A COMPARISON OF LAND USE CHANGES IN
RICHMOND, BRITISH COLUMBIA

A Study of Urban Expansion upon
an Agricultural Area
in a Rural-Urban Fringe

by
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B.A., University of British Columbia, 1957

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We accept this thesis as conforming to the
required standard.

THE UNIVERSITY OF BRITISH COLUMBIA
MAY 1964
ABSTRACT

As a metropolitan area expands, fringe areas are influenced by the growing number of people and urban functions. Agricultural and vacant areas are converted into residential, industrial, commercial and institutional sites. In recent years a greater concern has arisen over the manner in which land is converted and the effects of such conversion upon an agricultural region.

This study describes and analyses the land use pattern of one such region, Richmond, British Columbia, for the years 1930, 1949 and 1958. The land use data is represented cartographically and statistically. Changes which occurred during the intervening years and after 1958 are noted and reasons for them either explained or suggested, depending upon the availability of information. The major emphasis is on the effect of increasing urban expansion upon the character of the agricultural land use pattern, and upon Richmond's role as an agricultural and suburban area within the Greater Vancouver region.

Since the 1958 analysis is based upon a detailed land use survey conducted by the author, more specific information is given on the character of land use than for any other period. Regional differences in field crops, amounts of agriculture per section and problems resulting from wastage of land in subdivisions are examples of the factors considered in the thesis.

The effect of the past haphazard manner of urban development, especially residential, has created a jumbled land use
pattern with large, unproductive or unused areas. Little con-
sideration has been given to the consequences of this increased
sporadic urbanization upon agriculture and the municipality.
In the future an ever-growing population in the Greater Van-
couver area will create further demands for more urban land
in the fringe areas, such as Richmond. Sound planning will be
needed to ensure a more orderly and less wasteful development
of the region's valuable land resources.
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The University of British Columbia,
Vancouver 8, Canada

Date May 1964
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In addition, the cooperation of the Geographical Branch, Department of Mines and Technical Surveys, Ottawa, in allowing the author to make use of information obtained from the 1958 land use survey, cannot be overlooked.

The Staff of the Department of Geography and Dr. J. L. Robinson, in particular, who supervised the writing of this thesis, are most sincerely thanked for their guidance and assistance.
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CHAPTER I

INTRODUCTION

In a geographical regional study attempts are made to answer the question "...why do people do what they do where they do it?" In his search for truth the geographer "...deals with the distribution of phenomena and gives a description and interpretation of the face of the earth." In undertaking this task he must carry out extensive field work, utilize cartographic techniques and apply a chorographic point of view in describing and analysing the patterns, trends and relationships which are discovered.

The land use pattern of a region is the outcome of man's work within his physical and cultural environment. Regional differences in physical features, natural resources, pattern of settlement and economic activity occur, and the interaction of man and his particular environment undergoes variant modification as each region is transformed from rurality to an urban character. Because of these basic differences in regions the study of land use, its changes and their significance to a specific region fall within the scope of geographic research. The geographic approach with its emphasis on the description and analysis of the spatial aspects of land use should provide some new information on the character and trends of the transformation of a rural-urban fringe area from an agricultural to a non-agricultural land use.

2 Ibid., p.v.
In order for man to comprehend and interpret the present geographic features wisely, some knowledge of their historical development must be acquired. Similarly, planning for the future development of a region cannot be judiciously undertaken unless past and present conditions and trends have been examined and analysed. In this thesis the author undertakes the application of a geographic point of view and techniques to illustrate, describe and interpret some of the land use changes which have occurred in Richmond during the past four decades.

The continual growth of Metropolitan Vancouver has resulted in significant alterations in the land use of the surrounding areas. The desire of industry, commerce and private individuals to obtain larger, more inexpensive properties in less-congested areas has led to a notable movement to the outer fringes of the central Metropolitan region. However, with the passage of time and the continual outward expansion from the central section, the original outer fringe acquires many characteristics of the core area, and may eventually become completely integrated with it. Richmond is an example of a municipality experiencing such an evolution. (Map 1).

The Municipality of Richmond, comprised of a total area of approximately 58 square miles, consists of three major islands, Lulu, Sea and Mitchell-Twigg, and several smaller islands. (Map 2).

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4 Originally, Mitchell and Twigg Islands were distinct land units: today, due to extensive filling, they are one land mass. Since the name Mitchell Island is applied most frequently to the area, this name will be used throughout the thesis.
The three main islands, covering 47 square miles, are unquestionably the most important, whether considered demographically or economically. Therefore, this thesis will place most of its emphasis on these islands.

Thirty years ago Richmond was basically a rural area far removed from the bustling business section of Vancouver City. Today, this municipality has extensive urban sectors but at the same time it retains some former rural characteristics. Although it can be called a rural-urban fringe region of Vancouver, this rural-urban intermixture, which occurred haphazardly, has created a jumbled land use pattern.

The expansion of urban functions on a rural or agricultural landscape may take many forms, for example, an augmentation of housing, industry and commerce. Regardless of the form, urbanization generally implies an increase in population density and a decrease in agricultural acreage.

Richmond’s population has shown enormous growth over the past forty years. In 1921, there were 4,825 residents in the municipality; whereas in 1961, 43,323 people, or nine times the previous number, were recorded. In Figure 1, the increase in population of the surrounding districts is compared with that of Richmond. The graphs show that rapid increases took place in all municipalities, but the two cities, Vancouver and New Westminster, did not exhibit a similar rate of growth.

The Richmond graph has four different slopes signifying changes in the percentage rate of growth. The total number of residents doubled between each of the census periods, except during the 1931-41 interval, when only a 27 percent increase occurred.
This means that the average annual rate of growth has risen substantially since 1921. If this present rate were to continue, by 1971 the population could be 80,000.

In order to provide living space, employment and services for the growing population, more land must be converted to uses that will meet urban demands. Agricultural acreage, with its low housing density and good soils, is very desirable because it requires little initial preparation for urban development. Since sale prices for farm land are often very enticing, farmers continue to dispose of rich soils for non-agricultural uses. For some land-use planners and agriculturists interested in retaining agriculture in the Lower Fraser Valley, the decrease in farm land is reaching an alarming state. Between 1949 and 1958, 2,825 acres of Richmond’s agricultural land were removed from production. More seriously, 60 percent of this loss was recorded on Richmond’s best soils, and the remainder on the soils considered next best in suitability for agriculture. If this rate of decline were to continue, good farm land would disappear in a few decades, and the Lower Fraser Valley region would be deprived of essential nearby food-producing areas. This deprivation would be disadvantageous for several reasons, for example, the greater transportation cost involved and the increased dependency upon distant sources.

During periods of rapid urbanization, farm land was often taken out of production long before it was required for urban uses.

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5 Land for Farming, New Westminster, The Lower Mainland Regional Planning Board, 1962, pp. 6, 17.
This removal resulted in a considerable amount of idle land. Additional vacant land has been produced through unwise subdivision, namely, the creation of residential lots too large to be easily maintained. This wastage of land may be questioned.

This thesis examines and analyses the land use pattern of Richmond and the changes from 1930 to 1962. Special attention has been given to the distribution and character of agricultural land, to the effect increased urbanization has had upon the farm areas, to the manner in which urbanization expanded and to the problems created by unplanned or poorly-planned development. In order to account for the changing land use pattern, consideration has been given to the historical development of such urban functions as fish canneries and the airport. Minor attention has been given to the changing character of the population and to the economic reasons for the development of the suburbs as residential areas.

The techniques used for the research have consisted of five main approaches: mapping land use, collecting statistical data, examining historical information, interviewing and analysing.

In order to obtain a visual impression of the land use patterns, maps were prepared for the years 1930, 1949 and 1958. These three periods were chosen because in each case specific information was available and certain stages of development had been achieved. The 1930 land use map indicates the results of the changes which took place during the prosperous 1920's. The 1949 land use pattern is the product of alterations which occurred during the depression, the war and the early post-war
The 1958 map reflects the outcome of the rapid population and development boom which Richmond experienced during the 1950's. Thus, each land use map illustrates some of the features of the three growth stages.

For each map five major categories of land use will be described and the changes in their character analysed. These land uses are: agricultural, urban, peat extraction, road and rail facilities and vacant.6

The 1930 map is based upon interpretation of the first aerial photographs taken of Richmond. Although some of the photographs were somewhat blurred, it was possible to distinguish the basic land uses. The resultant map was compared and checked with the 1935 Richmond Waterworks maps and National Topographic Series 92G/2 and 92G/3.

A similar technique was employed for the 1949 map. Provincial aerial photographs, dated 1949, were used for the basic interpretation, and supplementary maps and photographs were utilized to check the land use map's accuracy and to study subsequent changes. The following other sources were used:

6 a. Agriculture includes those areas having plots of three acres or more in area and producing some agricultural products. Plots having less than three acres but which are still predominantly agricultural in nature will be called small-holding agriculture. (See Appendix I).

b. Urban means residential, commercial, institutional and industrial land use. These will be referred to as urban functions. (See Appendix II for detailed description).

c. Peat extraction includes only the area where peat is being removed, and the site of the processing plant.
a land use map of the Lower Fraser Valley, prepared in 1949 by A. Crerar for the Lower Mainland Regional Planning Board, New Westminster; one of Richmond, 1954, by D. Muirhead and Associates, for the Richmond Municipal Council; and a composite aerial photograph of the Western Portion of the Lower Mainland Region, 1953, (based upon British Columbia Government Air Photos taken in October, 1952), and prepared by the Lower Mainland Regional Planning Board.

The 1958 land use map was prepared from information gathered by the author while employed by the Geographical Branch, Department of Mines and Technical Surveys, Ottawa. (See Appendix III for details of survey). The categories chosen to be represented on the map were taken from the International Classification of Land Use and were interpreted by A. D. Crerar and the author.

The information for each of the maps was first plotted on municipal base maps at a scale of 1:28,200. Subsequent reductions were made to bring the maps to thesis page size. Basic statistical data on land use acreage was obtained from the maps. The total area of each land use was measured with a polar planimeter and checked with a dot planimeter. Farm acreages were compared with census data for 1931, 1951 and 1956. Additional information for the 1930 and 1949 periods was not readily available. More accurate figures were obtained for the 1958 map from data collected during the Geographical Branch survey. (See Appendix IV for details on method employed). More recent statistics were supplied by the Richmond Municipal Office and the Lower Mainland Regional Planning Board.
Several problems became apparent when detailed information about past and present conditions was sought. A search of libraries and archives revealed that historical material about Richmond was very limited in scope, descriptive rather than analytical in nature, and seldom authenticated. Municipal records, although detailed and adequate for the present day, are lacking for past years due to a municipal hall fire in 1913. Subsequent records were often incomplete and many were destroyed in 1957 when the municipal offices were transferred to the present hall.

Since very little historical material was unearthed, the author was forced to rely upon interviews with civic officials and private individuals. Information and opinions so derived were often based upon vague recollections of days gone by; however, by correlating the various pieces of data, a greater insight into Richmond's past was gained.

The collection and compilation of suitable data proved to be very time-consuming. Detailed information of the present day situation was more often than not unavailable to the author due to government restrictions on population and traffic data. Population data includes characteristics, (type of employment, source and amount of income, age structure and former residence), and detailed information about population distribution on a scale smaller than that of a census tract. Census tracts themselves have been changed frequently, therefore no comparisons between them could be made. Traffic data was even more limited and no information could be obtained on the amount of traffic,
type, (whether commuter, commercial or local), or pattern of traffic flow. This information would have been most useful in establishing traffic trends and in estimating the influences of each of the river crossings as well as the Deas Thruway. Incomplete and uncompiled data was found in the municipal hall, B. C. Electric Company, Department of Agriculture and in various private companies. Dates of subdivision, land use acreages and farm sizes had to be sifted from municipal records. The volume of freight and number of passengers handled by the tram service were available for short periods which first required lengthy compilation. Agricultural data on types of crops and farms was incomplete because only certain crops and regions were considered.

Chapters II and III, dealing with the developments of land use until 1949, are based upon limited sources and numerous opinions expressed by long time residents of Richmond; whereas, recent developments, Chapter IV, were obtained by reconnaissance surveys in 1962 and 1963, and by discussions with Richmond civic officials and members of the Lower Mainland Regional Planning Board. Chapter IV, based upon the 1958 land use survey, provides the most detailed and authenticated section.

An examination of Canadian geographical literature indicates that there are several studies covering aspects of land use similar to those considered in this thesis; however, the majority are of Eastern Canada. Some noteworthy ones are by:
Davis, (Scarborough Township); Gawinski, (North York); Gentilcore, (Antigonish County); Kreuger, (Niagara); Langlois, (Greater Montreal), and Matthews, (Southern Ontario). In British Columbia, the Lower Mainland Regional Planning Board has reported on various aspects of land use, urban sprawl and agriculture in the Lower Fraser Valley, for example, "Land for Farming", but no attempt has been made to examine the land use changes of a specific area over a period of time.

Land use studies in the United States have been more numerous. Only a few are noted because they deal specifically with the problem of conversion of land from agricultural to urban use, which is the theme of this thesis. These studies


include: Ackerman, (Boston);\textsuperscript{14} Bogue, (Metropolitan Growth);\textsuperscript{15} Griffin and Chatham, (Santa Clara County),\textsuperscript{16} and Hanlon, (Syracuse).\textsuperscript{17}

From the studies examined, some useful information was gleaned, because approaches to the problem under study were provided and a deeper insight into the factors operating in a suburban area was obtained. In summation, it was consoling and yet frustrating to find that the task of collecting specific data for land use studies is difficult throughout Canada.

\textsuperscript{14} E. Ackerman, "Sequent Occupance of a Boston Suburban Community", \textit{Economic Geography}, XVII, No. 1, 1941, pp. 61-74.


CHAPTER II

THE 1930 LAND USE PATTERN

The municipality of Richmond in 1930 was definitely an area of rural settlement oriented towards agricultural production. This rurality was exemplified by a small population, with a vast, dominant farm acreage, large, vacant areas and a relative lack of urban functions.

During the decade from 1921 to 1931, Richmond’s population had increased by 3,257, bringing the total to 8,182. (See Table I). With the exception of Burnaby, the other cities and municipalities adjacent to Vancouver had registered a smaller numerical increase.

Table I

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Increase</th>
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<tbody>
<tr>
<td>Vancouver</td>
<td>83,373</td>
</tr>
<tr>
<td>Burnaby</td>
<td>12,681*</td>
</tr>
<tr>
<td>Richmond</td>
<td>3,257</td>
</tr>
<tr>
<td>New Westminster</td>
<td>3,029</td>
</tr>
<tr>
<td>Coquitlam</td>
<td>2,497</td>
</tr>
<tr>
<td>West Vancouver</td>
<td>2,352</td>
</tr>
<tr>
<td>Surrey</td>
<td>2,274</td>
</tr>
<tr>
<td>North Vancouver District</td>
<td>1,838</td>
</tr>
<tr>
<td>North Vancouver City</td>
<td>858</td>
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</tbody>
</table>

* A 12,681 increase is indicative of urban sprawl from Vancouver.

Until 1931 Burnaby was the only municipality directly
affected by the urban expansion from Vancouver City. Of the remaining areas tabulated above, Richmond shows the greatest population increase. Thus Richmond, an agriculturally-based region, was attracting more residents than any other area, whether urban or rural in character.

The influx of population to Richmond during this period was due primarily to the diversity of agricultural land available. It was possible to purchase either large acreages suitable for full-scale farming, or small holdings for part-time employment. The superior quality of the soils also enhanced the attractiveness of the area to an agriculturally-inclined population. Therefore, by 1931, fifty percent of the residents of Richmond were classified as living on farms; no other municipality in proximity to Vancouver recorded this high percentage.

It was not feasible to establish population trends before 1931 for two reasons. Prior to 1921 Richmond was not listed as a separate municipality. Because gross figures only were given in 1921, there is no way of ascertaining the agricultural or non-agricultural character of the population.

The paramount importance of agriculture as a land use, and the minor role of urban development is evident in the Land Use Map of 1930 (Map 3) and in Table II.
Table II

Land Use in Richmond, 1930

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Acres*</th>
<th>Percentage of Total Acreage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>19,664</td>
<td>67</td>
</tr>
<tr>
<td>Urban</td>
<td>559</td>
<td>2</td>
</tr>
<tr>
<td>Road and Rail Network</td>
<td>630</td>
<td>2</td>
</tr>
<tr>
<td>Vacant</td>
<td>8,600+</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>29,453</td>
<td>100</td>
</tr>
</tbody>
</table>

Extractive - very small, not available

* The method of obtaining the acreages for each type of land use was as follows:
1. The various land uses were obtained from 1930 aerial photographs.
2. The major uses were plotted on a map at a scale of 1:28,200.
3. The area for each use was obtained by means of a polar planimeter and checked by a dot planimeter.

+ This acreage is approximate because it does not include small vacant areas.

Large farms of pasture, grain and vegetables covered the major portion of the municipality; only the two large, vacant peat bogs and a few urban areas disrupted the overwhelming agricultural pattern. Due to the mile-grid system of constructing roads, the area devoted to the road and rail network is relatively high in comparison to that of urban land.

A. Agriculture: Land use, soils and regional development

Agriculture in Richmond was an important land use, not only to the municipality, but also to the Lower Mainland region,
because it provided food and employment to many people. From its early beginnings in the 1860's and 1870's, Richmond had provided essential agricultural produce such as dairy products, grain and vegetables to the neighbouring cities of New Westminster and Vancouver. The means of transport of the products had changed considerably from boats, barges and wagons to trucks and trains, but the significance of these products to the cities had remained relatively constant. The three major islands, Lulu, Sea and Mitchell, continued as the most available sources for agricultural goods.

The significance of agriculture to Richmond was reflected in the fact that one-eighth of the residents were farm operators. No data could be obtained of the number of people employed on farms, but a conservative estimate would be another one-eighth of the population. Thus one-quarter of Richmond's residents were directly associated with agricultural production, which was chiefly oriented to the markets in neighbouring urban areas.

As a result of the great demand for food by the adjacent communities, a variety of farms developed in Richmond. Many farms grew field crops and raised livestock; however, some specialized in dairy products, especially fresh milk, while others produced grains or vegetables.

One of the characteristics of agriculture in Richmond was the predominance of farmland devoted to grass or grain crops. In 1931, of the total improved farm area, or 18,515 acres, 44% was in grass, (pasture and hay), while 34% was in grain. Local dairy farms consumed a large proportion of these
crops; however, the excess was shipped to neighbouring regions. Thus Richmond was a major supplier of dairy products and grain feed for the Greater Vancouver area.

The soils upon which agriculture was being carried out varied regionally throughout the municipality. A soil survey published by the Department of Agriculture\(^1\) and a recent land capability study by the Lower Mainland Regional Planning Board\(^2\) make it possible to estimate the amount of farmland on each soil type. The overlay, (Map 4), outlines the areas occupied by the three major soils, Class III, Class IV and Deep Peat. Table III provides the statistical data for the three more important islands, Lulu, Sea and Mitchell.

<table>
<thead>
<tr>
<th>Soil Type</th>
<th>Acres</th>
<th>Percentage of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class III - Lulu</td>
<td>10,106</td>
<td>51.4</td>
</tr>
<tr>
<td>Sea</td>
<td>3,347</td>
<td>17.1</td>
</tr>
<tr>
<td>Mitchell</td>
<td>197</td>
<td>1.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>13,650</td>
<td>69.5</td>
</tr>
<tr>
<td>Class IV</td>
<td>5,094</td>
<td>25.9</td>
</tr>
<tr>
<td>Deep Peat</td>
<td>920</td>
<td>4.6</td>
</tr>
<tr>
<td><strong>Total Agricultural Land</strong></td>
<td>19,664</td>
<td>100.0</td>
</tr>
</tbody>
</table>

* A description of the classes of soils is given in summary form by M.L. Crerar, "Land Capability", The Occasional Papers,

\(^1\) C.C. Kelley and R.H. Spilsbury, Soil Survey of the Lower Fraser Valley, Canada, Department of Agriculture, 1939.
\(^2\) Land for Farming, 1962.
"Class III soils - These are fair soils with moderate deductions for several soil factors. There are slight crop limitations, and good management practices are required for satisfactory returns.

Class IV soils - These are fair to poor soils, generally limited for some crops. Low productivity may be due to the need for irrigation, drainage, fertilizer or other intensive management practices.

Deep Peat - With drainage lime, manure, fertilizers and summer irrigation the Deep Peat areas can be made productive and when such expenses are warranted the peat bogs may well become agricultural areas."

According to the capability study there were no Class I or Class II soils in Richmond because the texture, drainage and fertility levels of soils were only fair, and satisfactory crops could not be grown without efficient farm practices. The best and most extensive soils in the municipality were the Class III group. In 1930 all the land having Class III and IV soils was being used, whereas only a small percentage of the peat area was under production.

From the land use map, (Map 3), four agricultural regions can be recognized: Sea Island, Western, Southern and Eastern Lulu Island. Each of these had distinctive characteristics of area, shape, soils, regional unity, field size, farmstead density and crop types. A general impression of the first two features can best be seen on the 1930 land use map.

Since all of Sea Island is composed of the best Richmond soils, namely, Class III, it is not surprising that at this time almost the entire island was devoted to some form of agriculture. The only parts which had some urban development
were located in the southwest portion of the island, near the mouth of the Middle Arm of the Fraser River, and in the north-east sector between the two bridges which connected Sea Island with South Vancouver and Lulu Island.

A large field pattern characteristic of grain and dairy farming covered most of Sea Island. Fields ranged in size from 20 to 100 acres with a prevalence of 30 to 50 acre farms. Individual dairy farms were often large, for example, J.J. Grauer's Frasea Farm, the largest in the municipality, which employed 10 men, provided pasture for 160 milk cows, and occupied 400 acres of the finest agricultural land on northern Sea Island. Several other farms extended over one or two sections. As a result of the large farms, houses were few in number and widely scattered. Thus an atmosphere of rurality was experienced as one drove through an area of green pastures, waving grain and natural serenity.

The western agricultural region, bounded by the Fraser River on the north and the Gulf of Georgia on the west, and separated from the other farming regions of Lulu Island by a series of small-holdings and urban areas, exhibited some of the characteristics of Sea Island but also had several that were different. The largest proportion of the region had good soils, namely Class III, (see Map 4), and the eastern

3 Sections in Richmond are generally between 150-160 acres in area; thus they are equivalent to one-quarter sections in the Prairie Provinces' land system.
part alone had the Class IV type. The large field pattern, typical of Sea Island, was present only in the outer coastal parts of the region. Since dairying was the most widespread type of farming there, the parallel with the agricultural pattern of Sea Island might be expected. Further inland, due to a greater subdivision of the sections, a difference in the kind of farming, and the existence of poorer grades of soil, fields were more numerous and less extensive. Because of these conditions, there were more houses in the inland portion of the region.

The greater intensity of subdivision and subsequent settlement on the land located furthest from the coast is due partly to the historical development of Lulu Island. The original pioneers settled along the river banks because the river provided the sole means of transportation. Their farms, often several hundred acres in size, extended along and back from the river, and remained for generations as vast holdings. The interior sections, on the other hand, were bought and settled later, (1900 to 1920), and since these settlers were interested in small scale farming, greater subdivision occurred and a large number of smaller farms were created. Many of these farmers produced vegetable and fruit crops; others favoured mixed farming. The small-holding areas were developed either by people who worked in some non-agricultural industry, making gardening an important avocation, or by retired persons who wished to provide much of their own food supply. Thus the inner portion of the western agricultural region had smaller farms and fields where mixed, vegetable, or small fruit farming were in
The southern agricultural region was bounded by the peat bog and small-holdings on one side and by the Fraser River in the south. Similar to the western region, good soils were available generally in the area, but a small portion were of the Class IV type. The southern zone, despite its large total acreage of pasture and grain, exhibited a predominance of smaller field units and a paucity of farm houses. No other region shared this characteristic. Much of the central portion of the southern region was comprised of the old slough area which required a dense drainage network of ditches. Their necessity probably accounts for a greater number of fields per farm in that sector. The pattern in other portions is not as readily explicable. For example, in the eastern part in a similar slough area, where a disrupted field pattern due to ditching might again be expected, there were in fact several large fields owned by dairy farms. A possible explanation is that thorough drainage of these pasture lands was not deemed necessary. Conversely, in the western portion, on apparently well-drained land, the small field pattern occurred. Regardless of the reason for the size of field, the more diminutive areas were nonetheless major producers of vegetables and fruits as well as grain and pasture.

The eastern agricultural region was similar to the western zone because it also exhibited a combination of small and large fields. Many of the smaller plots in the northern section of this region consisted of Class IV and Peat soils; whereas the
larger fields, generally in the southern part, were associated with the better soils. As the result of early subdivision, (1900 to 1914), when an abundance of small parcels of land were created on poor soils, the bulk of the northern portion developed into small farms which ranged in size from 1 to 10 acres. Mixed farming, poultry raising and vegetable growing became common forms of agriculture.

The boundaries of the eastern region corresponded approximately with the periphery of the peat bog, particularly in the central and southern parts of the region. In 1930 there was either no need or no desire to extend farming onto the poorer soils of the peat bog.

The land use map, (Map 3), also depicts small acreages classified as small-holding agriculture, located mainly in the western parts of Lulu Island. These areas were comprised of legal lots, varying in size from one to three acres. Their location was generally within the poorer soil zones; however, the largest tract was situated on both Class III and IV soils. All of the lots classified as small-holding agriculture in 1930 had been created between 1908 and 1914, a period of active subdivision in western Lulu Island. (Map 5). Apparently, optimism over settlement had surged in the pre-war years due to improved transportation facilities, (roads and trams), and increased employment opportunities in nearby industries. Although the majority of the small-holdings were not self-supporting economic units, they were producing agricultural goods. By so doing, they contributed to the overall production for Richmond and the Lower Mainland.
NUMBER OF SMALL LOTS PER SECTION
RICHMOND

MAP 5A

1 - 49
A 50 - 99
B 100 - 149
C 150 - 199
D 200 - 399
E 400 - 599
F 600 +

1/2 0 1 MILE
Summary

Agriculture in Richmond in 1930 was based primarily upon the needs and demands of the urban centres of Vancouver and New Westminster. Lulu and Sea Islands, with their flat, fertile land were ideal areas for the development of dairy, feed, fruit and vegetable farms. Large, well-kept dairy barns dotted the landscape marking the nuclei of extensive grass and grain-growing areas. Fresh milk and cream, either bottled or in bulk, moved into the nearby urban areas the year round. Similarly, but on a seasonal basis, vegetables found their way to the cities' markets and grains were shipped either to flour mills or to business concerns which required feed for their dray horses.

Soil conditions and pre World War I subdivision had a marked influence upon the location of the agricultural regions and on the type and size of the crop units. The larger farms and fields, characteristic of dairy and grain farms, were situated on the better soils. Smaller, less-specialized farms developed upon the poorer and more subdivided soils around the peat bog. The peat soils the most difficult to develop agriculturally, were used only in transitional areas, where small quantities of peat occurred naturally with better grades of soil.

Thus the agricultural picture of Richmond was one of large grazing and grain lands, smaller intensively-cultivated vegetable plots, and scattered, multi-crop holdings, all providing products for the neighbouring urban centres.
B. Urban Land Use

The urban land use pattern was very simple in 1930. A mere 559 acres, or 1.8 percent of the total Richmond area was occupied by commercial, industrial, institutional and residential developments. Of this acreage, 99 percent was located on Lulu Island.

Table IV provides data on the relative importance of each of the urban functions. As might be expected, residential use was by far the largest in area. The high commercial acreage was the result of two race tracks which had a combined area of 1825 acres.

<table>
<thead>
<tr>
<th>Function</th>
<th>Acres</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>322</td>
<td>57.6</td>
</tr>
<tr>
<td>Commercial</td>
<td>190</td>
<td>34.0</td>
</tr>
<tr>
<td>Institutional</td>
<td>5</td>
<td>0.9</td>
</tr>
<tr>
<td>Industrial</td>
<td>42</td>
<td>7.5</td>
</tr>
<tr>
<td></td>
<td>559</td>
<td>100</td>
</tr>
</tbody>
</table>

The dominant use of Class IV soils for urban development becomes obvious when the land use and soils maps are compared. Table V further emphasizes this point. Since the poorer grades of soil were less productive and therefore provided smaller economic returns, there was little incentive
Table V

Urban Land by Soil Type, 1930

<table>
<thead>
<tr>
<th>Soil Type</th>
<th>Acreage</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class III</td>
<td>78</td>
<td>13.9</td>
</tr>
<tr>
<td>Class IV</td>
<td>466</td>
<td>83.5</td>
</tr>
<tr>
<td>Deep Peat</td>
<td>15</td>
<td>4.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>559</td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

to retain them as agricultural areas. Subdivision and subsequent sale of the lots provided a more immediate source of income.

**Industrial Centres**

Industrial development in Richmond up to 1930 was based primarily on the processing of fish and timber. The fishing grounds of Georgia Strait and the Fraser River provided an abundance of salmon for many canneries, while the nearby forest regions of Howe Sound and Georgia Strait supplied excellent raw materials to the two sawmills located on the North Arm of the Fraser River. Very few other industries had developed in Richmond because the local market was inadequate and transportation costs would have made competition with city plants impracticable.

The fish-processing industry was, and had been for four decades, the dominant secondary industry whether considered from the standpoint of value of production, number of plants, area occupied, or number employed.
The canning industry began in Richmond in the late 1880's with the establishment of several small plants at the mouths of the two arms of the Fraser River. All fishing was carried out in adjacent waters. The proximity to the source of supply and the adequacy of docking facilities for fish boats and freighters aided the prosperity of the canneries. By 1893, fourteen canneries were in operation along the lower reaches of the Fraser River; by 1897 there were twenty-four. Although many of the canneries were modest in size, they provided considerable employment and gave impetus to growing communities such as Steveston.

Between 1900 and 1930 the canning industry faced periods of expansion and reduction. In 1902 many of the plants were consolidated by the B. C. Packers' Association, thus a greater order emerged in the industry. New machinery such as the "Iron Chink", and automatic can-making equipment increased the rate of production and reduced the cost of production because fewer Chinese and Indians were required for this labour. Expansion followed with an influx of Japanese workers between 1905 and 1910. Serious declines were experienced in the fish-


6 The Iron Chink or Iron Chinaman cleaned fish faster, worked tirelessly, and never complained as did its human counterpart.
ing industry during the World War I years because world markets were lost and the salmon runs diminished due to the Hell's Gate slide of 1913. Economic conditions in the industry remained at a low ebb until the mid-1920's.

As the result of consolidation and the closure of uneconomic plants, by 1928, twelve canneries were operating in Richmond: Steveston claimed seven, there were three on Sea Island, and one each on northwestern Lulu Island and Lion Island. However, by 1930 some had shut down, while others were facing bankruptcy. Two basic reasons for this deplorable situation were: (1), the much-anticipated heavy salmon runs of 1928 and 1929 failed to materialize, and (2), the tremendous catch of 1930 lacked a market due to the depression. Thus the fish-packing industry was drastically reduced by 1930.

In addition to the fish canneries, there were two operating sawmills, one at Bridgeport, and the other on Mitchell-Twigg Island: these formed part of the infant industrial complex developing along the North Arm of the Fraser River. Accessibility to water and land transportation determined the location of the mills. Logs towed into the river from northwest forest regions were sawn and the lumber was shipped to nearby urban or foreign markets.

Less pretentious enterprises, essential to the welfare of the community, sprang up as a result of the sawmills. Boat builders and repairers, as well as woodworkers, made use of

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7 P. Wilson, B.C. Packers Limited, interview.
the readily-accessible lumber to initiate businesses in Steveston and Bridgeport respectively.

In Bridgeport, a densely-populated area, a small cannery was processing fruit and vegetables, especially peas, grown on adjacent farms. Since the operation was seasonal, requiring only part-time women labourers, its location was related to the urban nucleus.

A brick-making plant in Steveston provided an example of a local market-oriented industry. The bricks, produced from imported clay, were used in construction on Lulu Island. However, adverse economic conditions in the 1930’s forced the permanent closure of the plant.

Industrial development in Richmond was thus limited in scope and location in 1930. Fish-processing and sawmilling were the only significant secondary industries: since both required waterfront locations, industrial growth became peripheral in character. The emergence of other urban functions, particularly commercial and residential, was directly affected by the location of these industries which offered employment to the communities of Steveston and Bridgeport.

Commercial Land Use

Commercial development in 1930 was not extensive. It built up in proximity to the main residential and industrial areas. Bridgeport, Brighouse and Steveston on Lulu Island,
and Eburne on Sea Island, were serviced by stores and shops which catered to the basic requirements of these more populated centres.

Steveston boasted the largest, if somewhat drab, variety of commercial enterprises, including a bank, a hotel and several cafes and stores which had sprung up before World War I. Situated on Moncton Street between Number 1 Road and Fourth Avenue, they supplied the needs of the fishermen, cannery workers and neighbouring farmers.

Bridgeport, a small community at the south end of the bridge linking Lulu Island and Sea Island, possessed the second largest commercial centre. Residents employed locally and in Vancouver's industrial plants across the river were served by three general stores and a lumber yard.

The Brighouse shopping area, opposite the Brighouse race-track and Richmond Municipal Hall, consisted of four stores. The low population density of the environs made unnecessary a large number of commercial establishments.

The two largest areas of commerce by 1930 were the race tracks: Brighouse, (Minoru Park), and Lansdowne. The former, near the junction of No. 3 Road and Granville Avenue, was constructed in 1910 and occupied 100 acres. The latter, at No. 3 Road and Lansdowne Avenue, was completed in 1924, and covered an area of 82.5 acres. The choice of an urban fringe

8 The Brighouse track is sometimes referred to as Minoru Park.
9 The Hastings Park track was also built in the same year.
area for both tracks appeared to be characteristic of the times.

The Brighouse track, which emerged as the result of the enthusiastic efforts of Samuel Brighouse, was erected on the poorest soil of his vast estate. The natural peat base and clay top provided a superior running surface to other more solidly-based tracks, and thus this area gained a reputation as one of Canada's finest racing surfaces.10

In order to facilitate transportation to Brighouse, special passenger trams were put into service carrying the racing fans to and from the track. In his book, H. Till11 vividly describes the fanfare, jubilation and adventure shared by Vancouver residents as they rode out to Lulu Island for an afternoon at the races. The slow, open-sided and sometimes roofless trams never seemed to dampen the enthusiasm of the riders.

The activities of the Brighouse track were not confined to horse-racing alone, however. Many other attractions took place there, including the demonstration by Charles Hamilton in 191012 of the first aeroplane ever flown west of Toronto, and the attempt by Barney Oldfield, a famous car racer, to lower the world's circular track record in 1912.

10 C. Oldfield - track builder - interview
The Lansdowne track, built in 1924 as part of the expansion programme of the Racing Association, did not share in some of the early glamour of Brighouse. It did, however, offer a longer running distance, (one mile, compared to the six furlong, or three-quarter mile course at Brighouse), and newer facilities for the many race spectators.

Residential Development

Three centres of residential development are shown on the land-use map: Steveston, in the southwest sector; Brighouse, centrally-located, and Bridgeport, in the north. Residential subdivision dates back to 1892 in Steveston, 1908 - 1909 in Brighouse, and 1915 in Bridgeport.

The early success of Steveston as a settlement is attributable to the man after whom the area is named, Herbert Steves. The eldest son of Manoah Steves, (the first farmer in the district), Herbert Steves, was responsible for laying out the rectangular grid for the townsite in 1892, building the community hall named the Opera House, and establishing the first newspaper, the Steveston Enterprise. He envisaged Steveston, with its riverfront location, canneries, abundance of flat land, and nearby source of food supply, as the site for a major city. This dream was unfulfilled because Vancouver, with its many natural advantages and its transcontinental railway terminal, soon surpassed all other urban centres.

Steveston did, however, continue to expand slowly. By 1899 the village, an area of approximately 200 acres, had a
population numbering 2,350, of whom almost 2000 were Japanese fishermen and cannery workers.\textsuperscript{13}

Subsequent immigration of more Japanese and a few whites increased the population to 3,200 by the year of incorporation, 1909. The proportion of whites to Orientals remained relatively constant, or 1:5\textsuperscript{14} This population might well have been 50 or even 75 percent of Richmond's total population at this time but no official statistical record is available.

The majority of the Orientals were men who were housed in small, often unsanitary, shacks near the canneries. These cramped, unsightly quarters, coupled with the almost perpetual foul odour of the canneries, degraded the townsite and dissuaded many from settling there. Thus the population increased only a few hundred between 1909 and 1930. \textit{Wrigley's B.C. Directory}, 1930,\textsuperscript{15} lists 1,000 residents for Steveston, which undoubtedly did not include the workers inhabiting the canneries.

The Brighouse residential area developed around a nucleus consisting of a small store and a few old homes built on poorer quality soil which had been considered unsuitable for large-scale farming. With the construction of the Marpole-Steveston

\begin{footnotes}
\end{footnotes}
rail line in 1902, (see Map 6), the establishment of the electric tram service in 1905, the opening of the racetrack in 1910, and the building of the municipal hall next to it in 1914, Brighouse became an important focal point. Around this core, many sections, within walking distance of the tram line, were subdivided into large residential lots. (Map 5).

Similar to many other areas, Brighouse underwent the expansion and speculation that were part of the "McBride Prosperity" experienced throughout British Columbia during the pre-war years. However, expansion between 1914 and 1920 was hindered due to the war and subsequent recession. During the mid-1920's, expansion recurred because new heights in prosperity were achieved, and people again sought inexpensive land. By 1930, one hundred and fifty houses occupied 640 acres east of the municipal hall. As a result of the limited local industrial and commercial employment opportunities, many new wage-earning residents had become commuters to Vancouver.

Starting as a small nucleation soon after the opening of the bridge in 1890, Bridgeport did not assume the characteristics of an urban area until after World War I. Although subdivision had created numerous urban lots, early develop-

16 The previous hall, erected in 1881 at Cambie and River Road, had burnt down. The new site, the southeast corner of the Brighouse estate, was more central.
17 Ormsby, p. 353.
To follow page 33.
ments were meager. By 1930, low residential density remained an outstanding feature. A mere 60 homes occupied the 60 acres. New Bridgeport residents, like those of Brighouse, became part of an increasing daily commuting movement to Vancouver's industrial and commercial centres.

Early optimism throughout Richmond is evident by the extensive subdivision which was carried out after 1908. (Map 5). Hundreds of lots, ranging in size from 25 feet by 100 feet, (approximately one-twentieth of an acre), to 5 acres were created upon Class IV and peat soils. How subdividers hoped to attract 400 to 600 families per section to the peat bog is difficult to comprehend. Even today the majority of the lots on the peat, and many on the Class IV soils, remain unoccupied. This early division of land is responsible for other undesirable developments, such as low density residential zones and inefficient small-holdings.

Institutional Land

Since the population of Richmond was small and the demand for school, church and municipal property was limited, the five acres devoted to institutional functions was minute in comparison with the allotment to other urban uses.

Seven schools, enrolling approximately 1400 students, were distributed throughout the more densely-populated areas of western Lulu Island. The largest elementary schools, situated in Bridgeport and Steveston, had several classrooms.
These schools were similar to those of urban areas because each teacher was responsible for only one or two grades. In the more rural schools, however, teachers had six to eight grades in one room. Due to the existence of only one high school, located in Bridgeport, some of the 200 senior students throughout the municipality were forced to travel long distances to attend classes.

Churches sprang up as part of the residential development. In 1886, the Presbyterians erected the first church on Sea Island. Lulu Island's first church, at Cambie and River Roads, was built by the Methodists in 1891. In subsequent years, churches appeared in Steveston and Brighouse. By 1930 Lulu Island boasted six churches of various denominations, including a Buddhist Temple serving the Oriental population of Steveston.

Designated park and recreational facilities had not been set aside by the municipality. However, several privately-owned centres, including Minoru Park, (the racetrack and its environs), the Richmond Agricultural Association's grounds at Number 3 Road and Granville Avenue, the lacrosse field in Bridgeport, and the school grounds, especially those of Bridgeport and Steveston, were often frequented by the public. These areas, in conjunction with the open spaces of eastern Lulu Island, adequately served the needs of the 8,000 residents of Richmond.
C. Road and Rail Network

Roads and railways were unevenly distributed throughout the municipality. The only well-serviced areas were Bridgeport, Brighouse and Steveston. (Map 6).

Road development in Richmond progressed through several phases. The year 1881 saw the gazetting of the first roads. A mile-grid system, frequently employed in British Columbia's early history, was established. Roads numbered 1, 2, 3, 4, 5 and 9 on Lulu Island, and 12 and 13 on Sea Island, were surveyed.\(^{18}\) At first, earth from the drainage ditches served as a road bed, and corduroy roads were laid where the soil lacked compactness. Later, planked roads appeared, notably in and around Steveston, because the dirt roads became trails of mud during the winter months. The use of gravel commenced in the post-1900 era, and the first experiments with pavement took place in 1919, on Number 3 Road.\(^{19}\)

By 1930, the three major settled areas exhibited the most densely-constructed road system. Bridgeport and Steveston, with their closely-spaced streets, already had the beginnings of an urban pattern. In the remainder of the municipality, a one mile grid had almost been completed west of No. 4 Road, whereas to the east, this system was still in an early stage of development.

\(^{18}\) Kidd, p. 76.

\(^{19}\) C. Oldfield, interview.
In order to travel from western to eastern sections of Lulu Island, a circuitous route was followed because no thoroughfare, such as the Westminster Highway of today, had been created. Since areas having large farms required fewer roads than regions dominated by smaller holdings, the road network reflected the more rural settlement pattern.

The railway "network", built in 1902 by the Canadian Pacific Railway, and consisting of one line connecting Marpole in Vancouver with Steveston, was acquired by the B.C. Electric Company in 1905. The purpose of the line was threefold: the exporting of local freight, (lumber and canned and packed fish); the importing of machinery and other supplies from Vancouver, and the transporting of passengers via trams.

In addition to the one railroad, two rights-of-way had been established on Lulu Island. Prior to 1918, a rail line parallel to the main arm of the Fraser River linked Steveston and New Westminster; however, the tracks were removed soon after a large peat fire destroyed an important pile trestle. In 1930, a second right-of-way was created across the northern side of the island. It was to provide a new rail connection between Bridgeport and New Westminster, avoiding the longer haul through Vancouver.

Because the municipality was composed of islands, the bridges connecting them to the mainland were essential as a

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means of transport. They also were locative factors for commercial and residential developments. The two wooden road bridges connecting Sea Island with Marpole, and Sea Island with Lulu Island, were constructed in 1889 and 1890, respectively, and provided the first direct access from Vancouver to the municipality.

In 1905, the completion of two bridges joining Lulu Island's Number 5 Road to Vancouver's Fraser Street, via Mitchell Island, provided a direct route for agricultural products from central Lulu Island to downtown Vancouver. The municipality's eastern end relied upon a crossing from Queensborough to New Westminster.

In 1930, one railway bridge was operating and a second was nearing completion. In 1901, the Canadian Pacific Railway Company erected the first railway bridge north of Bridgeport, forming part of the Steveston-Vancouver rail line. The second bridge, completed in 1931, spanned the North Arm of the Fraser near Number 9 Road and linked New Westminster and Richmond.

During the early period in Richmond's history, transportation facilities, particularly the railway, had a notable influence upon the settlement pattern and economic life of the municipality. The rapid electric tram system, introduced in 1905, provided comfortable, regular service, allowing commuters to reside long distances from their source of employment. The tram line was also an important locative factor because residential settlement developed within
walking distance of the line. In addition to serving the local inhabitants, the trams brought numerous visitors, such as racing fans and sportsmen, to the region. By so doing, they aided local commerce.

D. Vacant Land

Vacant land, composed of agriculturally-unsuitable areas and undeveloped residential lots, occupied approximately one-quarter of the municipality. The wet, spongy peat bogs, with their poorly-drained acidic soils, formed the greater portion of the 8,600 odd acres of idle land.

Because costs of preparing the deep peat soil were prohibitive, and economic returns per acre were generally inadequate, farmers chose to cultivate only the outer margins of the bogs where Class IV and peat soils were intermixed. Therefore, vacant portions of their farms were attributable to the poorer peat soils.

Unoccupied lots are part of a normal transitional period occurring when large acreages of land change from one use to another. In any growing residential area there is an interval of vacancy between the actual subdivision and construction of housing. The interval may vary from a few weeks to a decade, depending on factors such as the location of, and demand for, residential land, and the suitability of the soil.

In Richmond, a considerable amount of vacant land probably existed in 1930; however, accurate estimates cannot
be made because aerial photographs lack clarity and statistical data is not available. One can surmise that a greater proportion of the vacant lots were near the margins of the peat bogs, where the drainage, fertility, and textural qualities of the soil were inferior.

E. Summary of the 1930 Land Use Pattern

All the changes in Richmond's landscape which had taken place during the previous 70 years of settlement had culminated to form the land use pattern in 1930, as illustrated by Map 3. As the result of extensive dyking and drainage, almost all of the better soils, namely, the Class III and IV types, were employed primarily in agricultural production. Other land uses were extremely limited in area and were usually located on the poorer agricultural soils.

The land use pattern exemplified the process of regional distribution of functions based upon the physical needs of the specific function. Agriculture, especially dairying and vegetable growing, required a vast expanse of rich, fertile soils, whereas the fish canneries needed little acreage but demanded the provision of a ready source of raw materials and adequate facilities for docking.

Residential and commercial areas developed either in proximity to industrial centres, or where inexpensive land and other features, (for example, convenient transportation), attracted settlement.
The importance of agriculture as a major land use, a chief source of economic wealth, and a regionally-oriented industry, cannot be overemphasized. Richmond was one of Metropolitan Vancouver's chief suppliers of dairy and grain products and vegetables. The economy of the farming community depended solely upon the availability of these nearby markets. No other land use either held such a large acreage or relied so heavily on the urban centres of Vancouver and New Westminster. The canning and lumber industries shipped the bulk of their products beyond the Lower Mainland region; whereas, the small commercial and industrial plants served only the needs of the municipality.

Thus the land use pattern of 1930 reflected the natural resources available, the selective distribution of agricultural and urban functions, and the stage of settlement of the municipality. Richmond was clearly a major rural agricultural region.
CHAPTER III

THE 1949 LAND USE PATTERN

During the period from 1930 - 1949, the population of metropolitan Vancouver increased by 128 percent to approximately 560,000. Associated with this growth was the increased migration of people to the suburbs and the immediate rural areas. The surrounding municipalities such as Richmond, Burnaby and North Vancouver began experiencing the influences of this expanding urban giant. The land use pattern became more complex: the municipalities lost some of their former rustic, rural atmosphere, and acquired more of the suburban features.

Many of the factors responsible for the 1930 pattern continued to alter the land use. These included a steady population growth, further subdivision of land, an increase in the number of industrial and commercial enterprises, continued lower real estate and tax costs than Vancouver, and a more intensive use of the peat lands.

By 1951, the population of Richmond had reached 19,186: a 134.5 percent increase over the 1931 figure of 8,182. Of the 1951 total, 2,375 were living on farms but only 451 of these were farm operators. These figures demonstrate a reduction of 1,713 in the farm population, and 608 in the number of farm operators. Instead of 50 percent of the people being associated with agriculture, as in 1931, Richmond had
only 12.3 percent in 1951. Also, the number of wage-earners greatly exceeded that of the self-employed. Of the 6,833 employed persons, 5,739 or 84 percent were wage-earners. Richmond had thus changed from a municipality of self-employed farmers to one of wage-earners whose main employment opportunities lay outside the area.

Increased population had a direct effect upon the land use pattern. The predominance of agricultural land still remained, but it was noticeably reduced. (Map 8). The large increase in urban and extractive land is shown in Table VI. Non-agricultural uses had increased from 4 percent in 1931 to 20.8 percent of the total land available.

### Table VI

<table>
<thead>
<tr>
<th>Category</th>
<th>1930</th>
<th>1949</th>
<th>Change</th>
<th>1949 % of Total Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>19,664</td>
<td>18,067</td>
<td>-1,597</td>
<td>.61.2</td>
</tr>
<tr>
<td>Urban</td>
<td>559</td>
<td>3,624</td>
<td>+3,065</td>
<td>12.6</td>
</tr>
<tr>
<td>Extractive</td>
<td>0</td>
<td>1,310</td>
<td>+1,310</td>
<td>4.4</td>
</tr>
<tr>
<td>Road and Rail</td>
<td>630</td>
<td>1,170</td>
<td>+540</td>
<td>3.8</td>
</tr>
<tr>
<td>Network</td>
<td>8,600</td>
<td>5,300</td>
<td>-3,300</td>
<td>18.0</td>
</tr>
<tr>
<td>Vacant</td>
<td></td>
<td></td>
<td></td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>29,453</td>
<td>29,471</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 The extractive land includes the area upon which active peat removal was taking place. Since this is a type of surface mining, it is not included under the urban category.
To follow page 43.
1949 LAND USE
RICHMOND

INDUSTRIAL
COMMERCIAL
RESIDENTIAL
INSTITUTIONAL
PEAT EXTRACTION
VACANT

1/2 0 1 MILE

MAP 8
To provide for the non-agricultural growth, some agricultural acreage was removed from production and a much larger amount of vacant land was brought into active use.

A. Agricultural Land Use

In the two decades following 1930, agriculture in Richmond underwent some significant changes, which were apparent in the land use pattern and in the declining importance of farming as an economic activity. Providing the urban areas with fresh produce remained agriculture's chief purpose. However, Richmond's relative importance as a supplier for Vancouver and its environs had diminished, not because of a decrease in production, but because other regions such as Delta, Central and Eastern Lower Fraser Valley, and the Western United States had considerably increased their proportion. Due to improved transportation facilities, other areas were beginning to compete successfully for markets which Richmond had formerly controlled by virtue of its proximity. A marked decrease in the total area devoted to field crops was not, as might have been expected, offset by an increase on dairy farms of pasture and tame hay production.

Dairying continued to be Richmond's largest and most important agricultural activity. (See Table VII). Large farms such as the Frasea Farm on Sea Island, Quilchena Dairy on Cambie Road, and the May Farm on No. 6 Road were major producers of fresh milk. Their milk wagons were familiar
Table VII

Comparison of Crop Acreages 1931-1951

<table>
<thead>
<tr>
<th></th>
<th>1931</th>
<th>1951</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under pasture</td>
<td>3,476</td>
<td>4,627</td>
</tr>
<tr>
<td>Under crop</td>
<td>12,586</td>
<td>9,540</td>
</tr>
<tr>
<td>(a) Wheat</td>
<td>79</td>
<td>21</td>
</tr>
<tr>
<td>(b) Oats</td>
<td>3,968</td>
<td>2,680</td>
</tr>
<tr>
<td>(c) Barley</td>
<td>60</td>
<td>71</td>
</tr>
<tr>
<td>(d) Rye</td>
<td>26</td>
<td>87</td>
</tr>
<tr>
<td>(e) Potatoes</td>
<td>2,172</td>
<td>1,353</td>
</tr>
<tr>
<td>(f) Tame hay</td>
<td>2,756</td>
<td>3,626</td>
</tr>
</tbody>
</table>

Source: Dominion Census, 1956

sights on the streets of Vancouver.

More profitable conditions in the dairy industry prompted expansion of pastures and hay fields onto the peat soils and land formerly utilized for oats, in order to feed the increasing number of cattle. The smaller farms, although seasonal producers of vegetables and fruit, supplied the nearby canneries and markets with fresh produce, and thereby made significant contributions to the agricultural production of the region. With improved farming methods and greater mechanization, overall production was increased; however, it was never able to fulfill the demands of the expanding urban areas.

Between 1930 and 1949, agricultural acreage was reduced on all soil types except those of Deep Peat. The relative importance of each soil is noted in Table VIII. The large decrease in the Class III variety indicates that the retention of good agricultural land was considered secondary to urban expansion.
Table VIII

Agricultural Area based upon Soil Type, 1949

<table>
<thead>
<tr>
<th>Soil Type</th>
<th>Acres</th>
<th>Percentage of Total</th>
<th>+ Change (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class III Lulu</td>
<td>9,760</td>
<td>54.3</td>
<td>- 346</td>
</tr>
<tr>
<td>Sea</td>
<td>2,106</td>
<td>11.7</td>
<td>-1,241</td>
</tr>
<tr>
<td>Mitchell</td>
<td>173</td>
<td>1.0</td>
<td>- 24</td>
</tr>
<tr>
<td>Total</td>
<td>12,039</td>
<td>66.5</td>
<td>-1,611</td>
</tr>
<tr>
<td>Class IV</td>
<td>4,532</td>
<td>25.2</td>
<td>- 582</td>
</tr>
<tr>
<td>Deep Peat</td>
<td>1,496</td>
<td>8.3</td>
<td>+ 576</td>
</tr>
<tr>
<td>Total Agricultural Land</td>
<td>18,067</td>
<td>100.0</td>
<td>-1,597</td>
</tr>
</tbody>
</table>

A comparison of the 1930 and 1949 land use maps, (Maps 3 and 8), indicates that although there were still four agricultural regions, each had undergone modifications in size and character. In every case, the principal reason for the change was the further expansion of non-agricultural uses.

On Sea Island the construction of Vancouver Airport in the southern sections, and the development of residential subdivision in the north, produced a one-third reduction in farmland acreage. Apart from this change the agricultural pattern of large field units remained unaltered.

Greater diversification in land use was characteristic of the western agricultural region of Lulu Island. Due to an increased emphasis on vegetables, and less on grain crops, and to widespread, detached subdivision, the inland portion
had developed a more irregular field pattern. Field sizes had been reduced, while crop types had become more varied. Cropland became restricted to the central portions of sections because housing had sprung up along the sectional roads. On the other hand, along the coastal perimeter of the region, where conditions were more static, little modification occurred.

Although the areal extent of the southern region remained unchanged, the boundaries had shifted considerably. Further subdivision and urbanization had expanded southward from the Brighouse area and eastward from Steveston, thus removing from production some Class III and IV soils. The loss of agricultural land due to these movements was compensated for by the development of more agriculture on the peat bogs in the northeastern part of the region. This formerly vacant area was now used by numerous small blueberry farms. No longer did the peat bog form a distinct unproductive zone between the southern and eastern agricultural regions. A band of small-holding agriculture linked the two areas.

The general field pattern of the southern region had been slightly modified. The large fields evident in 1930 were divided into smaller crop units, thus making the whole region one of small fields.

Due to the expansion of residential and small-holding areas, the eastern agricultural region was substantially reduced in size. Large-scale agriculture was virtually eliminated from the area west of Number 5 Road. The extension of
farming further into the bog area along the southern boundary regained some of the lost acreage. A better understanding of peat soils, the provision of additional drainage, and more favourable economic conditions prompted the movement toward more agricultural land in an area formerly thought to be uneconomical. In order to obtain profitable returns, and to minimize expenditures for labour, crops such as grain and hay were grown in large fields. Farming on deep peat sections did not occur because these areas were still considered submarginal.

Small-holding agricultural areas had expanded tremendously from a total of 1,000 acres in 1930, to 2,700 acres in 1949. A writer in the Marpole-Richmond Review\(^2\) described the reasons for the growth in the 1930’s accurately:

> Whereas many big farms still survive and continue to ship tons of milk, hay and grain, more and more of Richmond’s big farms are being subdivided and broken up into small buildings, where the man with a job in the city makes himself a comfortable home with chickens, a cow, small fruits and a garden to occupy his spare time.

Many other lines, such as bulb raising, seed production, bee-keeping, rabbit raising\(^{[sic]}\) etc., have formed sidelines which the small holder has found profitable and pleasurable.

The expansion of small-holdings was not restricted to any one soil type, but was related to the high degree of subdivision that had occurred before 1930 and to the accessibility of transportation facilities.

Due to the various soil conditions, regional differences did develop in the character of the small-holdings. Those

located near Steveston and on the better soils were generally more restricted in size, (\(\frac{1}{2} - 1\) acre), but managed, nevertheless, to produce enough to market the excess. Other holdings situated on peat soil, such as the blueberry farms, were more extensive because of the economic advantages involved in farming a larger area of less valuable land. The acquisition of larger acreages necessitated the consolidation of several smaller lots, particularly where extensive subdivision had taken place.

The scattered nature of the small-holdings indicates that several factors had influenced their extent and location. These included: lack of planning as to the suitability of given areas for this type of use; sale of lots on an individual, rather than on a large-scale basis; variation in price of small-holdings throughout the municipality depending on size, location and soil type and on the owner’s desire to sell the property.

**Summary**

The agricultural land use pattern had therefore become much more dispersed by 1949. Increased urbanization was evident through small, scattered residential developments throughout some of the agricultural regions. With the ever-growing number of new residents seeking a small-holding, a large number of small farms had developed around the central bog area. Thus a notable contrast in farms evolved. The dairy farms, which occupied several hundred acres, appeared as giant
operators against the few acres of the small-holdings and the vegetable farms.

Expanding urbanization thus influenced the agricultural pattern in several ways: it reduced the total farm area; each agricultural region was reduced a different amount; the land use pattern became more complex; new areas on the peat bogs were brought under production; and an increasing number of part-time farmers developed on small-holdings.

B. Urban Land Use

With the impetus of wartime employment opportunities and post-war prosperity, the urban area in Richmond increased sevenfold over the 1931 total. All areas adjacent to the metropolitan centre were growing and undergoing some changes due to the outward movement of people, industry and commerce. The desire for more land, lower real estate and tax costs, and less-congested conditions prompted many to move to the suburbs. Richmond offered some urban amenities while also providing spacious, low-cost land. Since many of the residential lots were on former farmlands which had fine, alluvial soils, they were easily developed into small gardens and lawns. There was no need to clear the land, remove the rocks and improve the topsoil. Thus Richmond appeared very attractive to many people.

Each of the urban functions, particularly residential and institutional, contributed to the large, overall increase in urban land. Of the 3,624 acres occupied by urban uses in 1949, 71.9 percent was residential. Table IX shows the
substantial increases in residential and institutional acreages and the relatively small gains made in commercial and industrial areas. The building of the airport in 1931 and its subsequent enlargement during the war were the main reasons for the large increase in the area designated as institutional land.

Whereas in 1930, most of the urban uses were on Class IV soils, by 1949 they were distributed almost equally over the two better soils, Class III and IV. (See Table X).

Table IX
Area of Urban Functions, 1949

<table>
<thead>
<tr>
<th>Function</th>
<th>Acres</th>
<th>%</th>
<th>Increase over 1930</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>2,604</td>
<td>71.9</td>
<td>2,282</td>
</tr>
<tr>
<td>Commercial</td>
<td>255</td>
<td>7.0</td>
<td>65</td>
</tr>
<tr>
<td>Institutional</td>
<td>673</td>
<td>18.6</td>
<td>668</td>
</tr>
<tr>
<td>Industrial</td>
<td>92</td>
<td>2.5</td>
<td>50</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>3,624</td>
<td>100.</td>
<td>3,065 acres</td>
</tr>
</tbody>
</table>

Table X
Urban Land by Soil Type, 1949

<table>
<thead>
<tr>
<th>Soil Type</th>
<th>Acreage</th>
<th>%</th>
<th>Increase over 1930</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class III</td>
<td>1,772</td>
<td>48.9</td>
<td>1,694</td>
</tr>
<tr>
<td>Class IV</td>
<td>1,566</td>
<td>43.2</td>
<td>1,100</td>
</tr>
<tr>
<td>Deep Peat</td>
<td>286</td>
<td>7.9</td>
<td>271</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>3,624</td>
<td>100.</td>
<td>3,065 acres</td>
</tr>
</tbody>
</table>
The extended use of Class III soils signified that agricultural land, even when on the best soils, gave way to urbanization when a sufficient demand arose.

Industrial Developments

Although the outward movement of people had substantially increased the amount of land used for residences in Richmond, a similar growth in the industrial area was not evident. The trend to locate industrial plants outside the metropolitan core was still in its beginnings. Distance from suppliers and markets, involving additional transportation costs, overshadowed the desire for greater space and less congestion. Nevertheless, some industrial expansion did occur, particularly at the airport on Sea Island, on Mitchell Island, and near the No. 5 Road bridge on Lulu Island.

During the war years, a greater industrial use of land occurred as a result of the Boeing Aircraft plant built at the airport. Its abandonment after 1945 prevented the change from being apparent on the 1949 map. However, some industries, such as Bristol Aero Engines, did remain in the airport area.

Continued expansion of the wood manufacturing industries took place on Mitchell Island and on Lulu Island as the result of industrial expansion across the river from South Vancouver. These new developments formed part of the gradual evolution of an industrial complex along both sides of the North Arm of the Fraser River. The river served as an important transportation system, particularly for the movement of bulk mat-
erals such as logs. Thus between 1945 and 1950, three sawmills, (two lumber and one shingle), were established on Mitchell Island, and two mills, (one lumber and one shingle), on the north side of Lulu Island.

Low cost land and suitable water frontage attracted two grain milling companies, Canada Rice Mills and Gretchmill Flour Milling, to southern Lulu Island. The rice mill, established in 1931-32, received its raw material by boat from the southern United States. The rice, after having been processed, was then distributed by rail throughout western Canada. The flour mill, established in 1944, relied upon rail importation of grain from the Prairies, and the flour was then shipped to overseas markets. Thus, although the two companies were milling operations, the one provided Canada with a finished product, while the other exported a Canadian resource.

By the early 1930's, Steveston had become the only fish canning centre in Richmond. Further consolidation into companies such as B.C. Packers, and the depression of the 1930's had resulted in the closure of all other plants. Steveston had three main advantages: it was strategically located at the mouth of the main arm of the Fraser River; its canneries were large and well-established, and there was a copious supply of Oriental labourers, (fishermen and cannery workers), due to its thriving Japanese community. Other factors contributing to Steveston's supremacy were proximity to fishing grounds, extensive docking facilities, sheltered wharfage and convenient railroad service.
Commercial Developments

To meet the needs of the expanding local community, and to provide services for the surrounding regions, more commercial land was developed. Several establishments were located in Richmond for the first time. These included three airlines, two flying schools, an aircraft fuel depot and four radio transmitting stations.

The first real impetus to commercial flying in the Lower Mainland was provided by the development of the Vancouver Airport on Sea Island. Many of the early companies, organized in the 1930's, had disappeared as land users by 1949. The three remaining airlines were Trans Canada, established in 1937, B.C. Airlines Ltd., (1940), and Canadian Pacific, (1942). The only businesses offering instruction and aircraft-renting facilities were West Coast Air Services, (1942), and the Aero Club of B.C., (1945).

Due to British Columbia's rugged terrain and lack of adequate ground transportation, the convenience of air travel became apparent to many people. During the war and post-war periods, Sea Island became the home base for the airlines serving the logging and fishing camps, coastal towns and interior centres.

Because Lulu Island has a flat topography and has no nearby physical obstructions, it was considered a good radio broadcasting area. The Canadian Broadcasting Corporation, (C.B.C.), erected the first transmitter in 1937. This was
followed in 1939, 1940 and 1945 by stations CKWX, CJOR and CKMO respectively. Thus Lulu Island became the core of the Lower Mainland broadcasting area. As land users, the transmitting stations shared a unique feature, namely, all were located on sites containing several acres of property, but the area actually utilized for the stations and broadcasting towers was extremely small. The unoccupied portions generally contained some agricultural crop such as grass or grain. This explains why, on the land use map, the stations appear as minute commercial areas.

Two characteristics marked the expansion of retail outlets: first, the greatest development took place in the Brighouse area; secondly, many more corner stores were opened. Due to active municipal council support and encouragement, the Brighouse area became recognized as the administrative and business centre of Richmond. Besides being centrally located, it was near an area of dense residential settlement. Thus stores, both general and specialized, and other businesses, such as a theatre, were established along No. 3 Road.

The corner stores, supplying many food products and other sundries, thrived because of their location near or in the residential zones. As new nuclei of urban development arose, so new stores were established nearby.

The largest individual users of commercial land continued to be the two racetracks, which were both owned by one organization. However, in the post-war period, since it was more economical to operate one track, a greater concentration of
energy and money was put into improving and popularizing the Lansdowne track. Since Lansdowne had new facilities, and its maintenance costs were, therefore, substantially less, the Brighouse track was relegated to a training area.

Residential Developments

The increased movement of people out of the city and into the suburbs produced significant changes in the residential development of Richmond. As transportation facilities improved between Richmond and Greater Vancouver, it became more feasible for people to reside in Richmond and work in nearby districts, thus a move to Lulu Island did not necessitate a change in employment. Instead, the new residents joined the ever-growing number of commuters.

The land use map, (Map 8), shows how widely-distributed the residential areas had become by 1949. Because subdivision and use restrictions were few, land owners could freely subdivide or sell their property for residential purposes. (Map 9). Moreover, industrial developments varied considerably in size and shape, depending upon subdivision plans and sales promotions. Little consideration was given to the soil type occupied, although Class III was favoured.

Residential expansion underwent three forms of growth: filling-in and enlargement; linear occupancy, and isolated subdivision. The first occurred in the old centres of Bridgeport, Brighouse and Steveston which became more densely populated as vacant lots were utilized. Of the three areas,
Brighouse showed the most substantial increase in subdivision and expansion.

Linear housing developments occurred along major sectional roads. In some cases, e.g., east of Bridgeport, the land had been subdivided for several decades, but few lots had been sold prior to 1930. During the 1930’s and 1940’s these lots appeared more attractive because they were near Vancouver and its industry and had potentialities as sizeable gardens. West of Brighouse, this "Strassendorf" pattern developed along roads close to and at right-angles to the tram line, re-emphasizing the fact that many of the residents were commuters. Linear occupancy which also occurred parallel to major sectional roads allowed the interior parts of the sections to remain in agricultural production.

Three isolated residential areas were formed by the Federal Government under the Veterans’ Land Act. The first was on Sea Island, the second, north of Granville Avenue on No. 1 Road and the third, north of Bridgeport on No. 4 Road. Since the purpose of the areas was the partial support of the veterans, each plot of land was at least one-half acre in size. However, the veterans found this plan impractical and most of the land on each lot remained idle because each parcel of land was too small for the provision of a satisfactory farm income, and too large for maintenance as a well-kept lawn.

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3 Sectional roads are those located around the perimeter of sections, as created by the original land survey. These roads, one-half mile apart, may run east-west and north-south and thus form a grid.
and garden.

Institutional Developments

Institutional land use was increased considerably between 1930 and 1949 by the opening of the Vancouver Airport. Additional school and park sites accounted for only a trifling amount.

Rather than a Richmond undertaking, the airport's development was the work of an active citizenry in Vancouver who foresaw the value of adequate airport facilities in the Greater Vancouver area. The temporary and improvised landing strip near Minoru Park was undoubtedly insufficient. In May, 1929, the Vancouver taxpayers passed a bylaw enabling the council to purchase land valued up to $300,000. ⁴

In the same year, 500 acres were obtained south of Millar Road on Sea Island. The site provided several advantages: the runway was far removed from any residential areas; the surrounding level terrain allowed an unobstructed view; a nearby, sheltered landing area on the Middle Arm was available for float planes, and the airport could easily be expanded. During the war, an additional 500 acres were purchased because air traffic increased greatly, and there were indications that improved facilities would be needed to handle the

increased volume. Thus in 1949, the institutional land in the airport area included the operational and terminal area, the Royal Canadian Air Force Station and the Department of Transport buildings. Since these functions did not occupy the total area owned by the airport, a large portion was devoted to agriculture.

In comparison with the vast airport area, the increase in school acreage was modest indeed. Since only three schools were added, the ratio of elementary schools to population had increased from 1:1600 to 1:2700, resulting in larger classes for all schools. Similarly, the high school was extremely overcrowded and remained so for three years, until the opening of the new school on Foster Avenue in 1952. Many municipalities in the Lower Fraser Valley were faced with a similar school problem: an overabundance of children and insufficient classrooms. The student population was increasing rapidly, while money available for construction seemed limited.

In general, the recreation areas served only their immediate residential environment, and therefore new playgrounds were small and located within the large subdivisions. One park site had been set aside at Cambie and No. 5 Road, but no improvements were made upon the uncleared land. School grounds continued to be used as playfields for activities such as softball and soccer.
Summary of Urban Developments

The urban land use pattern of 1949 was a reflection of the beginnings of suburbanization in Richmond. As the population enlarged yearly, due primarily to the influx of numbers of new residents, more land was converted annually to some urban function, especially residential. Since little municipal planning was available, development became sporadic and agricultural regions were disrupted.

Industrial and commercial expansion was not as dramatic as residential, and therefore, job opportunities for new wage-earners were restricted both in number and in kind. An outcome of this situation was the increased proportion of the population which became daily commuters to other areas. Even the airport, with its large acreage, provided limited employment for Richmond's residents.

C. Peat Extraction

Large-scale extraction on the peat bogs began between 1930 and 1949. Peat had been employed for several decades by local farmers as a floor cover in barns, but prior to 1930, no commercial development had taken place. During the 1930's a growing number of poultry farmers found that dried peat was an excellent material because of its highly absorptive quality and ease of handling. At the same time, gardeners and horticulturists made greater use of peat in areas where soils were poor. These two developments provided encouragement to early
extraction companies. However, the war was responsible for the first real incentive for the large-scale development and expansion of the peat industry. Vast quantities were needed in the extraction of magnesium, a highly-important wartime metal. As a result, government restrictions were imposed on the commercial use of peat, and Richmond plants shipped tons of it to Canadian and American smelters. After the war, new markets were found in California and other western states, where an increasing amount of sphagnum peat moss was used as a soil conditioner.

The type of peat influenced the rate and extent of extraction. In processing, the peat was cut, stacked, dried, gathered, pulverized and sacked. Texture and density determined the drying time required, and the weight of the final product. Since the open air method of drying was prevalent, and shipping costs were determined by weight, light, low density peat was preferable. Thus the northern bog was the chief source during the industry's early period. This bog's light-weight peat, approximately two feet deep, was easily cut, dried and shipped. Extensive areas were put into production while the southern bog remained untouched until 1946, when the first commercial plant was established. Because of its higher organic content, the heavier peat of the southern bog has since gained favour with horticulturists.

The limitation of extraction to the inner areas where peat was several feet in depth precluded interference with other economic activities. The outer fringes of the bog,
where the shallow peat was mixed with alluvial soil, were used for agriculture; for example, the production of pasture and blueberries. No agricultural use was made of the deep peat areas or those from which the peat had been removed.

The location of the processing plants was closely related to the available transportation facilities. The northern plants were all adjacent to the rail line because it was the chief means of moving large quantities of peat. The southern plants were forced to rely on trucks to haul the peat to a railway or to the consumer.

Thus a natural resource that had hitherto remained untouched opened a new industry, (with its concomitant revenue), and provided varied seasonal employment for the municipality.

D. Road and Rail Network

The road and rail network of 1949 reflected the settlement pattern. The road network had filled in considerably west of Number 5 Road, but the railway system boasted only one more major line. (Map 10).

The 1,160 acres now occupied by roads was almost double the 1930 total of 630 acres. More definite regional differences in road density had developed. The more complex road systems were related to the residential areas of western Lulu Island. The agricultural areas which required few roads still utilized the one-mile grid system. The completion of several sectional roads, especially the Westminster Highway, provided faster, more direct connections between the various parts of the
municipality.

In 1930 all roads except River Road were based upon the rectangular grid system. By 1949, some residential areas, such as the Veterans' Land Act subdivisions, had curved streets, thus variety was added to the size and shape of lots and to an otherwise monotonous road pattern. In a region which was relatively flat and had few native trees, the new pattern enhanced the attractiveness of the residential districts considerably.

The railway system had been expanded by the completion of a line from New Westminster to the grain-milling areas along the south arm of the Fraser. The new line served many industries established during the 1930-49 period, namely, the peat plants, the lumber and shingle mills along the North Arm, and the flour and rice mills in the south. The old line in the west continued to be used by the indispensable passenger tram and the freight trains serving the canneries. Except for the tram service, the railway system was geared primarily to moving industrial products from Richmond.

E. Vacant Land

Between 1930 and 1949, the vacant area had been reduced by 38%, from 8,600 acres to 5,300 acres. The greatest reduction took place on the peat bog, where large areas were used for peat extraction, and smaller areas used by small-holding agriculture, dairy and grain farms, and residential developments. The two large blocks of vacant land which appear on
the 1930 land use map (Map 3), had disappeared. In their place was an irregular pattern which included many uses. The decrease in vacant land was a sign of greater intensification of land use associated with an increase in population pressure and growing regional importance.

F. Summary

The interrelationship between Richmond and Greater Vancouver was continually changing as the municipality's significance to the broader region was altered. As other areas contributed more products, and Richmond's agricultural production was reduced by increased urbanization, the importance of Richmond as a major supplier of food to the Metropolitan region decreased. On the other hand, the municipality was slowly evolving as another suburban area, capable of providing large quantities of low-priced land to people moving from the city and faced with problems of crowded schools and inadequate transportation facilities.

Although basically an agricultural land with few urban amenities, Richmond attracted a growing number of people. This growth was reflected by the increasing complexity of the land use pattern. Large areas were subdivided in a haphazard manner, best described as urban sprawl. Farmland became intermixed with small clusters of isolated residential developments spreading out from the older settlements. Concurrently, numerous small-holdings were produced by people seeking to supplement their income. Urban encroachment, with all its ramifications, was becoming more evident year by year.
CHAPTER IV

THE 1958 LAND USE PATTERN

Introduction

During the period from 1949 to 1958, widespread and significant changes took place in Richmond. Large increases in population, urbanization and road mileage had a profound effect upon the agricultural landscape. In order to control the rapid municipal developments, the council, during the latter part of the period, introduced more forceful regulations.

A marked growth in population occurred after 1951, indicated by a comparison of the census figures for 1956 and 1961. The 25,978 inhabitants in 1956 represented a 35 percent increase over 1951. In 1961, a 67 percent increase brought the total to 43,323. The upsurge during the 1950's was due to a number of factors, all inter-related and part of a North American suburban movement. Richmond's geographical position adjoining the large Vancouver mass was the main factor in a "normal" process. The movement of people from Vancouver resulted in vigorous real estate promotion and a tremendous building boom on relatively low-cost land.

This influx changed the character of the municipality's population. The proportion of farm residents was notably reduced: from 12 percent in 1951, to 9.5 percent in 1956, and then down to 4.4 percent in 1961. Numerically, there were 1,624 fewer than in 1931. Thus, in thirty years, Richmond
had changed from an area dominated by a farm population to one overwhelmed by urban dwellers.

Due to the substantial increases in non-agricultural uses, (Table XI), the land use pattern had become more irregular and complex. (Map 12). Unlike the simple pattern of 1930, the urban uses now dominated a greater total area and were more widely distributed throughout the islands. Whereas in 1949, urban usage occupied only 12.6 percent of the entire

Table XI
changes in land use, 1949 to 1958

<table>
<thead>
<tr>
<th>Category</th>
<th>1958 Ac.</th>
<th>Change (Ac.)</th>
<th>1958 % of Total Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>15,242</td>
<td>- 2,825</td>
<td>51.6</td>
</tr>
<tr>
<td>Urban</td>
<td>6,254</td>
<td>+ 2,630</td>
<td>21.3</td>
</tr>
<tr>
<td>Extractive</td>
<td>1,932</td>
<td>+ 622</td>
<td>6.5</td>
</tr>
<tr>
<td>Road and Rail Network</td>
<td>2,207</td>
<td>+ 1,037</td>
<td>7.5</td>
</tr>
<tr>
<td>Vacant</td>
<td>3,844</td>
<td>- 1,464</td>
<td>13.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>29,479</strong></td>
<td>0</td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

*See Appendix IV for details of 1958 Survey

acreage, by 1958 the percentage had risen to 21.3. Agricultural and vacant acreages continued to decrease; the former at an average rate of 314 acres per year, and the latter at 163 acres per year. These decreases, plus the subsequent expansion in urban land, were indicative of the rural to urban transformation that Richmond was experiencing.
To follow page 66.
A. Agricultural Land Use.

Agriculture remained the major land use in 1958; however, its dominant position had greatly declined since 1930. Instead of occupying 66.6 percent of Richmond, (as in 1930), agriculture now covered only 51.6 percent. The losses were evident on all types of soils except those composed of peat. (Table XII).

Table XII

Agricultural Area based on Soil Type, 1958

<table>
<thead>
<tr>
<th>Soil Type</th>
<th>Acres</th>
<th>Acreage Change from '49</th>
<th>% Change from '49</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class III Lulu Sea Mitchell</td>
<td>10,335</td>
<td>- 1,704</td>
<td>- 14.1</td>
</tr>
<tr>
<td>Class IV</td>
<td>3,088</td>
<td>- 1,444</td>
<td>- 31.8</td>
</tr>
<tr>
<td>Deep Peat</td>
<td>1,819</td>
<td>+ 323</td>
<td>+ 21.5</td>
</tr>
<tr>
<td>Total</td>
<td>15,242</td>
<td>- 2,825</td>
<td>- 15.6</td>
</tr>
</tbody>
</table>

The increase in farming on the peat soils resulted from the development of large-scale cranberry and blueberry farming on parts of the northern bog from which peat had been extracted and drainage improved. Both berry crops are of the genus Vaccinium, which prefers the texture and highly acidic quality of peat soil. Cranberry farming land also demands adequate moisture in the summer, and a level terrain. The plants suffer in dry weather, in cold winters, and in periods of high insect
infestation. Therefore the ability to flood the land is of the utmost importance. Since the old commercial peat bogs offered a water table near the surface and some established drainage, the conversion of the land into cranberry fields was relatively simple. In summer or when flooding was desired, the field drainage channels were closed, and irrigation water from the large, nearby ditches was pumped onto the land. Further incentives to production were provided by the availability of a sizeable nearby market and limited outside competition. Once the first successful attempts had been completed, the cranberry area expanded rapidly. The associated blueberry production, carried on in neighbouring fields, was a more extensive form of fruit farming because flood conditions were not necessary, and cultivation was less demanding.

During the periods 1930-1949 and 1949-1958, the best soils, (Class III), were experiencing the highest rate of change from agricultural to non-agricultural use, namely, an average of 85 acres per year for the first, and 189 acres for the second period. The changeover on the Class IV type rose from 30 to 160 acres per annum. The greater use of the Class III soils resulted from the desire of residential land promoters to obtain large blocks of easily-developed land for subdivisions, such as Richmond Park on No. 1 Road.

In 1958 a greater proportion of the land used for urban expansion came from agricultural areas. During the 1930-1949 period, the urban acreage increased by 3,065 acres, while farmland decreased by 1,597 acres. In other words, the ratio
of urban gain to agricultural loss was 2:1. In the 1949-1958 period, the urban increase was 2,630 acres and the farm decrease was 2,825 acres, a 1:1 ratio. The trend towards a lower ratio would suggest that a closer relationship had been established between the increase in urban land and the amount of agricultural land removed from production. This in turn was indicative of the insignificance of vacant peat land as a source for urban development: farmland facilitated residential and industrial development, whereas the vacant peat bogs did not.

In Chapter III it was noted that the four agricultural regions had undergone changes in area, field pattern, and amount of urban encroachment. As the result of further urbanization, all the regions became even smaller, more interspersed with residential areas, and less distinct with respect to boundaries and continuity as agricultural regions.

On Sea Island, during the 1950’s, farmland was reduced an additional 550 acres by the enlargement of the airport. A golf driving range and miniature course, located on the eastern end of the island, consumed a further 35 acres.

Although the farmland on Sea Island had diminished in area, there was no notable variation in the field pattern. Large pastures and grain fields continued to dominate the agricultural scene because most of the land was owned or leased by dairy farmers who were primarily interested in grazing and feed areas. Since the airport owned many of the sections leased by the farmers, and zoning regulations restricted subdivision, there was little incentive for other forms of agriculture to be initiated.
The western agricultural region on Lulu Island experienced the greatest encroachment by urban functions: the vast, open spaces characteristic of the 1920's, had been largely obliterated. Residential subdivisions, commercial zones and vacant land were now dispersed throughout the region. Many sections retained only one-quarter to one-half of their former farm acreage, and one section was urbanized completely.

The character of the western region had been transformed in other ways. Apart from alterations in size and distribution of farmland, a smaller field pattern was evident, particularly in the sections where partial subdivision had taken place. A shift in emphasis to vegetable crops, especially potatoes, was revealed by the 1958 survey, and a closer relationship between the size of farm and the type of crop grown was noticeable. The larger farms still produced grains and pasture, whereas the smaller areas specialized in more intensive crops, for example, potatoes. In several sectors, former farmland lay idle because it had been purchased and subdivided for future housing, but no active development had yet taken place. Thus, urban and vacant land, intermingled with small and large farms, created an irregular and complex pattern throughout the region.

In the southern agricultural region, fragmented residential development had also arisen to a lesser extent than in the western one. Major decreases in farmland took place in the northern sector where several sections, formerly entirely agricultural, were now only partially so used. Residential
expansion in the form of several subdivisions moved southward from the Brighouse area. Other parts of the southern zone had been converted to industrial and commercial land, the former, along the Fraser River, and the latter, further inland.

The field pattern of the region remained similar to that of 1949. The creation of more small-holdings upon land bordering the peat bog simply multiplied the number of small fields.

In the post-1949 era, Richmond’s eastern agricultural region experienced the least modification of all four areas. Some decreases in agricultural acreage were evident, principally on the western side where several urban uses, such as commercial enterprises and residential subdivisions, arose. Development was slower because the dairy farmers did not wish to break up their large farm units, and the municipal council discouraged urban expansion there by zoning the area east of Number 5 Road as agricultural.

Small-holding agriculture continued to dot the Richmond landscape in 1958, particularly the western half of Lulu Island. The greatest proportion of the small-holding areas remained upon the poorer soils, Class IV and Peat; however, a few large areas were found upon the better Class III soils. Generally speaking, the small-holding farms were more widespread on peat land than on other soils, because of the limitations imposed on agricultural possibilities by the former. Blueberries constituted the chief crop grown. In order to produce larger, more economical farm units, many lots were consolidated, thus the number of small-holdings was reduced.
No correlation between intensity of use and field size was discernible among the small-holdings. Both large and small-holdings grew pasture and grain which were used as feed for a cow or another animal, or were sold to nearby dairy farms. Other holdings raised vegetable crops for sale or personal use, while another type produced a mixture of vegetables and grains. Patches of vacant land were also a common sight on all types of farms. It appeared that some economic returns, varying considerably because of the crop type and the amount of production, were generally obtained. Since the area of the holdings was small, the possibility of reliance upon farm profits as a sole income was indeed remote.

Although urbanization was on the increase, the municipality was still agriculturally-oriented because farming dominated fifty-six percent of the sections. (Map 13). Only sixteen percent were predominantly urban, and most of these were situated upon Class IV and submarginal peat soils.

Regional variations in the intensity of agriculture resulted from differing amounts of urban encroachment and/or varying degrees of quality of the land. Map 14 emphasizes these regional differences.

In the majority of cases the sections of highest intensity were those located on the best soils. The southern,

---

1 Intensity of agriculture and small-holding agriculture was calculated by comparing the sectional acreage of each of the two categories with the total area of the section and expressing the resulting fraction as a percentage.
eastern and Sea Island agricultural regions, which had been protected by 1954 zoning regulations restricting urban encroachment, contained the largest areas of intensive agriculture. On the other hand, sections of high intensity located on the poorer peat soils were due to large-scale cranberry and blueberry farming.

Very few sections lacked some farmland. The vacant sections were on the peat bog or were being used for some special purpose requiring a large acreage, for example, the airport, golf course, civic centre and government wireless station. The two maps, 11 and 12, illustrate that in Richmond agriculture still covered the greatest area.

A detailed crop survey made on Lulu Island ascertained that pasture and hay, the most prevalent crops, occupied the largest acreage.

Table XIII
Crops Grown, 1958, by Category

<table>
<thead>
<tr>
<th>Crop</th>
<th>Agricultural Type (%)</th>
<th>Small-Holdings Type (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pasture*</td>
<td>56</td>
<td>45</td>
</tr>
<tr>
<td>Vegetables</td>
<td>22</td>
<td>23</td>
</tr>
<tr>
<td>Grains</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>Fruit</td>
<td>10</td>
<td>26</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Note: The total crop area for the agricultural category was 10,905 acres; for the small-holding category, 1,026 acres.

* Pasture also included hay lands.

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2 If the small-holding agricultural area is added to the total
The prominent position of the dairy industry was reflected by the high percentage of pasture. Large areas were used as pasture for privately-owned cattle, or for hay, grown and sold to dairy farmers. This latter practice was common on lots too large for intensive cultivation, and where owners were anticipating future subdivision and building. The growing of hay required little expenditure of time and money, but still provided some financial return on land which would otherwise have lain idle.

By 1958 there was a shift in the location of dairy farming. Map 16 shows that the major pasture and hay belt was in the eastern agricultural region. The dairy farms, formerly occupying large areas in the western portion of Lulu Island, had largely disappeared, whereas in the eastern region, almost the entire area was devoted to some type of cattle feed. Thus as urban encroachment reduced the number of dairy farms in the western region, the eastern zone emerged as the main dairy area.

The localization of small fruit farming in both the southern agricultural region and the peat bogs is evident in Map 16. Regional differences in farm organization and soil type resulted in considerable specialization. On the better soils of the southern region, where farms were owned and operated largely by Orientals, strawberry and loganberry crops

2 (cont.) agricultural acreage for each section, the proportion constituting farmland is increased and the importance of agriculture as a land use is further emphasized. (Map 15).
were combined with vegetable growing. On the peat land, where the potentialities for crops were more limited, farmers concentrated mainly on blueberries and seldom raised a second crop. Except for the huge, company farms on the northern bog, individual blueberry farms were smaller than those in the southern agricultural region. Throughout Richmond, many farmers sold all their fruit at road-side stands or on a "pick-your-own" basis.

Summary

The four agricultural regions persisted in 1958; however, each had experienced some changes due to increased urbanization. Farming on Sea Island diminished in area because of the expansion of the airport. The western region had been reduced considerably by a growing, but haphazard, residential development. In the southern and eastern regions, where zoning had imposed restrictions on urban development, a less radical change in the farm landscape occurred. These areas became the centres for vegetable growing and dairying, respectively. Small-holding agriculture had become more widespread, but was confined primarily to Class IV and Peat soils.

B. Urban Land Use

During the period 1949-1958, urbanization spread rapidly. The resultant figures for 1958 show a total urban area of 6,254 acres, or 21 percent of Richmond. An expansion of 2,630
acres over the nine year period (1949-1958), signified that the annual rate of growth of the urban area had risen from 161 acres, (1930-1949), to 259 acres. Thus the tempo of land conversion from agricultural to non-agricultural had quickened. Because the lenient zoning regulations before 1956 had had little effect upon the location of residential development, urbanization, in particular, housing, had pervaded Richmond, forming a sporadic pattern, and thereby had consumed good, fair and poor agricultural land.

Of the three soil types, the Class III soils were still favoured by new urban development; however, proportional increases in the use of the other two soil types resulted in no overall percentage change. (Table XIV). Thus in 1949 and 1958, 48 percent of the urban development remained on Class III soils, 44 percent on Class IV, and 8 percent on Peat.

The areal importance of the various urban functions was considerably modified. The dominant position of the residential area in 1949 was reduced substantially from 71 to 58

Table XIV
Urban Land by Soil Type, 1958

<table>
<thead>
<tr>
<th>Soil Type</th>
<th>1958 Acreage</th>
<th>Increase since 1949</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class III Lulu</td>
<td>1,563</td>
<td>1,106</td>
</tr>
<tr>
<td>Class III Sea</td>
<td>1,354</td>
<td>74</td>
</tr>
<tr>
<td>Class III Mitchell-Twigg</td>
<td>103</td>
<td>68</td>
</tr>
<tr>
<td>Total</td>
<td>3,020</td>
<td>1,248</td>
</tr>
<tr>
<td>Class IV Lulu</td>
<td>2,739</td>
<td>1,173</td>
</tr>
<tr>
<td>Total</td>
<td>2,842</td>
<td>2,630</td>
</tr>
</tbody>
</table>
percent. (Table XV). This trend could be expected because

Table XV

Areal Importance of Urban Functions

<table>
<thead>
<tr>
<th>Function</th>
<th>1949 (%)</th>
<th>1958 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>71.3</td>
<td>58.5</td>
</tr>
<tr>
<td>Institutional</td>
<td>18.5</td>
<td>24.3</td>
</tr>
<tr>
<td>Commercial</td>
<td>7.1</td>
<td>9.9</td>
</tr>
<tr>
<td>Industrial</td>
<td>2.5</td>
<td>7.3</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total Urban Area</td>
<td>3,624 ac.</td>
<td>6,254 ac.</td>
</tr>
</tbody>
</table>

Richmond was becoming integrated with the Greater Vancouver industrial and institutional complex rather than remaining a residential suburb. Many of the industries and institutions emerging in Richmond provided goods and services for a much wider population than the immediate municipality. As an example, although the airport was located in Richmond, it had become of national and international significance to the Greater Vancouver area.

A comparison of the 1949 and 1958 land use maps indicated that major alterations in the urban pattern had occurred, particularly in the areal expansion and degree of dispersion. Another factor, not evident on the maps, was the increased diversity of all functions, e.g., new commercial enterprises, such as specialized clothing and sporting goods stores, were established in the newer shopping centres. Industrial plants, such as aluminum metal processing and battery making, were located for the first time in Richmond.
Industrial Developments

Industrial development along the river front continued to enlarge in the type of industry and in areal extent. Ships and barges transported the raw materials for new paper, cement and concrete plants along the south arm of the Fraser River, and railways and trucks handled the outgoing manufactured products. The modern food and metal plants near the North Arm of the Fraser relied more heavily on rail and truck facilities to acquire their supplies. Thus, the accessibility of more transportation facilities played an important role in industrial development.

An industrial survey by the Lower Mainland Regional Planning Board reported that two-thirds of the industrial plants located in Richmond in 1958, were established after 1950. (Table XVI). Furthermore, 25 of the 46 plants had

Table XVI
Industrial Plants - Richmond, 1958
Number by Period of Establishment

<table>
<thead>
<tr>
<th>Area</th>
<th>1900-30</th>
<th>1931-49</th>
<th>1950-58</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Island</td>
<td>0</td>
<td>1</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Northern Lulu Island</td>
<td>1</td>
<td>6</td>
<td>21</td>
<td>28</td>
</tr>
<tr>
<td>Southern Lulu Island</td>
<td>6</td>
<td>1</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>8</td>
<td>31</td>
<td>46</td>
</tr>
</tbody>
</table>

Note: Northern Lulu Island includes Mitchell Island.
started production between 1955 and 1958, and the variety of industry was greatly increased. Prior to 1950, food processing and sawmilling were the main secondary activities. The kinds of industrial plants operating in 1958, and the number established before 1950 are tabulated. (Table XVII). Most of the developments had occurred in the Northern Lulu Island District, particularly between Number 4 and 6 Roads.

Table XVII

<table>
<thead>
<tr>
<th>Type</th>
<th>Sea Island</th>
<th>N. Lulu</th>
<th>S. Lulu</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aircraft supplies</td>
<td>8 (1)</td>
<td>0</td>
<td>0</td>
<td>8 (1)</td>
</tr>
<tr>
<td>Contractors</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Fish canners</td>
<td>0</td>
<td>0</td>
<td>4 (4)</td>
<td>4 (4)</td>
</tr>
<tr>
<td>Food and beverage</td>
<td>0</td>
<td>6 (2)</td>
<td>1 (1)</td>
<td>7 (3)</td>
</tr>
<tr>
<td>Metal works</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Non-metallic works</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Pulp and paper</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Sawmill-plywood</td>
<td>0</td>
<td>7 (5)</td>
<td>0</td>
<td>7 (5)</td>
</tr>
<tr>
<td>Shipbuilding</td>
<td>0</td>
<td>0</td>
<td>2 (2)</td>
<td>2 (2)</td>
</tr>
<tr>
<td>Transportation equipment</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Wholesale</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Woodworking</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8 (1)</strong></td>
<td><strong>28 (7)</strong></td>
<td><strong>10 (7)</strong></td>
<td><strong>46 (15)</strong></td>
</tr>
</tbody>
</table>

( ) number of plants established prior to 1950.

Many of the industries which obtained property in Richmond between 1950 and 1958 sought land which was larger in area and more moderately priced than corresponding property in Vancouver. In addition, Richmond could offer large, uncongested water frontage suitable for docking purposes and booming grounds.
These conditions were particularly favourable for industries relying on imported logs, (plywood plant and sawmills), chips and pulp, (paper plants), and clay and crushed rock, (cement works). Companies such as Swift Canadian Company Limited, Hygrade Packers Limited, (Husky Animal food), and Standard Brands Limited, (Dr. Ballard's animal food), located near No. 5 Road, obtained industrial sites away from densely populated areas and where the disposal of liquid sewage into the river was possible.

Commercial Developments

The commercial area increased almost threelfold between 1949 and 1958. The main contributors to this growth were the golf courses, commercial nurseries, shopping centres, as well as a drive-in theatre. The development of these functions in Richmond was a trend typical of all suburban areas around Vancouver. The high cost of land and increased taxes in the more densely-settled urban areas precluded the establishment of commercial functions such as golf driving ranges and courses. Thus, for the first time, these functions were not only, (or mainly), for the benefit of the local population or local economy, but were related to Richmond's position and attraction to Greater Vancouver residents.

The largest single commercial users of good, agricultural soil were the 18 hole golf course and the nurseries. The former, along the western dyke of Lulu Island, occupied an area which had previously been a dairy farm. Since good grass land was already in existence, little additional improvement
was necessary for the fairways. The seaside location provided a refreshing, scenic view to an otherwise flat course. On the other hand, the nurseries developed throughout the western half of Lulu Island where suitable soil conditions, essential to the rapid growth of flowers, shrubs and trees, were available.

The greatest expansion of shopping facilities occurred in the Brighouse area, which continued to be the principal retail centre in Richmond. The steady development of this area was attributable to four major factors: the largest residential area was situated near the business section; centralization of commercial buildings was favoured by municipal council and local businessmen; parking facilities were improved adjacent to the shopping centres; and traffic congestion was reduced by the widening of Number 3 Road from Westminster Highway to Granville Avenue.

Residential Developments

During the interval from 1949 to 1958, residential development continued to enlarge, but at a much faster annual rate than it had previously. By 1958, an almost uninterrupted belt of residential settlement linked Bridgeport and Brighouse, while large subdivisions dotted the landscape west and south of Brighouse. Small developments sprang up throughout Lulu Island, dissecting the agricultural regions.

The 1958 land use map (Map 12), reflected the housing boom which had reached Richmond in the 1950's. The modern subdivision with its medium-cost homes, ($10,000 - $15,000),
constructed in assembly-line manner, highlighted the residential growth. These subdivisions featured four or five house styles, easy terms of payment, a few curved streets, (to reduce traffic speed and add variety), and the possibility of a nearby shopping centre.

Real estate promotion and an increased interest in suburban living, coupled with the prosperous economic conditions of 1956-58, encouraged large-scale housing developments in Richmond. Because optimism about economic conditions prevailed, and land costs, taxes and rents rose in the city, many people, (especially younger families), sought suburban homes where a few hundred dollars as a down payment would purchase a new house on a large lot. Improved transportation facilities, particularly the increased use of the automobile, lessened the problems of commuting. Since more industrial plants were moving into suburban areas, many employees found it also convenient to move to the suburbs.

Real estate promotion and more relaxed restrictions on loans facilitated the buying of new homes. The land was purchased from the farmer at a modest price (approximately $2,000 per acre), and houses were built on a mass-production basis. The resultant minimal cost to the residential developer enabled the real estate promoters to sell the homes at a price attractive to young, middle-income families. In addition, down payments were kept below $2,000, and were often less than $1,000. Loans from Central Mortgage and Housing Corporation and private companies were relatively easy to obtain. Thus a
family, residing in Vancouver and paying a monthly rent of one hundred dollars, could move to Richmond, and for a similar expenditure could own a new three-bedroom home, fully landscaped, in a "soot and smog-free" neighbourhood.

The rapid expansion of the residential area with its sprawling nature presented the municipal officials with problems to provide adequate services such as water, drainage and garbage collection. Costs of expanding and improving these facilities were often higher than the revenue received from servicing the new developments. Water lines had to be laid for several miles in order to supply a small group of houses. Similarly, drainage facilities had to be intensified over a greater proportion of the municipality. Although farms were not damaged by heavy rains, residents did not like to have their backyards flooded when it rained. With the increase in traffic, more roads had to be built and they required more maintenance. The growing school population resulted in the need for more schools. Therefore, implementation of zoning and building regulations became necessary to direct development into specific areas, create a greater concentration of housing, and economize on municipal services.

Institutional Developments

The ever-increasing demands for more land for the airport, wireless stations, schools and parks resulted in an areal expansion of institutional land to 1,522 acres. Sixty-seven percent of the acreage was utilized by the airport.
Another 21 percent, or 320 acres, was occupied by a Department of National Defense Wireless station, and the remaining 12 percent, or 190 acres, constituted other institutional uses.

As aeroplanes became larger and air traffic grew, the airport was obliged to extend its terminal facilities and operational area, which included runways and aircraft parking space. By 1958, 1,014 acres were actively used by the airport; however, another 1,736 acres had already been purchased and reserved for future expansion. Much of the additional land was leased to farmers on a short term basis. From a municipal standpoint, the expansion of the airport did not substantially increase the tax revenue. Assessment of airport buildings was similar to that of other commercial property: taxation of runways and service areas was very low, and land leased for farming was still rated on a farmland basis.

A great demand for new schools was created by the significant growth in population. By 1958, the system had been extended to include one senior high, three junior high and seventeen elementary schools, occupying a total area of 129 acres. A 100 percent enlargement in the number of schools after 1950 had temporarily relieved the overcrowding. The total student capacity was raised to 8,865, while the enrollment had just reached 6,500. However, with the high average number of elementary pupils and pre-school children per house, (.53 and .86

respectively), and the rapid increase in total population, schools, especially those in western Lulu Island, would soon have their vacant desks filled. A continual program of school construction was therefore necessary to meet future demands. Fifty-nine acres had already been reserved for this purpose by the Richmond School Board.

The effect of an increasing population upon the recreational area was less dramatic than that of the educational facilities. Four additional playgrounds were added, but the total acreage amounted to less than 10 acres. Local children still used the school grounds as major play areas. The parks commission had obtained 91 acres to be used for future park development. The largest site, near the municipal hall, occupied 59 acres and was designated as Richmond's Centennial Park. Centrally located, it would be readily accessible to a major portion of the population.

It appeared that all functions of an institutional nature, (schools, airport, and parks), had acquired land for future expansion and development. During a period when land conversion from agriculture to urban use was taking place, it was relatively easy and inexpensive to reserve suitable property for future needs.

Summary

In the interval from 1949 to 1958, urban land use had

4 Ibid., p. 5.
grown throughout the municipality; however, the greatest expansion occurred on Lulu Island. Urban growth had emerged on all soil types, but more of the better soils were utilized because they were associated with the large, undivided and available tracts of land on Sea Island and on the western end of Lulu Island. Economic factors, such as high taxes, low farm incomes and enticing real estate offers, led many farmers to sell or subdivide their farms. Limited zoning restrictions allowed real estate companies and private individuals to subdivide land and develop residential areas almost anywhere in the municipality. The result was a widespread, disjointed urbanization exhibiting many of the characteristics of urban sprawl. In this respect, Richmond had many of the same characteristics as other suburban municipalities around Vancouver. The one major difference was that in Richmond, good agricultural soil was being removed from production, whereas in other areas such as Burnaby, Coquitlam and Surrey, the residential areas were being developed upon upland soils, thus no serious agricultural loss was incurred.

Geographical factors such as proximity to Vancouver, easily-developed soils and areas, and suitable commercial and industrial sites were helping population growth, and thereby,

5 Urban sprawl has been defined by A.D. Crerar as "...a stage of transition between true agricultural development, which has a density less than 0.3 people per acre, and suburban residential development, with a density greater than 3.5 people per acre." Economic Aspects of Urban Sprawl, New Westminster, Lower Mainland Regional Planning Board, May, 1956, p. 8.
the expansion of urban land uses.

C. Peat Extraction

The land use map for 1958, (Map 12), indicates the large area occupied by the peat extraction industry. The most noteworthy alteration was on the central bog where a large proportion of the peat was being removed. The increased demand for more highly organic and chemically enriched peat resulted in the expansion of operations of the two companies located there. Prepared peat, in bulk and in packaged form, was shipped out by large trailer-trucks. This method of transport differed substantially from the rail method used more extensively by the processing plants on the northern bog. The northern bog also experienced some depletion and conversion to cranberry and blueberry farms on older fields. In no instance were the old fields used for any other purpose.

D. Road and Rail Network

Continual growth of urbanization meant a steady increase in the density of the road network, and, to a more limited extent, the rail lines. The combined coverage by these two transportation facilities was 2,207 acres, or 7.5 percent of the total land area. Although this percentage was still only one-half that of a highly-urbanized area, it did signify that road and rail acreage was a noteworthy land use.

Road construction was an important activity, particularly in the western half of Lulu Island where the greatest resid-
ential development was taking place. In any large area being
developed for housing, there are extensive increases in road
acreages to provide access to the many houses. In the period
from 1949-1958, for every 2.5 acres converted to urban use,
one acre of road was added in the municipality. In a resid-
ential area, this meant that for every 15 homes constructed,
approximately 660 feet of road, 66 feet wide, were provided.6

In 1958, the provincial government began the construction
of an express thruway, (the Deas Thruway), extending from Van-
couver to the United States border. The main purpose of the
highway was to provide fast, convenient facilities between
Metropolitan Vancouver and United States centres. For Richmond,
the thruway necessitated the construction of a four lane toll
bridge across the North Arm of the Fraser River, a tunnel under
the south arm of the Fraser, and a four lane divided highway
with overpasses and cloverleaves connecting the bridge and
tunnel. Since much of the highway was over peat land, the
area taken out of agricultural production was relatively small.
However, it did dissect some good farmland in the southern
agricultural region. As the thruway had only limited crossings,
(one every mile), it presented a gross inconvenience to many
farmers who owned property on either side of it. Otherwise,
the highway did not restrict east-west movement.

6 In Vancouver there are from 12 to 24 miles of road for
every square mile of residential development, therefore,
if a similar square mile in Richmond were to be developed,
an equal mileage of new roads would be necessary.
The construction of the bridge and tunnel greatly improved the access routes to Richmond. The old bridges, built in the 1890's, could no longer cope with the ever-increasing amount of traffic.

Rush-hour traffic moved slowly across the narrow, creaking wooden bridges. Periodically, their spans were closed because a barge had hit the swing span, thus damaging some vital part, and preventing the span from returning to its rightful position. Besides these annoyances, there were always temporary delays when the bridges were forced to open to allow fishboats, tugs and barges to move up and down the river.

The tunnel also improved connections between Richmond and Delta. No longer was it necessary to line up for the small car ferry which shunted back and forth between Woodward's Landing and Ladner, and departed from alternate sides every half hour. The four lane tunnel provided for a continuous flow of traffic which covered a similar distance in less than three minutes. The thruway therefore brought new access to Richmond.

Between 1949 and 1958, rail facilities were extended in two places only: one to the Lefarge Cement plant at the south end of Ewen Road, and the other, to the Crown Zellerbach paper plant at the south end of Garden City Road. In both cases, the Canadian National Railway lengthened its trackage about one mile. By 1958, all industrial plants on Lulu Island had direct access to railway facilities.

On February 27, 1958, as the last B.C. Electric tram rolled across the tracks from Steveston to Marpole, an old era
in transportation ended and a new one began. After fifty-three years of continuous tram service, the B.C. Electric decided to retire the old trams and change to gas-powered buses, thus providing more widespread service to the municipality, plus a rapid express service to downtown Vancouver by way of Oak Street Bridge. As in many other suburban areas, transportation was modernized to meet the demands of a growing urban population in an ever-expanding metropolitan area.

E. Vacant Land

Vacant land continued to decrease in area during the period under study because more land was required for farming and urban use. The average rate of decrease over the nine year period was 153 acres per annum, or approximately one-half that of the agricultural figure. The smaller rate of decrease was quite understandable because most of the vacant land was comprised of peat soils which were not as desirable for urbanization as the better soils. Some residential development did occur on the more inexpensive peat land where adequate drainage was provided. The type of housing areas created on this land was often undesirable from a municipal point of view. Because the lots were too large, the owners left in wasteland the portions not immediately used for houses. Since houses tended to be strung out along the roads, municipal service costs were higher than in more densely-populated areas. Very little municipal control could be exercised because most of the land had already been subdivided for decades. The only possible measure that
could be undertaken was to attempt to prevent any further sub-
division unless it created a high density residential area,
or an important commercial or industrial centre.

The additional problems of drainage, foundations and
roads made development upon the peat soils less attractive
to land promoters. Thus development was restricted to an
individual, rather than a large-scale, subdivision basis, and
much vacant land remained.

As agricultural land was converted to various urban uses,
not all of it was immediately developed; therefore, some areas
with good soils were vacant. In newly-subdivided areas, many
lots lay idle until owners decided to build or until contrac-
tors completed other portions of the subdivision. Examples of
such vacant land in Richmond were evident west of Number 1
Road, (Map 12). Recent studies in the United States\textsuperscript{7}
and in
Metropolitan Vancouver\textsuperscript{8} report that this is a phenomenon com-
mon to the fringe areas of metropolitan centres.

Thus, vacant land in Richmond in 1958 was either in a
state of transformation from agricultural to urban use, or
was considered undesirable due to its soil structure.

F. Summary, 1958

As the result of a rapid growth in population and a

\begin{footnotes}
\item[Economic Aspects of Urban Sprawl, pp. 8, 9.]
\end{footnotes}
greater urban orientation, Richmond by 1958 had acquired characteristics similar to other suburban areas, such as Burnaby. The residents were mainly wage-earners employed within the Greater Vancouver region, thus commuting played an important part in their daily lives. As more urban area was created, the agricultural acreage was reduced to three-quarters of its former total. These reductions meant that valuable farmlands were taken out of production, and produce for the adjacent urban areas considerably curtailed. For Vancouver this signified a greater reliance upon more distant sources of dairy products and fresh vegetables. Within Richmond, in order to restrict the haphazard disposal of valuable land, serious thought was given to the institution of a planned program of development, which was put into effect in 1956.

Although the enlargement of the urbanized sectors of the municipality resulted in larger residential and commercial areas, the sprawled nature of the urban development was affected only slightly. In this regard, Richmond shared a phenomenon with many other outlying municipalities. Unoccupied and accessible land was widely dispersed and susceptible to urban encroachment: few considerations were given to the effect of these sporadic developments on the overall region.

A shift in emphasis from an agricultural to urban economy was reflected by the increased number and broader regional basis of urban functions. More commercial and industrial enterprises were emerging which supplied services and products to markets throughout the Greater Vancouver area.
Because of these developments, Richmond experienced greater outside influences than ever before. Its peripheral position, coupled with its proximity to Vancouver, made possible large-area functions such as golf courses and industrial plants, where space was easily acquired, regulations were not too stringent and markets were nearby. As the outside demands for land increased, farmers reassessed their positions and future possibilities. In many cases immediate returns were substituted for unpredictable agricultural profits.
CHAPTER V

POST-1958 DEVELOPMENTS AND TRENDS

As Richmond became more integrated with the Greater Vancouver urban complex, the land use pattern reflected the larger proportion of the municipality allocated to non-agricultural uses, and the decline in agriculture. No longer did vast grasslands and South Vancouver's forested slopes separate Richmond's quiet rural population from Vancouver's bustling urban community. In the 1950's and early 1960's, Richmond was caught up in the dynamic expansion occurring throughout British Columbia, especially in the Greater Vancouver area.

After 1930 the population of Richmond increased five-fold to more than 44,000 by 1962. The percentage growth had risen during each census period: 1931-41:27%; 1941-51:85%; 1951-61:126%. By 1961, the actual number of people had more than doubled that of 1951. In this respect Richmond's trend of growth concurred with the tendencies of other neighbouring municipalities. However, from 1956-1961, Richmond's population increased by a larger proportion than it had from 1951-56: this proportional increase was greater than any municipality in Metropolitan Vancouver or the Lower Fraser Valley. (Table XVIII). During the interval from 1951-56, Burnaby and
Table XVIII
Population Increases 1956-1961

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Increase 1956-61</th>
<th>Increase 1951-56</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Surrey</td>
<td>26,911</td>
<td>14,198</td>
</tr>
<tr>
<td>2. Vancouver</td>
<td>18,678</td>
<td>21,011</td>
</tr>
<tr>
<td>3. Richmond</td>
<td>17,345</td>
<td>6,792</td>
</tr>
<tr>
<td>4. Burnaby</td>
<td>16,412</td>
<td>25,359</td>
</tr>
<tr>
<td>5. North Vancouver Dist.</td>
<td>12,719</td>
<td>11,785</td>
</tr>
<tr>
<td>6. Coquitlam</td>
<td>8,253</td>
<td>5,103</td>
</tr>
<tr>
<td>7. West Vancouver</td>
<td>6,257</td>
<td>5,207</td>
</tr>
<tr>
<td>8. Delta</td>
<td>5,845</td>
<td>2,051</td>
</tr>
<tr>
<td>9. North Vancouver City</td>
<td>3,705</td>
<td>4,264</td>
</tr>
<tr>
<td>10. Port Moody</td>
<td>2,076</td>
<td>467</td>
</tr>
<tr>
<td>11. New Westminster</td>
<td>1,989</td>
<td>3,026</td>
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</table>

Vancouver had registered the largest gains. Burnaby, due to its proximity and accessibility to Vancouver, had experienced the first effects of the rush to suburbia. However, Burnaby soon acquired many of the characteristics of residential Vancouver and therefore people began to move into Surrey and Richmond where property was still quite easily obtainable and inexpensive.

The Fraser River had for many years acted as a settlement barrier, particularly for those who intended to commute to Vancouver. The old bridges across the North Arm of the Fraser were scenes of bottlenecked traffic during early morning and late afternoon rush hours. With the building of the Oak Street Bridge and the subsequent improvement in the transit system, travel between Richmond and Vancouver became considerably easier.

Thus, spurred on by the improvement and the building expansion in Richmond, more people than ever before looked to
this municipality as their future home. (Figure 2). Besides increasing rapidly, the population became basically urban-oriented in respect to occupations sought after and services demanded. Thirty years before, the majority of inhabitants obtained a living from the local soil resource, whereas the present inhabitants are almost independent of the land, and capitalize on the position of Richmond in the Greater Vancouver region.

A. Agricultural Changes

One of the first effects that increased urbanization had on Richmond after 1958 was to decrease the area of agricultural land. According to the 1961 census, Richmond had 15,867 acres of farm land, of which 11,439 acres (or 72 percent), were classified as improved. Since a farm was defined as "... a holding of one acre or more with sales of agricultural products during the past twelve months valued at $50 or more", some holdings, categorized as farms, would not have been considered as such in the census years of 1951 and 1956, or in the 1958 land use survey. Therefore, no direct indication could be obtained from the 1961 census data as to the amount or rate of decrease in agricultural area. Since the acreages obtained by the 1961 census and 1958 survey are approximately equal, it can be assumed that agricultural acreage had decreased. A

CENSUS TRACTS

FIGURE 2

POPULATION BY CENSUS TRACTS 1956-61

1000

14

12

10

8

6

4

2

0

220 221 222 223 224 225

TRACTS

1956

1961

FIGURE 2
recent reconnaissance survey indicated that residential areas occupied large sections which in 1958 were crop lands. These areas were most noticeable in the western and southern agricultural regions. In other parts of the municipality, urban encroachment was reducing the farm acreage much more slowly.

As the total farm acreage decreased other changes took place in the agricultural pattern. Some intensification of land use occurred, particularly in the increased acreage of vegetable and fruit crops, (Table XIX), and in the reduction

<table>
<thead>
<tr>
<th>Use</th>
<th>1951</th>
<th>1956</th>
<th>1961</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under Crop</td>
<td>9,540</td>
<td>7,409</td>
<td>8,056</td>
</tr>
<tr>
<td>Grains</td>
<td>3,259</td>
<td>1,932</td>
<td>1,896</td>
</tr>
<tr>
<td>Potatoes</td>
<td>1,353</td>
<td>1,402</td>
<td>1,551</td>
</tr>
<tr>
<td>Vegetables &amp; Fruit</td>
<td>1,302</td>
<td>1,396</td>
<td>2,069</td>
</tr>
<tr>
<td>Under Pasture</td>
<td>4,627</td>
<td>3,397</td>
<td>2,457</td>
</tr>
</tbody>
</table>


of grain crops and pasture land. The closure of several dairy farms on the western end of Lulu Island, and on Mitchell and Sea Islands largely reduced grain and pasture acreage, while farmers in the southern and eastern agricultural zones converted some of the grasslands into vegetable and fruit plots. Photograph 1 shows a former dairy farm on Mitchell
Island, part of which was transformed into a market garden. The remains of the dairy barn are visible in the centre background.

Photograph 1. Former dairy farm.

As the use of dried feed and silage became more popular, some dairy farmers found that they required less pasture. The dairy farm shown in Photograph 2 and located at Capstan Way and Number 3 Road is a prime example of this newer method of farming. Thirty to forty cows are kept on 4.3 acres of heavily fertilized pasture.
Photograph 2. *Intensive dairy farming.*

Another trend is for some farms to become feed lots for beef cattle such as the one depicted in Photograph 3. The yard space is essentially for exercise rather than for pasture. Hay and grain are fed to the cattle from small feed stalls similar to the one seen in the centre of the photograph.
This type of farming can be profitable only if the price of feed, whether home-grown or imported, remains low enough; otherwise, the farms can not compete with areas where large quantities of low-cost feed are grown, for example, in southern Alberta.

Agricultural use of the peat bogs increased after 1958, particularly along Number 6 Road on the southern bog. Several scores of acres were cleared of bush and planted in blueberries, a crop which requires a minimum amount of soil preparation and brings good profits in a short time.

Cranberry and blueberry farming on the northern bog are still mainly under the control of one development company, Big Red Cranberry Company. Vast fields, each 30 - 40 acres in size, have been planted. Photograph 4 shows a cranberry field
on the left and a blueberry field on the right. Each of these fields is 30 acres or larger.

Photograph 4. Cranberry and Blueberry fields on northern bog.

The further development of the old peat bogs as agricultural areas will depend upon profits being sufficient to warrant the initial expenses of drainage and soil preparation. If berry prices remain at their present level or show an increase, more areas will probably be developed and will provide an income from land that would otherwise remain idle.

Other types of farming on peat soil do not seem to be increasing. The farm in Photograph 5 is typical of the limited type of development that occurs where most of the farm is composed of peat soils. A small portion was converted to pasture; however, a major part of the property is still
undeveloped. This particular farmer pastured approximately 10 - 12 cattle. An increase in pasture acreage would require a sizeable capital outlay to provide adequate drainage, bush removal, soil conditioning and grass seeding. Farmers with small incomes cannot easily undertake such a project. Where there is better soil mixed with peat a farmer can more readily develop his whole farm as shown in Photograph 6. This farm, located in the extreme eastern part of Lulu Island, is completely improved.
Photograph 6. **Mixed farming on shallow peat soils.**

A form of mixed farming is carried on in that cattle are raised, and some grain and vegetables are grown. Although the profits from this type of farm may be insufficient to support the farmer, they will form a reasonable supplement to his earnings.

Drainage is still a major problem throughout the municipality and probably will continue to be for many years. The islands are all part of the floodplain of the Fraser River and, as such, must be dyked and drained. During the winter months when the amount of precipitation is at its greatest, the water table rises to within a few inches of the land surface. If the tides and river are high, very little water is removed from the land by the ditches, despite the many pumps which operate 24 hours a day. As a result, large sections of the
islands may be inundated. Photographs 7 to 11 show drainage conditions during the winter. Pasture lands must often have furrow channels (see Photograph 11) in order to remove the water more quickly.

Photograph 7. Filled ditches along Westminster Highway.

Photograph 8. Flooded land - No. 6 Road and Westminster Highway.
Photograph 9. Flooding of pasture land No. 6 Road and Westminster Highway

Photograph 10. Flooded yards - Westminster Highway

Photograph 11. Furrow drainage used at No. 1 Road and Westminster Highway.

Photograph 12. Empty drainage ditch at low tide in summer.
In summer when precipitation is low and the level of the water table has fallen, the ditches may become dry at low tide, (see Photograph 12), partially-filled, (Photograph 13), or extremely stagnant, (Photograph 14).

Photograph 13. Partially-filled ditch during autumn months.  
Photograph 14. Extremely stagnant water due to poor drainage - Blundell and No. 3 Roads.

Stagnation presents a health problem, particularly when it occurs near residential areas. Since Richmond will always be confronted with a drainage problem due to its low, flat terrain, and since urban areas demand adequate drainage, the municipality has two choices: (1) to greatly increase pumping facilities and the drainage network, entailing large capital expenditures, or (2) to allow the land to remain as farmland, install a few additional pumps and permit the land to flood
only during periods of extremely high precipitation. An in­
crease in urbanization will necessitate making the first choice.

Several aspects of agriculture in Richmond are changing
as urbanization expands and farmers attempt to take advantage
of the improved economic conditions. Large green fields such
as those pictured on Sea Island, (Photograph 15), and picturesque
old barns such as the one on Number 5 Road, (Photograph 16),
are disappearing from the landscape. Small chicken farms and
cabbage fields are being superseded by urban development.
(Photographs 17 and 18). Only in the southern and eastern
agricultural regions can widespread evidence of the former
agricultural landscape be found. (Photograph 19).

Disappearing Scenes in Western Richmond

Photograph 15. Oat fields
   and pasture on Sea
   Island.

Photograph 16. Old dairy
   farm - No. 5 Road.
Present Day Reminders of Richmond's Past

Photograph 17. Chicken farm on No. 1 Road

Photograph 18. Cabbage field - No. 1 Road and Steveston Highway.

Photograph 19. Large scale dairy farm - Westminster Highway and No. 7 Road
The future prospects for agriculture in Richmond will depend upon several factors such as economic conditions, rate of population growth, urban growth, taxation, zoning regulations, and municipal and regional attitudes towards farming. Since the interaction of these factors and many more present a very complex situation, it is extremely difficult to forecast how long agriculture will remain a major land use.

If the agricultural acreage were to decrease at the same rate as it did from 1951 to 1958, (314 acres per year), there would be only a few acres of farmland left in Richmond by the year 2000. Since both Class III and IV soils were reduced at the same rate, Class IV soils would be consumed first, (by 1976), by urban development, because at the present time, there is a smaller acreage left.

One important factor which will help to determine whether or not farmers continue farming will be the taxation - profits ratio. At the present time farm land, (a farm over 5 acres), is taxed at a rate of $200 per acre. The new provincial act allows $1,000 exemption for school taxes, thereby giving the farmer a distinct advantage.

A farmer having 5 acres pays no land tax, whereas one having 20 acres would pay $3,000. Thus, farmers with small

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2 The 1951-58 rate of decrease was chosen because it represents a moderate figure, as the period included both a rapid and a slow conversion of agricultural land to urban uses.

3 G. Trigg, Assessor of Richmond, personal interview.
Ill acreages have been greatly encouraged to continue farming, whereas farmers owning large acreages have not been given proportional incentives.

The taxation-assessment-service problem has been dealt with in a recent report by the Lower Mainland Regional Planning Board. The report states that:

Regional Planning Board studies some years ago proved that in municipalities containing both urban and agricultural areas, farmers were being overtaxed in relation to the benefits they received from municipal services. Subsequent changes in assessment procedure, notably the changing of assessment values to 50 percent of current market value, seem to have greatly worsened the position of the larger farmer while bettering that of the small holder. Since the large farm is generally the more efficient we seem to have imposed another penalty on efficiency. 4

Thus if agriculture is to be retained in the municipality, greater encouragement must be given to large scale farmers.

A second factor which has an influence upon the retention of agriculture is zoning of land use. Zoning regulations which were first introduced in 1947 and made more stringent in 1956, have had marked effects upon the retention of agriculture and the restriction of the urban development to certain areas, (Map 17). In the zone designated as agricultural, residential subdivision is severely limited. Other urban functions can be developed only after municipal council’s approval. Thus most of the recent losses in agricultural-acreage have been in areas not reserved for agriculture. Therefore, the future of agri-

4 Land for Farming, pp. 17-19.
To follow page 111.
culture in Richmond is partially dependent upon the maintenance of strong zoning regulations. If the present agricultural zones are modified to allow more urban development, as they have been in several cases, eventually very little farmland will remain. The present zoning map, (Map 17), shows that agriculture is limited to a narrow belt in the south and to a broad area east of Number 5 Road. In addition to these two zones, small-holdings will provide some farm products.

The municipal attitude towards the importance of agriculture to the area is another factor influencing the survival of agriculture. Two basic points of view emerge with regard to agriculture and Richmond: the first regrets the use of good farmland for residential purposes and hopes that agriculture will always be retained; the second foresees Richmond as an urban area with little or no agriculture.

In the writer's opinion the first point of view has merit over the second. Good agricultural land is at a premium in the Lower Fraser Valley, while vast areas of suitable residential land can be found on poor agricultural soils, such as those of the uplands. As the metropolitan area grows it will require increasing amounts of food, especially fresh produce. At the present time, Richmond supplies some of those products; however, large quantities are being imported from other municipalities in the Lower Fraser Valley and from the United States.

If the nearby sources cease to supply some of the demand, because of urbanization, there will be a complete dependence upon distant sources. This would not be a serious situation if these areas from which Metropolitan Vancouver gets its food were not also experiencing rapid urbanization upon agricultural lands. As agricultural acreage decreases in distant areas, less food will be available for export, then Vancouver will be forced to find new source areas.

These factors will lead to higher prices and greater transportation costs for food supplies. Since agricultural land, once removed from production due to urbanization, cannot be returned to agriculture it would seem highly desirable to retain a valuable local resource.

In addition to providing an important source of food to the Vancouver region, agricultural areas of Richmond have aesthetic value to the urban residents. The green pastures and luxuriant gardens provide a peaceful and refreshing atmosphere to nearby urban dwellers who often seek the open roads on weekends for temporary relief from the noise, bustle and congestion of city life. In the autumn a short drive to Richmond gives the urban resident the opportunity to buy products fresh from the garden or berry field from the many roadside markets. Thus he has the satisfaction of obtaining produce near the peak of its perfection. Aesthetic value, per se, cannot be

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7 *Land for Farming*, p. 3.
measured in dollars and cents; however, in a world plagued by anxieties, it cannot be discounted.

The agricultural land of Richmond is ever decreasing in area and there seems little likelihood that this trend will cease. The southern and eastern agricultural regions will be the last areas to survive. Indications already are that these areas will become dissected by more urban functions such as golf courses and industrial plants. Thus, large acreages of agricultural land in Richmond can only be retained if strong action is taken now to preserve them.

B. **Urban Developments**

Richmond has acquired all the characteristics of a suburban region, including large residential areas and limited commercial and industrial developments. The evolution of urban development in the past few years has been much more controlled. Zoning has directed development into planned areas, thus municipal services are less expensive and the sprawl appearance which Richmond had prior to 1958 has been reduced. Present zoning has reserved 12,204 acres for various urban uses.

Table XX

<table>
<thead>
<tr>
<th>Zoned Urban Area 1960* Used and Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
</tr>
<tr>
<td>Industrial</td>
</tr>
<tr>
<td>Commercial</td>
</tr>
<tr>
<td>Institutional</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>
Industrial Developments

The principal industrial areas remain along the north and south channels of the Fraser River where water frontage and rail and road facilities are near at hand. Due to their widely-spaced nature, the industrial areas still have the appearance of industrial sprawl. Food and wood-processing are still the main industries; however, a few metal processors have recently located in Richmond. For example, West Coast Steel Company has established a plant on Mitchell Island. The basic raw material is scrap iron which is shipped in by rail. The main locational factor was the availability of a large, isolated piece of property having both water and rail services. In a similar way, the Aluminum Company of Canada Limited erected a processing plant on Vulcan Way on Lulu Island.

During the period from 1958 - 1963, new plants have opened in the industrial zones along Vulcan Way and in South Bridgeport. Amongst those located in the former area are a lithographer, soft drink bottling plant, meat packer and plywood manufacturer. In the latter area, a furniture factory and a boat yard have been added. Photographs 20 and 21 show a few examples of industrial plants now located in Richmond.
The municipality of Richmond has reserved large areas along the north and south arms of the Fraser River for potential industrial use. (Map 17). However, development has been relatively slow because of competition with other suburban regions for a prominent position in the growing industrial complex of the Greater Vancouver area. Although Richmond has a large area suitable for industry, land prices there are no longer low, thus a former advantage no longer exists. In general, the land zoned for industrial purposes can readily be developed. Even the peat lands present few problems because the peat is not deep and the sub-layer is composed of silty clay which provides an adequate foundation material. (Photograph 22).
Photograph 22. *A profile of peat and silty-clay layers, Deas Thruway.*

Removal of the peat, silt-filling and adequate drainage would be necessary in most instances.

The industrial potential of Richmond will depend upon how its regional position and its site factors compare with other areas around Greater Vancouver. Richmond can provide industry with large parcels of land, wide waterfront property, and adequate rail and road facilities. A Lower Mainland Regional report[^8] on industrial land prospects considered Richmond as an important area in the development of the Lower Mainland Region.

The report forecasts that Richmond should receive 36.5 percent of the new industrial acreage and 13.0 percent of the new industrial employment in the years 1960-66. Furthermore, a continued high proportion of development is forecast for the period 1966-71; 29.2 percent of the acreage and 15.6 percent of the employment.

The main reasons for the optimistic outlook are: Richmond’s proximity to the present industrial centres which permits a travelling time of less than forty minutes to central Vancouver; reservation of ample medium-cost industrial acreage which possesses deep sea and shallow water frontage, and the possibility of further industrial expansion through reclamation of the Lulu Island peat bog, (1,200 acres), Sturgeon Bank, (1,500 acres), and Barber Island, (1,900 acres).

One major reservation made in regard to industrial development throughout the Lower Mainland, which applies particularly to Richmond, is that in order to prevent further industrial sprawl, a regional approach must be taken towards future industrial growth. Since the Lower Mainland region is small, optimum use must be made of the available land. Therefore areas near the present industrial core, Vancouver, should be developed first, then consideration given to the

9 Ibid., p. 5
10 Ibid., p. 11
11 Ibid., p. 7
more peripheral areas. 12 If this idea is accepted Richmond will share in the immediate industrial growth, otherwise, industrial sprawl will continue to be the outstanding disagreeable feature in the land use pattern.

Commercial Developments

Commercial developments since 1958 have been rapid and widespread, and include shopping centres, marinas, golf courses, and nurseries. The chief aim of the shopping centres was to provide the local residents with more facilities, both in number and in variety. The purpose of the other enterprises was an orientation towards a regional market.

Although there was a general commercial growth throughout Richmond, rapid development was more regional in nature. Most of the development was outside the three main business districts, Brighouse, Bridgeport and Steveston. Several shopping areas were opened or expanded. These included centres at Number 1 Road and Francis, Number 3 and Williams, Number 4 and Steveston Highway, and Number 5 and Cambie. The new centres provided goods and services for the newly-developed residential areas in the immediate district. Each centre has a supermarket, drugstore, medical office and several specialty and service shops. (Photographs 23 and 24).

12 Ibid., p. 39, 40.
Brighouse remains the main business district and will continue to be now that a major department store, (Simpsons-Sears), has decided to locate there. By 1965 with the completion of Richmond Square on the west side of Number 3 Road, the Brighouse Commercial area will extend along both sides of the road from Granville Avenue to Westminster Highway. It will have the greatest number of stores and service shops, and, with its central location, will become the main business, recreational and apartment centre in Richmond.

With the closure of the old bridge and the opening of the new road on Sea Island, the business centre of Bridgeport has moved south to the new road. At present the commercial area is developing in a linear fashion along Number 3 Road.
this fact may restrict any future large-scale development. Since Bridgeport is only a mile and one-half from Brighouse, and residential development around Bridgeport is small, there is an unlikelihood of substantial growth in the Bridgeport commercial area. The limited commercial growth in Steveston results from the small amount of industrial and residential growth in the area. The commercial area remains almost the same size today as in 1958. To prospective Richmond residents, Steveston has few attractions because of the fish canneries and their periodic strong odours. Because of the lack of residential growth, there is little demand for, or profit involved in, the expansion of present commercial facilities.

Most of the regionally-oriented commercial enterprises have grown considerably since 1958. Marinas have located on both sides of the Middle Arm of the Fraser near the new Moray Channel Bridge. The marinas provide a well-protected area within a short distance of Georgia Strait. More nurseries have been established throughout Lulu Island, providing flowers, shrubs and trees to the Greater Vancouver area. The opening of another golf course along the Steveston Highway within the agriculturally-zoned area reduced the agricultural acreage, and, in particular, has eliminated a significant vegetable-growing area.

The two race tracks, which formerly occupied the largest commercial area, were notably reduced in importance. The
Brighouse track was closed as a practice track and partially dismantled. The Lansdowne track was closed to the public in 1960, and is now used solely as a training area. Poor attendance at the races, and a severe outbreak of coughing amongst the race horses caused serious economic losses in 1959 and 1960. It was decided to concentrate all racing at Exhibition Park in Vancouver rather than to try to make major improvements at Lansdowne.

In summary, commercial development in Richmond has two noteworthy features: locally-oriented shopping and service centres and regionally-oriented enterprises. New centres are being created, and commercial development is becoming more widespread and more suburban in character.

Residential Developments

Residential development has always been the dominant urban land use in Richmond; however, in the past decade and particularly in the last five years, the character of the development has changed from individual projects to company undertakings. Similar to many other suburban regions, Richmond's recent major housing developments have been chiefly of a speculative nature rather than of a customer-built basis. In other words, houses were built in anticipation of a population influx. The role of the real estate companies and the subdivision developers should not be underestimated when the main reasons for Richmond's rapid population growth in the
past ten years are considered. Land entrepreneurs obtained low-cost land from the farmers, approximately $2,000 per acre, and built homes in the medium-price range, $9,000 to $12,000. Since down payments and monthly mortgage payments continued to be relatively low, many people, particularly young couples, have moved out of Vancouver, where real estate is more expensive. By migrating, these people have become immersed in the sea of similar houses with their quasi-artistic landscaping. Commuting problems, overcrowded schools, and a multitude of neighbourhood children form an integral part of life in suburbia.

Due to prevailing economic conditions, the rate of residential development varied considerably from year to year and regionally within Richmond. Between 1957 and 1959 rapid changes took place; however, between 1960 and 1962 residential growth was retarded. Maps 18 and 19 indicate the numerical change in dwellings per section for these two periods. The sections west and south of Brighouse, zoned as residential areas, exhibited most of the growth. No sections experienced reductions in the number of dwellings during the 1957 - 1959 period, as several did from 1959 - 1961. Decreases registered during the latter period were due to a change in land use, for example, to institutional in the airport area, or to commercial or industrial on Lulu Island.

The effects of zoning upon residential development are clearly evident in Maps 18 and 19. In the zones not allocated for residential use, minimal growth, and in several cases, reductions, occurred. The latter situation was often the result
NUMBER OF DWELLING CHANGES PER SECTION, 1957-1959
RICHMOND

MAP 18

-1 - 15
0
1 - 15
16 - 49
50 - 149
150 - 350

1/2 0 1 MILE
NUMBER OF DWELLING CHANGES PER SECTION, 1959-1961
RICHMOND

MAP 19

-1 -15
0
1 - 15
16 - 49
50 - 149
150 - 350

1/2 0 1 MILE
of a change to some other urban use.

Additional modern large-scale housing schemes, evident west of Number 3 Road on Lulu Island, increased the residential density. The development is still very dispersed in nature, and Map 20, which shows the number of dwellings in 1962, emphasizes this point. Some sections have over 300 houses; others, very few. Within the residentially-zoned area, extreme contrasts result from the juxtaposition of sections of high and low density, thus a patchwork-quilt pattern has emerged.

An irregular density pattern makes great demands upon existing municipal services. As a direct result, regulations have been instituted that require land developers to provide many of the urban conveniences, such as paved roads, storm and sanitary sewers and street lights. Until such time as the overall dwelling density reaches 100 or more per section, the municipality will not be receiving a maximum revenue for the services it must provide.

Several of the low density areas are remnants of past unwise subdivision, which now demands considerable effort to correct. The lots in the low density areas are large, a quarter to one acre, and frequently long and narrow. Three such subdivisions were examined to ascertain the degree of use being made within them. (Table XXI).
To follow page 124.
Table XXI
The Degree of Development on Large Residential Lots

<table>
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<tr>
<th>Size</th>
<th>0-19</th>
<th>20-39</th>
<th>40-59</th>
<th>60-79</th>
<th>80-100</th>
<th>Total Lots</th>
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<td></td>
<td></td>
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<td>0.5 to 1.0 ac.</td>
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<td>27</td>
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<td>6</td>
<td>14</td>
<td>101</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.1 to 0.49 ac.</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>74</td>
<td>83</td>
</tr>
<tr>
<td>0.5 to 1.0 ac.</td>
<td>17</td>
<td>37</td>
<td>32</td>
<td>25</td>
<td>25</td>
<td>136</td>
</tr>
<tr>
<td>Sample 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.1 to 0.49 ac.</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>18</td>
<td>1</td>
<td>21</td>
</tr>
<tr>
<td>0.5 to 1.0 ac.</td>
<td>16</td>
<td>11</td>
<td>7</td>
<td>6</td>
<td>17</td>
<td>57</td>
</tr>
</tbody>
</table>

Note:
Sample 1 was in Section 23, Block 5, Range 6 - Class IV soils
Sample 2 was in Section 17, Block 4, Range 6 - Class IV soils
Sample 3 was in Section 11, Block 4, Range 7 - Class III soils

In each sample, over half of the 0.5 to 1.0 acre lots had less than sixty percent of the area developed, which indicates that the larger lots were not as efficiently used as the smaller. The undeveloped part consisted of unsightly weeds or rough grass, an example of the wastage of land. (Photograph 25). Further division of the property is often impossible due to its shape or to the placement of the house.

A serious problem persists in the Brighouse area regarding the density of housing. Many sections next to the major business centre "... are reaching a state of static
density at a level which is uneconomically low due to undevelopable and waste 'back-land'". Early subdivision in this region created wide, deep lots, varying in area from one to five acres. Some further division has taken place but now the density of housing is not increasing

... because the majority of the available dedicated and improved road frontage has been developed to a near maximum capacity. In hundreds of cases this has produced long narrow lots, the back portions of which can not be developed into marketable lots unless a large number of such adjacent back-properties are consolidated and developed as one unit. 14

13 "Density of Residential Development in Municipality of Richmond, B.C.", Richmond, Town Planning Department, 1959, p. 6. (mimeographed).

14 Ibid., p. 6.
That these back-properties should be developed is readily justified because the land is not being utilized for the growth of any agricultural crop "... and is in effect a burden to the predominantly 'urban-oriented' property owner residing there."\textsuperscript{12} Thus a situation has arisen due to a change in outlook of a modern generation. When the sections were first subdivided, large, long lots were considered desirable. Now they only hinder the compact urbanization that the planning department considers necessary in proximity to the central business core.

The poorest housing in Richmond is found along and outside the dykes, especially in East Richmond. The houses, such as seen in Photograph 26, hover over the river receiving minimum services from the municipality, namely, water and electricity. The homes are owned by fishermen or people connected with the fishing industry.

\textbf{Photograph 26. Poor housing outside the dyke.}  
\textit{East Richmond.}

\textsuperscript{12} Ibid., p. 6.
Residential development in the future must be planned and controlled if sprawl is to be reduced and land efficiently used. Municipal councils should encourage a regional development within the present residential zones, thereby reserving the agricultural and industrial land. Without the most stringent zoning regulations residential development will completely dissect and ruin the remaining agricultural area as it did in the western region.

Institutional Developments

Richmond's growth in population and importance in the Lower Mainland region have resulted in an increase in the size of the institutional area. The principal institutional land owners at present are the Department of Transport, which owns the airport, the Department of National Defense, which operates the large wireless station on Lulu Island, and the municipality, which owns the parks and schools.

On Sea Island, the airport has again augmented its runway facilities and thus eliminated approximately 400 additional acres of agriculture. Since most of the island is owned by the Department of Transport and is slated for future airport expansion, farm acreage will continue to decrease.

Sea Island's emergence as a major international airport is creating several problems in the municipality, over some of which it has no control. The profusion of aeroplanes, now large in size, is constantly increasing the noise level around the airport. The screaming of jet engines as planes take off or are tested, creates a disturbance, and shatters the tran-
quality of nearby residential areas. Old-time residents claim that they have become indifferent to the noise; however, prospective residents may not feel the same way.

The more frequent use of the airport has generated a vast increase in the amount of ground traffic between the airport and Greater Vancouver. To reduce future traffic congestion, improved highway service will be imperative, and a tunnel or another bridge may have to be constructed.

The operations of the Department of National Defense on Lulu Island will probably have little effect upon the future growth of any of Richmond’s functions because of the location of the wireless station upon soils with a high peat content. At present the station marks an open area between two zones composed of residential and agricultural small-holdings.

To keep pace with its growing population the municipality is ever multiplying the number of schools, parks and playgrounds. Some future sites have already been purchased or reserved. In 1963 Richmond operated 34 schools, enrolling 10,655 pupils, compared to the 1958 totals of 21 schools and 6,500 pupils. The higher number of students reflects the population increase, and, in particular, the fact that many new residents are younger people with school-age children. As long as younger couples continue to take up residence in the municipality, Richmond will be faced with increasing educational costs.
C. Peat Extraction Developments

Since there is a finite amount of peat located in Richmond, exhaustion will eventually occur; however, the available reserves are sufficient for several decades if the present production rate is maintained. The recent introduction of a type of giant vacuum machine supplements hand-digging of the peat, and has increased the rate and amount of commercial extraction of peat moss. Through this innovation, areas which have been abandoned may again provide marketable peat.

Since the northern bog has the smallest reserves and the greatest number of extraction companies, it will be the first to become depleted. However, much of this area will probably be converted into cranberry and blueberry farms, thus changing its land use type.

Markets for peat products have been exceptionally good in the past decade and future demands seem optimistic because few other areas can provide the raw material. Richmond's chief competitor lies across the river in Delta, where the Burns' Bog is the largest and most productive in the Lower Mainland. Richmond will continue to be a major producer of raw and processed peat for the Lower Mainland region, as well as a provider of large quantities for the western United States.

D. Road and Rail Network

The road and rail network continued to expand after 1958; however, this growth was confined in area and removed
only a small amount of agricultural land from production. Most roads were constructed within new residential sectors, or as connecting links with the Deas Thruway. New rail lines consisted only of spur lines leading to individual industrial plants. (Map 2 shows roads and rail lines in 1962).

The most noteworthy road construction was the completion in 1959 of the Deas Thruway. To provide adequate foundations for the highway, all the peat was removed from the roadbed and silt fill, three to six feet in depth, was then hauled in by truck. (Photographs 27 and 28).

Photograph 27. Excavating a road bed through peat land.

Photograph 28. Excavated roadbed - Deas Thruway.

The completed highway provided rapid, direct access across Lulu Island. (Photographs 29 and 30). The Oak Street Bridge at the north end of the highway easily accommodates Richmond-Vancouver traffic, and the Deas Tunnel allows a
speedy crossing of the Fraser River into Delta and southern points. The Oak Street Bridge has reduced the traffic on the

old bridges connecting Fraser Street in Vancouver and Number 5 Road on Lulu Island. The construction of the Queensborough Bridge connecting New Westminster and Lulu Island has helped to ease traffic conditions on the eastern end of the island.

The main rail extensions into industrial property were located either along Vulcan Way or on Mitchell Island. To facilitate shipment of finished aluminum products, a spur line was extended into the property of the Aluminum Company of Canada. The establishment of West Coast Steel Mills on Mitchell Island necessitated the construction of a swing-span bridge across the North Arm of the Fraser, as well as an additional
mile of trackage. The rail extension brings in scrap iron and ships out processed steel.

At present, road and rail facilities are adequate, and will undoubtedly increase with the expansion of the municipality. However, new bridges connecting Number 5 Road to Fraser Street in Vancouver, via Mitchell Island, are urgently needed. The old two-lane wooden bridges are responsible for frequent delays of traffic. (Photograph 31). Some relief may be forthcoming when the tolls are removed from the Oak Street Bridge on April 1, 1964; nevertheless, better facilities are a necessity in the Number 5 Road area because it forms a major link between Central and Eastern Vancouver and the Deas Thruway. Mass congestion results during rush hours as traffic creeps over the two old bridges and along the narrow Number 5 Road. (Photograph 32). As Richmond's population grows, more of its automobile commuters will seek better access routes from and to the islands. At the same time, because Richmond is part of the new freeway system, it is increasing in importance to the Lower Mainland transportation pattern. All of these factors will necessitate the construction of a better transportation network for the municipality. However, any improvements will mean a further change in land use and undoubtedly a decrease in agricultural land. So far the construction of the thruway has not brought about any significant changes in the use of land along its route. This situation would change if the municipality allowed commercial and industrial development to occur along the highway.
E. Vacant Land

Vacant land is still abundant throughout the municipality. Large areas are found on the peat bogs; tens of acres surround the partially-developed subdivisions; and scattered, empty lots are conspicuous in the more densely-settled areas. (Photographs 33 and 34). The rate at which vacant land is becoming utilized varies considerably. Regional differentiations in soil type, accessibility, potentialities for use, and cost, influence not only the rate of occupancy, but also the type of development. Since the area of vacant land is large, land users have a wide choice of locations.
Within the present residential zone there are approximately 1,000 acres of vacant land, or enough space to build 6,000 more homes. If the present rate of building, (300 dwellings per year), continues, there will be vacant land
available for the next twenty years. However, it is very unlikely that complete occupancy will take place. New areas, such as the present agricultural zones, will probably be opened to residential development. Thus some vacant land may always be part of the Richmond landscape.

The peat lands have been the greatest vacant areas because development of any kind must contend with a number of problems, such as drainage, soil conditions, and suitable foundations. Zoning regulations have reserved most of this area for agricultural or industrial use. The latter use would require extensive filling in order to improve foundation material. Even if the peat areas were zoned as residential there is little likelihood that widespread use would be made of these lands for this purpose, for the unattractive conditions of poor drainage and spongy soils would discourage prospective residents. In the past, peat lands were occupied by people seeking land which was low in price and taxes. Land values and taxes have increased substantially over the years, thus the peat areas now have no special attraction. At the present time, and for some years to come, there will be sufficient vacant land available on good soils so that the majority of urban developers will have little inclination to use the poorer areas. Furthermore, building and zoning regulations do not permit the development of "poor" housing upon the peat lands because municipal standards have been established.
F. Summary and Recommendations

The land use and population of Richmond have been greatly modified since 1930. No longer is the municipality mainly a rural agricultural area producing significant amounts of dairy products and fresh produce for the Greater Vancouver region. The former inexpensive land and low tax rates have disappeared because of changing economic conditions and the increasing demand for urban property. Similarly, the farm population has exhibited a steady decline, and constitutes only a very small percentage of today's total population.

Richmond is now one of several suburban areas adjacent to the City of Vancouver. As such, it has many urban characteristics, for example, rapidly-growing residential and commercial areas, expanding industrial regions and an ever-increasing population. However, despite these features, it retains many rural qualities such as large farmlands and vast peat bogs.

To the Greater Vancouver area, the Richmond of today offers many attractions: agricultural produce is still obtainable, large tracts of land remain available for industrial and commercial development, and the increase in the number of houses enhances the municipality's possibility as a residential area.

Richmond has also provided an important link in the transportation network of the Lower Mainland because of the Deas Thruway and the international airport. The thruway makes the area far more accessible to those who reside there, or
whose destination is Richmond. The location of the airport in Richmond involves the passage of many people to and from the area. However, the chief benefit from these two facilities accrues to the Greater Vancouver area, and not to Richmond.

An examination of past and present trends and of Richmond's assets as a region within the Greater Vancouver area, indicates that Richmond will continue to become more urbanized. The following reasons are offered in support of this conclusion: Richmond has large areas of land available for urban functions in proximity to an expanding metropolis. Its coastal and river position offers a prime area for future expansion of industry based upon shipping. No municipality adjacent to Vancouver has such an abundance of potential industrial land with both deep sea and shallow draft water frontage reserved and ready for development. As industrial and commercial employment increases and urban amenities such as sewers, covered drainage, and transportation and shopping facilities are improved, the municipality will become more attractive to those seeking residential property. Continual growth in population in the Lower Mainland region will ensure that large numbers of people will live in the suburbs.

With increased urbanization foreseen, a continual reduction in the agricultural acreage can be expected because farm lands are the areas most easily converted to urban developments, and some farms are already operating on a marginal economic basis. Increasing urban encroachment is evident within all agricultural sectors. Zoning regulations do not completely prevent farmland from being used in the future by urban
functions: basically, they only ensure a more orderly development of the municipality. Increased pressure to expand the urbanized area and the greater willingness of people to subdivide and sell their land, make it extremely difficult for municipal officials to forestall indefinitely the occupancy of some farm land.

If the belief that greater urbanization is inevitable is accepted, several recommendations should be made to assure that Richmond and the Lower Mainland receive the greatest benefit from all resources and assets available.

1. The scope of planning, both on a municipal and on a broader regional basis, should be enlarged to guard against injudicious developments which have been common in the past, to prevent unnecessary competition between regions for the acquisition of new industries, and most important of all, to give planning departments, particularly the Lower Mainland Regional Planning Board, greater authority to implement the proposals of their land use studies.

2. Since Richmond is basically a residential area, a greater effort should be made to expand the industrial base and thus reduce the tax burden placed upon the residential and farm population.

3. Through zoning and redevelopment, uneconomical urban sprawl conditions can be reduced to give greater cohesion to the municipality and produce a more efficient use of land.

4. A careful reassessment of the position of agriculture in Richmond and the Lower Mainland is imperative. If it is ascertained that farmland is a necessary and integral part of
the region, as the author believes it should be, then immediate action should be forthcoming to prevent further loss of good soil resources and economically sound farm units. The rate of taxation on farmland should not be allowed to increase and, if possible, it should be decreased. Incentives in the forms of technical aid and broader loan facilities would make possible the improvement of farming methods and production, and adequate and profitable marketing opportunities should be maintained for those farmers interested in keeping agriculture as an important local industry.

The haphazard and often premature consumption of valuable agricultural land that occurred in Richmond, especially in the past two decades, is presently engulfing other municipalities in the Lower Mainland and similar areas adjacent to many North American major cities. Perhaps the information gained from a geographical examination of the changes and results of one region in an evolving rural-urban fringe will provide some enlightenment and future guidance for other regions caught in this process of urban-rural evolution.
BIBLIOGRAPHY


"Density of Residential Development in the Municipality of Richmond, B.C." Richmond, Town Planning Department, 1959. (Mimeographed).


APPENDIX I

Definitions of Categories used in Agricultural Land Use:

Agricultural
- includes all plots of land 3 acres or more in area which produce some agricultural products.

Grains
- Include all plots of land having more than one-half acre of a grain crop such as oats, barley or wheat.

Fruits
- include small fruits such as strawberries, raspberries, loganberries, blueberries and cranberries.
- exclude any sizeable orchards of applies or cherries, as these were not present in Richmond.

Market Garden
- includes lots which produce a variety of vegetables in sufficient quantities to be of commercial value.

Pasture or Grass
- includes pasture grass and hay.
- excludes rough grass, defined as grass which is not being tended or used for any purpose.
- excludes lawns or golf courses.
APPENDIX II

Definitions of Categories referred to as Urban Functions:

Industrial
- all lots on which a product is manufactured.
- includes electrical substations and oil pumping stations.

Commercial
- all lots on which either retail or wholesale goods are sold.
- includes all service establishments.
- includes commercial nurseries and recreational facilities, such as golf courses and race tracks.

Residential
- includes all lots less than 3 acres which are comprised of residences and associated lawns and gardens.
- excludes lots 1 to 3 acres which have an annual cash crop valued at or above $250.

Institutional
- includes all governmental or municipal property, for example, schools, community halls, legions, parks and playgrounds.
- includes the airport - operational and terminal areas, Royal Canadian Air Force Station and Department of Transport buildings.
APPENDIX III

1958 Land Use Survey

In May, 1958, as an employee of the Geographical Branch, Department of Mines and Technical Surveys, Ottawa, the author undertook a pilot land use survey of Richmond municipality. The survey included a detailed record of the use made of every parcel of land on Lulu and Mitchell Islands.* Each lot was classified as to overall use, then the specific use of each internal area of the lot was noted. In addition, for areas considered agricultural, the proportion of land devoted to each crop was recorded. The information obtained was recorded upon field maps at a scale of 1:2400. Subsequently, a composite map was prepared for the Geographical Branch at a scale of 1:12,000. The composite map, field sheets and additional information gained while carrying out the survey formed the basis used by the author for Chapter IV.

* The land use survey of Sea Island, recorded by the author in August, 1958, was independent of the government survey.
APPENDIX IV

Methods used to obtain Detailed Land Use Information for 1958.

Since no accurate figures were available for each type of land use in Richmond, it was necessary to compile the needed information from the 1958 survey field maps. This procedure involved several time-consuming steps:

1. The area of each lot was obtained from the assessment roles, Assessment Department, Richmond.
2. Each lot was then classified as to type of land use, whether residential, commercial, industrial, agricultural, etc.
3. The area used and unused on each lot was tabulated and the degree of development was calculated on a percentage basis.
4. Lots classified as agricultural or small-holding areas were further subdivided into the area occupied by vegetables, fruits, grains, grasses and other uses.
5. The results of all the tabulations were summarized so that a total acreage could be obtained for each major land use and agricultural crop on a sectional, regional, island or municipal basis.

The following are samples of the tables prepared to tabulate the acreage for each land use and each agricultural crop.
Sample Table.

Land Use Acreage for a Few Sections on Sea Island

Block 5 - Range 6

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<th>Sections</th>
<th>Res.</th>
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<th>Ind.</th>
<th>Inst.</th>
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<td>27.0</td>
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<td>21</td>
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<tr>
<td>29</td>
<td>46.1</td>
<td>7.5</td>
<td>17.8</td>
<td>117.2</td>
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<td>188.6</td>
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<td>31</td>
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<td></td>
<td>51.6</td>
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<td>51.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>46.1</td>
<td>36.2</td>
<td>17.8</td>
<td>168.9</td>
<td>407.4</td>
<td>0.0</td>
<td><strong>676.4</strong></td>
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</tbody>
</table>

Res. - residential; Com. - commercial; Ind. - industrial; Inst. - institutional; Agric. - agricultural.

Sample Table.

Agricultural Crops by Plots

<table>
<thead>
<tr>
<th>Crop</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetables</td>
<td>36.0</td>
<td>16.0</td>
<td>50.0</td>
<td>38.7</td>
</tr>
<tr>
<td>Grain</td>
<td></td>
<td></td>
<td></td>
<td>10.0</td>
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<tr>
<td>Fruit</td>
<td>1.6</td>
<td>8.0</td>
<td>15.0</td>
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</tr>
<tr>
<td>Grasses</td>
<td>8.0</td>
<td></td>
<td>5.5</td>
<td>13.0</td>
</tr>
<tr>
<td>Other</td>
<td>.2</td>
<td>1.7</td>
<td>.5</td>
<td>1.0</td>
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<tr>
<td><strong>Total</strong></td>
<td>45.8</td>
<td>25.7</td>
<td>76.0</td>
<td>62.7</td>
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</tbody>
</table>
## APPENDIX V

The Gross Acreage within Each Zoned Area, 1960

<table>
<thead>
<tr>
<th>Zone</th>
<th>Acres</th>
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<tbody>
<tr>
<td>General Residential I</td>
<td>2,376.08</td>
</tr>
<tr>
<td>General Residential II</td>
<td>2,628.61</td>
</tr>
<tr>
<td>Small-Holding District</td>
<td>3,115.44</td>
</tr>
<tr>
<td>Agricultural District</td>
<td>12,344.94</td>
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<tr>
<td>Local Commercial District</td>
<td>20.61</td>
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<tr>
<td>Gas Station District</td>
<td>7.45</td>
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<tr>
<td>General Commercial District</td>
<td>132.27</td>
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<tr>
<td>Service District</td>
<td>115.05</td>
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<tr>
<td>General Manufacturing</td>
<td>3,337.75</td>
</tr>
<tr>
<td>Schools and Parks</td>
<td>703.48</td>
</tr>
<tr>
<td>Airport</td>
<td>2,879.49</td>
</tr>
<tr>
<td>Private Recreational</td>
<td>3.41</td>
</tr>
</tbody>
</table>

27,664.58

Roads and Rights-of-way

2,207.08

29,871.66

Source: Richmond Planning Department