: Legal Aspects of Acquiring or Otherwise Preserving Open Space in the Tri-State New York Metropolitan Region, New York: Regional Plan Association, Inc., 1960.

United States. Outdoor Recreation Resources Review Commission, Washington, D.C.: 1962.

White, Virginia Kahn. Measuring Leisure Time Needs, a report of the Group Work Council Research Project, Welfare Federation of Cleveland, Ohio: February, 1955.

Whyte, William H., Jr. Open Space Action, Outdoor Recreation Resources Review Commission, Study Report No. 15, Washington, D.C.: 1962.

Williams, Norman, Jr. Land Acquisition for Outdoor Recreation - Analysis of Selected Legal Problems, Outdoor Recreation Resources Review Commission, Study Report No. 16, Washington, D.C.: 1962.

Unpublished Material

Getis, Arthur. A Theoretical and Empirical Inquiry Into the Spatial Structure of Retail Activities, Seattle, Washington: University of Washington, unpublished Ph. D. dissertation, 1961.

London. A Questionnaire on Land Dedication, London, Ontario: unpublished survey conducted by the Planning Department of the City of London, Ontario, 1967.

Robertson, Reginald. Empirical Testing of the Map Transformation Technique in Marketing, Waterloo, Ontario: Waterloo Lutheran University, unpublished B.A. thesis, 1966.

Waterloo. Master Plan, Waterloo, Ontario: an unpublished planning manual prepared by the Planning Department for the City of Waterloo, 1965.

Other Sources

Department of Education. Personal Interview with Mr. W. Houston, Community Programs Division of the Department of Education, Waterloo, Ontario: May 15, 1968.

Personal Interview with Mr. P. McGarrity, Community Programs Division of the Department of Education, Waterloo, Ontario: April 23, 1968.

Department of Municipal Affairs. Personal Interview with Mr. John Darker, Research Planner for the Department of Municipal Affairs, Toronto, Ontario: January 15, 1969.

Grand River Conservation Authority. Personal Interview with Mr. E. Lemp, Planner for the Grand River Conservation Authority, Galt, Ontario: May 8, 1968.

Kitchener. Personal Interview with Mr. R. Ballantyne, Director of the Recreation Department for the City of Kitchener, Ontario: May 8, 1968.

Personal Interview with Miss D. Macri, Planning Department for the City of Kitchener, Ontario: September 17, 1968.

Telephone Interview with Mr. W. Somerville, Supervisor-in-charge of Physical Health and Safety Education, Kitchener and District Public School Board, Kitchener, Ontario: December 6, 1968.

Waterloo. Personal Interviews with Mr. B. Turnbull, Director of Planning, City of Waterloo, Ontario: September 10 and 12, 1968.

Personal Interview with Mr. K. Phlug, Director of the Recreation Department for the City of Waterloo, Ontario: May 9, 1968.

Waterloo Area Planning Board. Personal Interview with Mrs. S. Thorsen, Waterloo Area Planning Department, Kitchener, Ontario: May 11, 1968.

Personal Interviews with Mr. J. Guy, LL.B., Waterloo, Ontario: January 8, 9, and 27, 1969.