

SOME DIMENSIONS OF A PLANNING PROBLEM: RESIDENTIAL-
AGRICULTURAL LAND USE CONFLICT IN METROPOLITAN RURAL-URBAN
FRINGE AREAS

By

MARTIN GREGORY YEOMANS
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Department of Community and Regional Planning

The University of British Columbia
1956 Main Mall
Vancouver, B.C.
Canada V6T-1Y3

Date October 13, 1987

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ABSTRACT

Residential-agricultural land use conflict in the rural-urban fringe of metropolitan areas is commonly mentioned as a planning problem. The initial intent of this research was to correlate types of conflict and local planning responses in order to identify effective approaches to the management of such problems.

The anticipated method would have combined theory which addresses the cause and characteristics of residential-agricultural conflict along with data from Vancouver suburbs having substantial agricultural activity and planning departments respected for their professional qualities. However, the investigation showed that the academic literature and the accessible data would not support such research. On the other hand, consultations with local planners and a review of available documentation in the municipalities of Richmond, Delta and Surrey, British Columbia, showed that residential-agricultural land use conflict is treated as a planning problem and is a source of complaints to municipal officials.

Three kinds of conclusions resulted from this research. The first and second are appropriate to the underdeveloped state of the academic literature, while the first and third relate to professional practice in the absence of applicable scientific knowledge.

The first is a description of the characteristics which are perceived as constituting a planning problem and a governmental response.

Secondly, there are recommendations for development of data to support future research. Municipal governments in the three communities have no comprehensive monitoring system or set of cross-referenced records of complaints associated with land use conflicts. Instead, conflicts are received, identified and acted on by a variety of departments in the local government. From the descriptive material a tentative typology is offered to guide data collection and classification.

Thirdly, there are suggestions which may be useful to planners who must rely on non-systematic methods to identify conflict situations appropriate for a planning response and to develop that response. The summaries of problems and responses reported are used to develop a tentative critique of present conceptualizations of appropriate planning measures. It is observed that planners have used only a few of the possible responses to rural-urban conflict. In particular, it is clear that for a wide range of conflict types there has been a reliance on land buffers to separate potentially conflicting activities. Alternative and supplementary approaches which may improve the management of typical conflict situations are suggested. These approaches focus on preventing the development of conflict through increasing the mutual understanding of the

conflicting parties' points-of-view. Examples include public involvement in problem identification and resolution, as well as programs to facilitate communication between the government, farmers and non-farm residents.

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My final thanks go to Stevan Rageesh, who helped keep me on the right track.

CHAPTER 1

INTRODUCTION

I began this thesis with an interest in municipal land use planning in areas experiencing rapid growth. Preliminary research into general land use planning literature, discussions with practicing planners, and monitoring of related topics discussed in the media led me to concentrate my study on the rural-urban fringe. Of particular concern were the ways in which local governments balance pressures to develop and expand the urban land base against the perceived need to preserve farmland and the agricultural sector. Residential-agricultural land use conflicts became the focus of my research because this subject embodied many of the issues which created my interest in land use planning.

This thesis points out the need for more extensive data collection on the occurrence of residential-agricultural conflict and the use of more varied planning techniques in the management of such conflicts.

Purpose

In broad terms this thesis is intended to contribute towards improving the management of rural-urban conflicts at the local level, with the ultimate goal being to preserve the agricultural land base while providing adequate stocks of land for urban expansion.

More specifically, the thesis is intended to show how local planning departments try to establish a policy and

land use framework that both preserves farmland and reduces the chance for residential-agricultural conflicts to occur.

The focus is on rapidly expanding urban fringe communities that have been experiencing an interpenetrating pattern of residential and agricultural land uses. It was anticipated that such a pattern would generate substantial data on land use conflicts and complaints between neighbouring farmers and suburbanites, as well as providing a number of recently introduced planning responses that could be cross-classified with the types of conflicts and then evaluated. However, the available data proved to be inadequate to meet this goal. A re-evaluation of the central thesis purpose was required, and is reflected in the following section concerning research objectives.

Research Objectives

At the outset it was assumed that local planning responses to conflict could be tested against the theory and conceptualizations in the literature in order to assess the effectiveness of the responses, and to identify alternative conflict management techniques that might be indicated. Much of the theory would have come from Ontario-based literature, as many of the pre-eminent Canadian authorities concentrate their attention in that province. As publications became available to me it became clear that the academic literature, when combined with the accessible data, would not support a case study approach which focused on the Lower Mainland. The literature review section and other parts of

this thesis explain more fully why this approach could not be used.

Accordingly, the purpose of this thesis became using an account of local planning experience to document the lack of research the issue is receiving in the Lower Mainland with regards to data collection and investigation into alternative conflict management techniques. The main objective became the generation of descriptive data and observations that could be used to support more substantive and controlled analysis.

The thesis uses the theory which is available in the literature, combined with an account of current planning approaches to residential-agricultural conflict in the Lower Mainland, in order to suggest alternative ways of conceptualizing both the problems and solutions as a step towards raising the awareness of this aspect of land use planning as well as improving data collection and management. It should be emphasized that the research has generated descriptive data and conclusions intended to provide the basis for more systematic studies of residential-agricultural conflict.

Problem Statement

The literature and practicing planners have established the significance of rural-urban conflict in the context of urban expansion and the loss of agricultural land. Yet the literature contains very little theory that lends itself to applied analyses of certain classes of conflict occurring in the rural-urban fringe. Further, while there is clear evidence of planning responses to conflict, there is a dearth of local level data on the incidence, characteristics and geography of conflicts. This thesis expands on and documents this problem in an effort to provide conclusions and suggestions that could be used to guide future research aimed at improving the state of the literature and assisting planners who must deal with rural-urban conflict issues.

Methods And Data

The research method followed in this thesis is outlined below. While the method is presented as a series of incremental steps, there were several occasions when earlier stages had to be returned to and revised because of new information or a lack of data.

Step 1: Literature Review

The first step in this thesis involved a review of Canadian and other relevant literature concerned with rural-urban land use conversion, urban fringe geography, rural-urban conflicts and techniques to resolve them, empirical studies of conflict occurrence and the results of

government responses, the role of local government in land use decision-making, and conflict resolution theory.

Step 2: Purpose, Objectives and Problem Statement

Following the initial literature review, the purpose, objectives and problem statement given above were prepared and used to guide subsequent research. As already noted, the purpose and accompanying objectives were later re-evaluated based on further study of the literature and local planning situations.

Step 3: Selection of Communities

The next step involved a selection of communities on which the research would be based. The community selection criteria were as follows:

- a) the communities had to contain substantial areas of farm and residential land in close proximity;
- b) they had to be experiencing regular farmland conversion (i. e. urban area growth);
- c) the local administrations had to have a planning staff that was large enough to have the expertise necessary to assist the author in the research;
- d) the selection of communities was limited to those which had sizable stocks of agricultural land;

e) the communities had to be close enough to Vancouver to allow the author to make repeated visits to the respective planning departments.

Based on these criteria, the selected municipalities were Richmond, Delta and Surrey, British Columbia. Their community plans and supporting documents were then reviewed, paying particular attention to policies and planning mechanisms that affected land use along the rural-urban interface.

Step 4: Selection of Respondents and Consultations

It was then necessary to identify the local government officials who could provide specific information with regards to residential-agricultural conflicts in each jurisdiction. The initial targets for consultation were the directors of planning and staff planners who were familiar with the issues. Discussions with available personnel often led to conversations with representatives of other departments, such as the local police detachment, Permits and Licenses, Environmental Health and Building Inspection. The consultations were not conducted in a structured interview format due to the exploratory nature of the research, hence they were not, and were not intended to be, reproducible.

Step 5: Conclusions and Recommendations

The final major step was to provide a tentative critique of current planning approaches to residential-

agricultural conflict management, and to make conclusions and recommendations based on this analysis.

Thesis Overview

The structure of this thesis is laid out to follow a logical sequence from problem definition to conclusions and recommendations. Chapter 2 is the literature review and provides much of the background information that is used throughout the study. The main purpose of this chapter is to establish the context in which residential-agricultural conflicts arise. This is accomplished by providing a working definition of the rural-urban fringe, identifying the range of land uses observed in a typical urban fringe region, and describing how the regular activities of one interest can affect the activities of another.

Chapter 3 deals with the data and findings based on research in the three Lower Mainland communities. Major topics which are covered include the data collection method used in this thesis, municipal records, the incidence and types of conflicts identified in the communities, the placement of residential-agricultural conflicts on the planning agenda, and the types of planning responses observed.

The fourth chapter brings the literature and the research findings together in an effort to suggest alternative and supplementary conflict management techniques. Of especial concern is current data collection

practices with regards to residential-agricultural conflict. The suggestions and concepts dealt with in this chapter are intended to stimulate further, more systematic research into particular topics raised in this thesis.

Chapter 5 contains the research conclusions and recommendations, and offers some closing remarks on the future of land use planning in the rural-urban fringe.

CHAPTER 2

LITERATURE REVIEW

This chapter presents the results of the literature review, and as such provides much of the background information used throughout the thesis. The main purpose of this review is to establish the land use context in which residential-agricultural conflicts occur in the rural-urban fringe. Some additional material collected during the literature review will be brought into the discussion in later chapters.

Definition: The Rural-Urban Fringe

The literature indicates that the rural-urban fringe has several basic characteristics. These include: (a) forming a transition between the continuous built-up city and the unbroken countryside; (b) containing a diverse and dynamic mixture of urban and rural land uses; and (c) being the region where most expansion of the urban area occurs, which typically involves the displacement of rural activities by urban activities (Bryant et al, 1982, Martin, 1975, Pryor, 1968, and Russwurm, 1974). Based on these characteristics and further elaboration by Russwurm (1974, 1977, 1980), the following definition shall be used throughout this study:

The rural-urban fringe is a zone of semi-rural countryside extending beyond the continuous suburbs to the region of unbroken rural land. The fringe is characterized by a mixture of rural and urban land use activities, and more than fifty percent of its population will typically be comprised of non-farm residents. In most instances rural land uses in the fringe will over time become displaced by urban land uses.

Rural-Urban Land Use Conversion And Urban Growth

In a discussion of the context in which residential-agricultural conflicts arise it is useful to understand how fast Canadian cities have been expanding through land use conversion. It should be emphasized that this thesis is not concerned with urban expansion and the loss of agricultural land per se. As will become clear in later pages, these sub-topics are discussed in order to underscore the fact that residential-agricultural conflicts are generated and maintained by continual residential development in and around farmland.

Canada

During the six year period between 1976-1981 approximately 50,000 ha of prime CLI class 1-3 agricultural land was converted to urban (i. e. non-farm) uses in Canada (Lands Directorate Fact Sheet 85-4, 1985). About half of this conversion occurred in the 33 urban-centred regions of

British Columbia and Ontario, especially in the regions centred around Vancouver and Toronto.

Over the same period on the national scale there has been an interesting inverse relationship between the rate of conversion and the size of urban centres (Lands Directorate Fact Sheet 85-4, 1985). The highest rate of rural-urban conversion, 341 ha per 1,000 increase in population, occurred in those centres with a population of between 25,000-50,000. Contrasting this, in those urban centred regions with a population greater than 500,000 people, the conversion rate was the lowest at 61 ha per 1,000 increase in population. Thus the smaller cities appear to have been consuming land at a faster rate per capita in recent years (Lands Directorate Fact Sheet 85-4, 1985).

British Columbia

Over 90% of British Columbia is mountainous and non-arable, with the remaining 10% of potentially arable land occurring in the Interior Plateau, the Peace River area in the northeast, and in scattered pockets located predominantly in the province's fertile floodplains. Less than one percent of the province's total area is class one prime agricultural land.

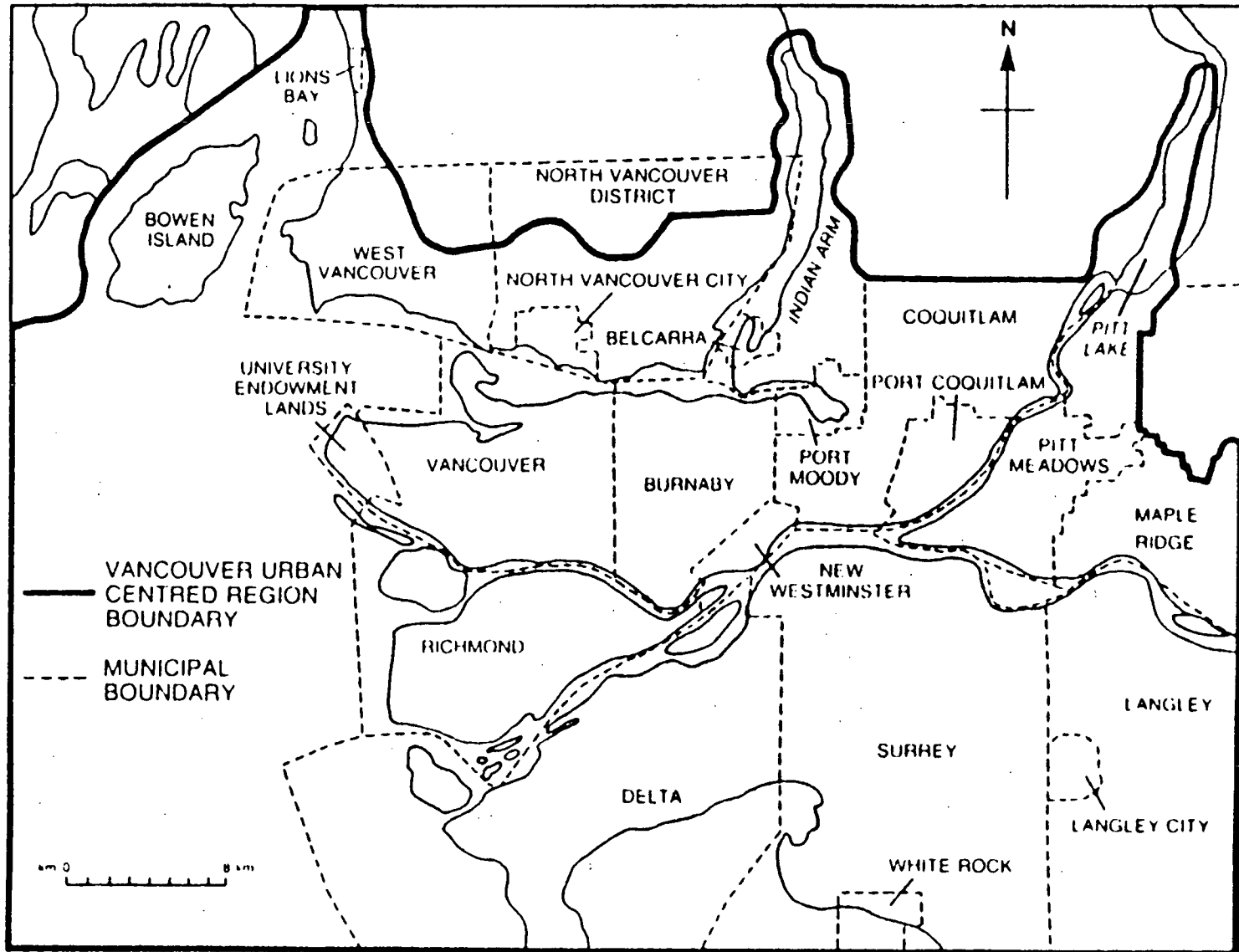
During the period between 1976-1981, 23,372 ha of land used for "renewable resource production" was converted to urban uses, of which 5,272 ha was prime agricultural land of class 1-3 (Lands Directorate Fact Sheet 85-4, 1985).

Vancouver Centred Region

The Lower Mainland, like much of Canada, experienced a population boom in the 1950s-1970s. The formerly rural communities in Richmond, Delta and Surrey began to receive an unprecedented influx of people from Vancouver and more distant places. At the early stages of the boom the only major automobile link providing access between these towns and Vancouver was the Pattullo Bridge joining New Westminster and Surrey. In order to accommodate and encourage the movement of people to the other suburbs, a series of crossings were constructed over the Fraser Delta. Beginning with the Oak Street Bridge in 1957 and the George Massey (Deas Island) Tunnel in 1959, and continuing with the recently completed Alex Fraser Bridge and the planned rapid transit link to Surrey, the area has become integrated into metropolitan Vancouver and more generally urbanized (see Figure 1). However, in the three municipalities of interest here, farming has remained an important land use and economic activity.

As of 1982, 28% of the region was classified urban undifferentiated, 24% of the land was used for agriculture, 22% was unused, 12% was designated recreation and conservation, and 7% was used for dwellings. Most of the agricultural land continues to be located in either

Vancouver Urban-centred Region



Source: Lands Directorate, 1985.

FIGURE 1

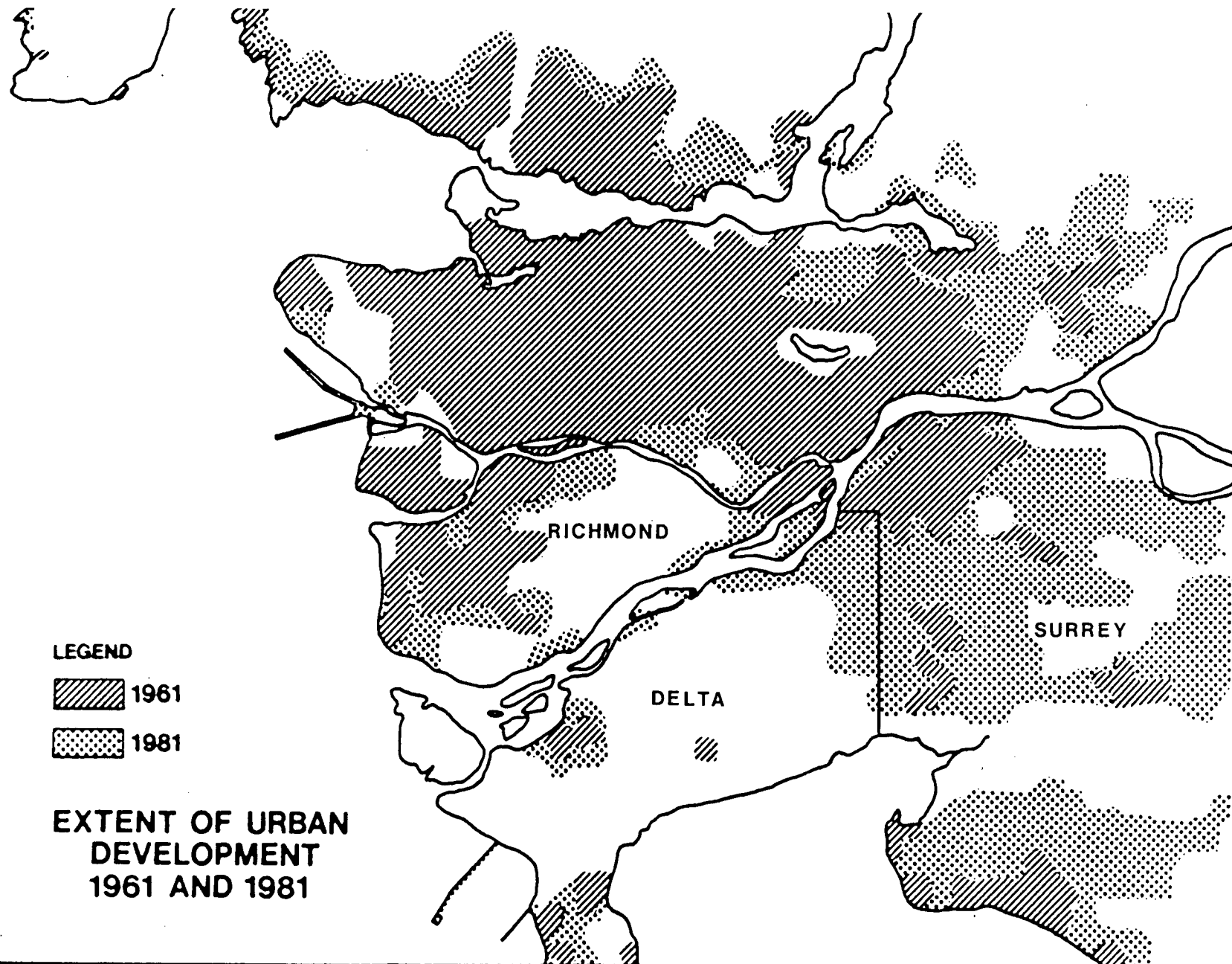
Richmond, Delta, Surrey, Pitt Meadows, or Langley (Lands Directorate Fact Sheet 85-5, 1985).

Between 1961 and 1981 the populations of Richmond and Surrey more than doubled, and Delta experienced yearly growth rates as high as 17% (GVRD, 1975). Rates in recent years have been more modest, hovering around the 1%-1.5% range. Surrey continues to grow rapidly, with its population having expanded by roughly 22% between the 1981 and 1986 censuses (Statistics Canada, 1986 Census Interim Counts). Current population figures and land area statistics taken from official regional and community plans (OCPs) are given below in Table 1.

Table 1
Population and Area

	POPULATION	AREA (ha)
GVRD	1,256,075	228,577
City of Vancouver	427,131	11,690
Richmond	107,763	13,311
Delta	79,166	18,679
Surrey	180,075	32,226

The urbanization which accompanied the population growth in the region is illustrated in Figure 2. In this map, "urban development" refers to any land use change involving the development of non-urban (i. e. rural) land, and so also gives an indication of the conversion of



Source: Greater Vancouver Regional District, 1982.

FIGURE 2

farmland to other uses (GVRD, 1982).

During the period covered by Figure 2 Greater Vancouver's urban area expanded by approximately 18,000 ha, or roughly the same area as Vancouver City and Burnaby combined. This figure is remarkably similar to the 17,787 ha of land that was urbanized in the Toronto area between 1966-1976, ninety-six percent of which was class 1-4 agricultural land (McCuaig and Manning, 1982). Nearly two-thirds of the addition to urban land in the Vancouver region occurred in the then rapidly developing communities south of Vancouver, especially in the form of single-family housing (GVRD, 1982). During the five year period between 1976-1982 nearly 20% of the 7,345 ha of land that became urbanized was good quality class 1-3 agricultural land, much of which had been within the Agricultural Land Reserve (Lands Directorate act Sheet 85-5, 1985).

In terms of area Surrey has clearly urbanized the most, although much of the municipality's urbanized zone contains scattered pockets of farmland that are too small to be reproduced on the map (Everitt, 1981, Lower Mainland Regional Planning Board, 1962). Since much of the land which has become urbanized in Richmond, Delta and Surrey either was once farmland or is adjacent to farmland, there is the potential for numerous land use conflicts between residential and agricultural activities.

The Diversity Of Urban Fringe Activities

In the decades following World War II Canada's urban population grew dramatically, pushing city boundaries outwards in the form of ribbon development, "scatteration," and general urban sprawl. The activities undertaken in these developments were diverse and haphazardly distributed as landowners enjoyed great freedom in the ways they could use their land (Bryant et al, 1982). Gradually planning controls introduced a sense of order to the booming development, yet the spread of urban and urban-associated activities continued. Indeed it might be argued that, at least initially, development and planning regulations were established to complement the expansion of the urban area. Similarly, area-based planning in the rural-urban fringe of Toronto has been criticized for contributing towards an "inefficient" use of land encouraged by "administrative chaos" (Bourne, 1984). Eventually the urban fringe grew to contain a variety of land uses unmatched anywhere else in the urban region, with waste disposal sites, quarries, idle plots, houses, farms, shopping malls, and industry unsuitable for a city location situated virtually side by side (Bryant et al, 1982). For a more complete identification of common urban or urban-associated activities, see Table 2.

Table 2
Common Urban-Associated Land Space-Resource Activities
Of The Urban Fringe

RESIDENTIAL	INDUSTRIAL	MINERAL
EXTRACTION		
Isolated subdivision	Animal slaughtering	Ground water
Crossroad clusters	Auto assembly plants	Aggregate pit
Ribbons	Cement plants	Stone quarries
Isolated	Construct. equipment	
Mobile courts	Chemical plants	RECREATION
	Oil and gas storage	
COMMERCIAL	Amusement park	Racetracks
	Oil refineries	Beaches
Animal hospitals	Silos	Campgrounds
Auction barns	Trucking terminals	Wildlife clubs
Auto body repair		Go-cart tracks
Auto wreckers	WASTE DISPOSAL	Golf courses
Parks		Parks
Building stone	Incinerators	Ski resorts
Cabins	Land fill sites	Walking trails
Carpets and flooring	Sewage lagoons	
Dance halls	Treatment plants	AGRICULTURE
Drive-in theaters		
Farm equipment	TRANSPO., COMM., and	Dog kennels
Farm supplies	UTILITIES	Fur farms
Fertilizer supplies		Game farms
Fruit stands	Airports	Nurseries
Furniture	Hydro stations	Riding stables
Lumber yards	Microwave towers	Sod farms
Marine supplies	Pumping stations	
Meat markets	Radio towers	OTHER
Mobile homes	Switching yards	
Motels	Television towers	Flowers
Restaurants	Water supplies	Greenhouses
Service stations		Market gardens
Taverns	INSTITUTIONAL	Mushroom farms
Used car lots		Poultry
Wholesale groceries	Churches	Stockyards
	Community colleges	
	Mental hospitals	
	Special schools	
	Universities	

Source: Russwurm, L.H. "The Surroundings Of Our Cities,"
1977.

As is evident from Table 2, there are many interests operating in the rural-urban fringe, each with its own reasons for being there, and each affecting the activities of the others in a different way.

Land use conflicts will not necessarily arise just because there are different groups operating in the same vicinity. Such conflict will occur when: (a) one type of land use is incompatible with or detrimental to the quality of the land resource; (b) when a land use adversely affects another activity because of spatial proximity; or (c) when there is a clash of values between "existing" and newly established interests (Phipps, 1981, Beesley, 1981).

The stresses which lead to conflict affect both the long-time residents and workers who watch their community change in character, as well as the individuals who move to the fringe only to find the realities of living in this dynamic environment to be much less favorable than their expectations (Clawson, 1955). Table 3 helps to identify some of the perceived physical externalities arising from a variety of common land use conflicts.

Table 3
Land Use Conflicts: Externalities

Land Use Activities Impinging	Land Use Activities Being Impinged Upon	Externalities
Residential development	Agriculture	Overconsumption of land Loss of agric. productivity Crop theft and vandalism Increased land prices Interruption of farming Reduced quality of rural lifestyle Tax inequities Service demands
Industrial activities	Agriculture	Land, air, and water pollution
Land clearing and drainage	Recreation Wildlife Natural drainage pattern	Loss of potential recreation areas Degradation of habitats Localized drainage problems
Agriculture	Nearby residences	Smells and noises from crop production Obstruction of traffic by farm vehicles Use of pesticides
Recreation	Agriculture Wildlife	Loss of agric. productivity Degradation of habitats

Source: after Phipps, A.G. "Land Use Conflicts In Urban-Rural Fringe Areas," 1981.

The various conflicts may be categorized in many ways, but generally they are between individual and societal interests, present versus future uses, and market versus non-market uses. Within these categories, individuals may conflict, interest groups may conflict, and different economic activities may conflict (Bryant et al, 1982, Russwurm, 1974). Different branches of the government have also been known to compete between themselves. Bourne notes that the scattered mixture of land uses observed in the rural-urban fringe of Toronto has in part been the result of what he calls the "confused" actions of the various levels of government and "the frequent internal conflicts, wasteful competition, contradictory policy actions, almost random political interventions by the province and little in the way of integrated regional planning" (Bourne, 1984, p.139).

A simple conflict classification scheme developed by Russwurm will be used in the next chapter as a means of presenting the findings of the community-based research.

Regional Land Use

The Greater Vancouver Regional District (GVRD) land use pattern as of 1981 is shown in Figure 3. Though largely self-explanatory, a few points about the observed patterns should be noted in order to understand their implications for residential-agricultural conflicts.

The large zone of residential land in Surrey is the result of dispersed, low density housing, much of which is designated "rural-residential" in the Surrey OCP.

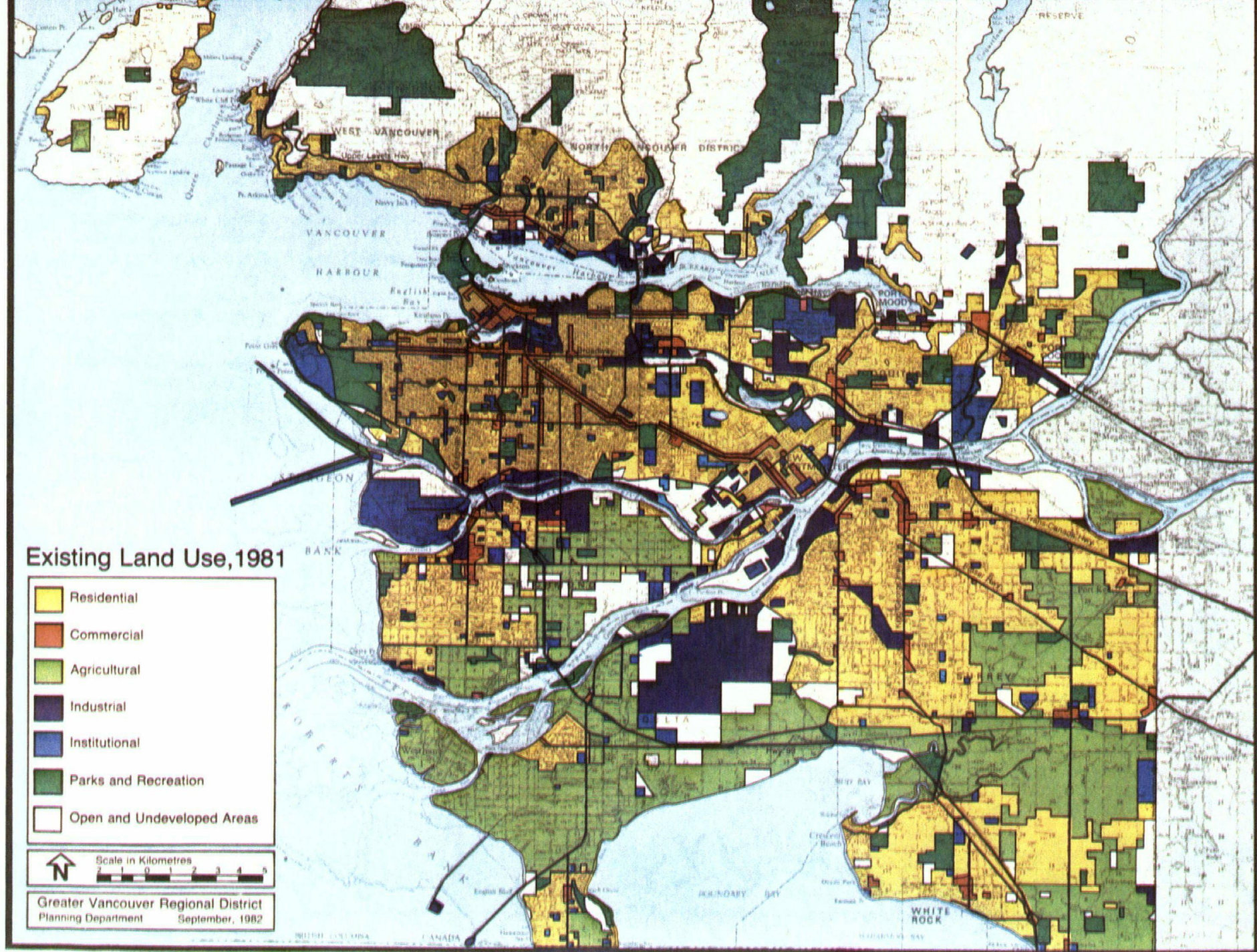


FIGURE 3

Punctuating this zone are numerous small farms and recreational facilities which do not show up on the regional land use map. The substantial "industrial" zone in northeast Delta identifies the region's solid waste disposal facility located within Burns Bog, several peat-cutting operations, and a strip of heavy industry along the Fraser River.

A comparison of the area occupied by residential and agricultural land is shown below in Table 4. Note that these figures were taken from the respective community plans, and so do not completely conform to the areas represented on the GVRD land use map. There are two sets of figures given for Surrey: the first being the general residential and agricultural break-down, and the second having been calculated after the "rural-residential" area was factored out of the total. This was done because of the difficulty in assessing whether such residences constitute small farms or large-lot homes.

Table 4
Land Use Areas

	RESIDENTIAL	AGRICULTURAL
Richmond	26.4%	49.1%
Delta	14.2%	51.6%
Surrey-1	35.0%	29.2%
Surrey-2	14.3%	38.5%

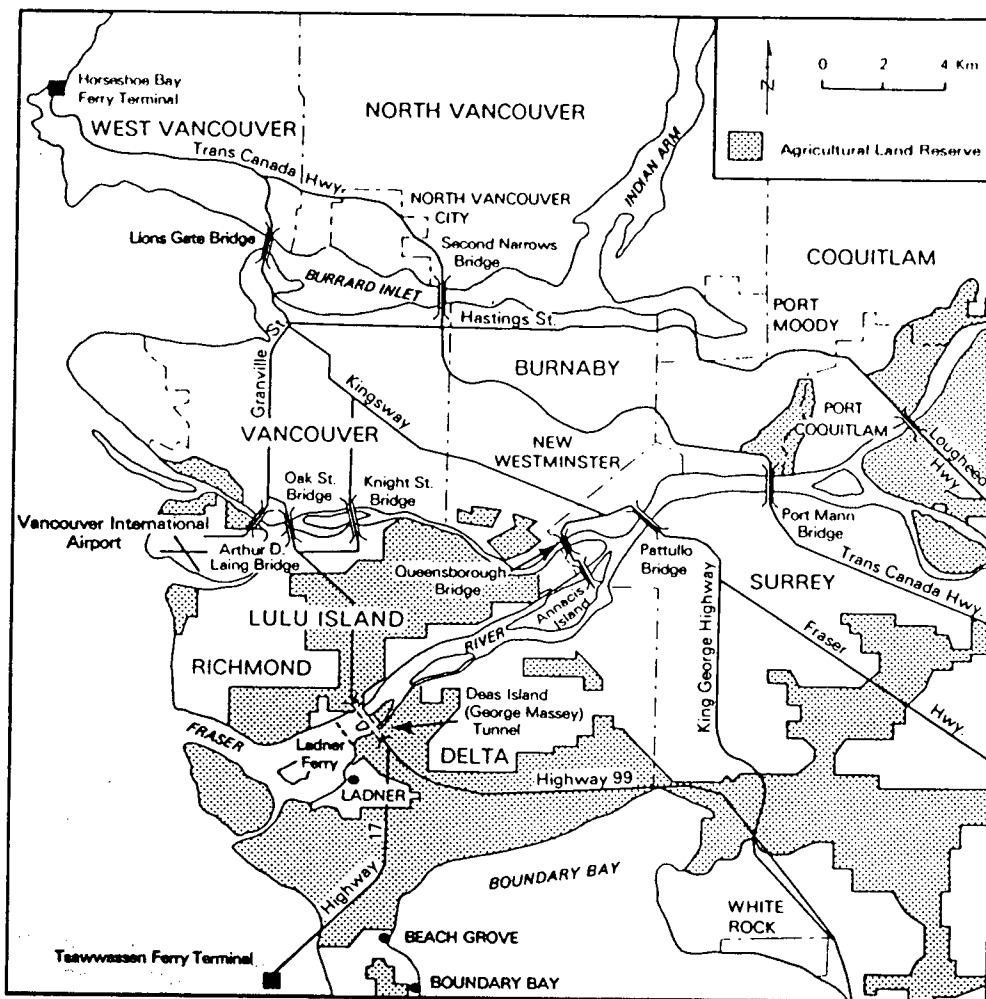
The general pattern of land use in Richmond, Delta, and Surrey helps to establish the nature and extent of rural-urban conflicts. It is along the boundary lines between residential and agricultural land where most of these conflicts will occur, and as is usually the case in B.C., most of the farmland has been included within the Agricultural Land Reserve (ALR) system.

Farming In The Fringe

Most of British Columbia's potentially productive farmland is incorporated into the Agricultural Land Reserve system, the boundaries of which were established after the creation of the Agricultural Land Commission in 1973. As a rule of thumb, all Canada Land Inventory class 1-4 land not already in urban uses was included, plus certain tracts of class 5-7 land if they were traditionally farmed. Estimates vary, but approximately 80% of the province's class 1-4 farmland is included within the ALRs (Manning and Eddy, 1978).

Figure 4 is a simple map indicating the ALR boundaries in Greater Vancouver. Though generalized, the ALR designations roughly correspond to the agricultural areas indicated on the detailed land use map presented as Figure 3. The reserve boundaries demarcate where most residential-agricultural conflicts will occur, although some problems will transcend these dividing lines, and others may arise well inside the residential or agricultural zones.

AGRICULTURAL LAND RESERVE: GREATER VANCOUVER



Source: Evenden, 1978.

Figure 4

The ALRs shown in Figure 4 do not represent all of the land actually used for farming, as some 15% of the region's agricultural land is in the form of small plots scattered throughout the urban areas, most of which are located in Surrey. Further, not all of the land located within the ALRs is actually farmed. It has been estimated that as little as 65% of the total ALR area in Greater Vancouver is currently farmed, the remaining being used for roads, institutions, housing, recreation, or simply left vacant (GVRD, 1982).

It is difficult to determine how much of the 18,000 ha of land urbanized in Greater Vancouver between 1961 and 1981 involved a conversion of agricultural land. Runka determined that over this 20 year period the area of farmland in Richmond declined from 6,421 ha (15,867 acres) to 4,478 ha (11,065 acres), or a drop of about 30% (Runka, 1985). Similar figures are not available for Delta or Surrey, although Delta's OCP indicates that since 1971, large farms between 28 ha and 97 ha in area have declined from 39% to 32% of the total number of farms, while smaller farms between 4 ha and 28 ha have increased in number from 38% to 43% of the total (Delta OCP, 1981). In spite of the amount of farmland lost in recent decades, these three communities still contain nearly 93% of the agricultural land within the GVRD (GVRD, 1982).

ALR Exemptions

The ALR boundaries identified in Figure 4 are not permanent, although they tend to change rather slowly. Below are summaries of the key sections of the Agricultural Land Commission Act which permit exemptions from an ALR (Agricultural Land Commission, 1982).

- 1) Under Section 11(1) the Agricultural Land Commission, a regional director, or a municipality may make application to the Lieutenant Governor in Council for exclusion of private or Crown lands from an ALR, or the Lieutenant Governor in Council may initiate such action on his own.
- 2) Under Section 12(1) an individual land owner may apply to the Agricultural Land Commission for exclusion of his property from an ALR.
- 3) Section 20(1) applications are for permission to subdivide or use a parcel of land in an ALR for purposes other than those permitted by the Act or its regulations. The land remains in the ALR, and the Commission may impose whatever terms and conditions it considers advisable.

The number of applications under these sections reflects the development pressures being placed on agricultural land by government and private bodies, as do the number of appeals should the applications be

rejected. The amount of land actually approved for exclusion would be a useful indicator of urbanization, since undoubtedly a portion of the exempted land would eventually be developed. Such data at the local level are unfortunately either unavailable or out of date, making it difficult to accurately assess the loss of farmland in specific communities. Table 5 lists the area excluded from the ALR under Sections 11(1), 12(1), and 20(1) within the GVRD and the province over the last five years (Agricultural Land Commission, 1986). It should be noted that not all land excluded from the ALR is prime farmland. For example, in 1985 approximately 16% of excluded land was CLI class 1-3, and of this amount only a fraction may become built-up (Agricultural Land Commission, 1985).

Table 5
Area Excluded From The ALR (1981-1985)

	SEC. 11(1)	SEC. 12(1)	SEC. 20(1)
GVRD	441 ha	110 ha	919 ha
Provincial Total	30,355 ha	9,153 ha	71,921 ha

Source: Agricultural Land Commission, 1986.

While the 1,470 ha of land removed from the land reserve in the GVRD represents only about 1.3% of the provincial total during this period, the GVRD land contains some of the most productive soils found in British Columbia, making the loss far more significant than the relatively small number implies. A break-down of exemptions by soil

classes, were these data available, would no doubt show how significant are the exclusions in the Lower Mainland.

Farming and the Land Market

One must be cautious to avoid saying that farmers are the only ones who suffer because of development pressures in the fringe. In fact farming is often the source of some problems, especially for nearby residents. But it seems safe to say that since farming is a long-established rural-urban fringe activity that is immobile and closely tied to highly prized tracts of land, it may well be the activity which suffers the most from residential-agricultural conflicts. The problems arising from adjacent residential developments are the subject of the next chapter, but several brief points should now be made about the influence of property taxation and the land market on maintaining the viability of a farming operation.

Agricultural activity generally yields a lower dollar return per hectare than urban revenue-generating uses, but due to the proximity of these two classes of uses in the fringe they are commonly assessed similar property tax rates. This places a proportionately heavier tax burden on the farmer, thus reducing his potential earnings and adding incentive for him to sell.

Aside from high assessments, there is strong evidence that the market has tended to: (a) undervalue the social benefits derived from farming and open space; (b) inadequately consider the externality effects of fringe

developments on farming activity; and (c) heavily discount future returns from farming in the light of higher short-run benefits from urban activities (Bryant et al, 1982, Lyon, 1983, and Russwurm, 1977). Speculators also play a role in land prices, but their precise influence is unclear, as they exert neither monopolistic control, nor is speculation per se necessarily a raiser of prices (Brown et al, 1980). Each of these factors can influence the perceived value of farmland, and in general will place additional pressure on the farmer to consider a change in land use.

Are these pressures unusual or alarming? That would depend on one's point of view. Some would suggest that if a farmer is not able to successfully compete, he or she should move on to another profession, rather than being bailed-out by government support. After all, we frequently hear of farm over-production, which could indicate that there are too many farmers given current levels of technology and product demand. Either way, provincial and municipal governments have seen fit to develop a number of strategies aimed at reducing the rate of rural-urban land conversion and maintaining agriculture as a viable land use activity in the urban fringe.

These strategies come in many forms, but most represent variations on two basic approaches: (a) tax compensation policies designed to make it more attractive for farmers to continue operating in the fringe and resist

pressures to sell or develop their properties; and (b) direct government regulation to curb speculation and place large amounts of productive farmland in some form of reserve or land-bank. Some analysts would prefer to eliminate those policies that work to keep farms and urban land uses in close proximity, replacing them instead with policies intended to dissolve the rural-urban fringe and create a rural-urban "fence," one that would encourage the separation of the two classes of activities (Evenden, 1978).

CHAPTER 3

THE DATA AND FINDINGS

Data Collection

Data concerning residential-agricultural conflicts and planning responses were collected through consultations with planners and other government officials in Richmond, Delta and Surrey, and through an analysis of available planning documents prepared by the respective administrations. These data were used to indicate the types of conflicts occurring in the three communities, and the extent to which the local governments collect data on conflicts and investigate alternative conflict management techniques.

The primary sources of data were the consultations with practicing planners. Initial consultations were conducted in an unstructured format in order to garner background information. Subsequent discussions were more focused, but retained some of the generalized and unstructured characteristics of the earlier conversations. This format was followed because of the exploratory nature of the research, the lack of detailed guidance from the literature, and the inherent complexity of the issues. In-person consultations with planning staff were taped in order to facilitate later analysis, although the names of some sources could not be cited due to the sensitive nature of the material. A number of the consultations were conducted via the telephone, especially when the purpose was to

clarify certain aspects of the more lengthy in-person discussions.

Several criteria were used to select the government representatives to be consulted. These criteria included professional qualifications, familiarity with the community, expertise with regards to the thesis subject, and knowledge of planning practice in the particular administration. The numbers of people consulted were kept relatively low in order to avoid overly disrupting normal staff duties.

The general subjects of discussion included the occurrence and characteristics of residential-agricultural conflicts within the community, the process through which the government identifies conflicts, the methods which the planning department uses to address the problems, and the strengths and deficiencies of current conflict management techniques. The literature indicated that most residential-agricultural conflicts occur along the rural-urban interface, and it provided a broad description of the types of conflicts that may occur. Further, the literature provided an understanding of some of the factors which lead to a conflict situation. This information assisted in refining the general subjects into somewhat more specific topics to be explored during the consultations.

Administrative Records

The consultations revealed that one of the most common means of identifying conflicts used by each of the three municipalities is the formal complaints process.

Essentially, a person with a complaint calls or goes to municipal hall in-person and outlines the essentials of the problem, sometimes filling out a complaint form or submitting the complaint in writing. The complaint is processed by the "line" department, such as Environmental Health or Building Inspection, which has jurisdiction over the problem. Bylaw enforcement officers or other representatives of these departments make the decision to act on the problem, inform their superiors, or make some other response. Often an initial discussion with the complainant will remedy the problem or will prompt the person to address the issue without government intervention. If the person wishes to pursue the complaint, a record of it is usually placed within the civic address files maintained for all municipal addresses (this information was obtained through telephone conversations with bylaw enforcement officers in Richmond, Delta and Surrey). It should be pointed out that the civic address files are not the responsibility of the planning department. As such, planners may not hear of the complaints unless planning expertise is required to resolve the problem, or until a bylaw enforcement officer identifies a trend or peculiarity in the complaints and makes the issue known to other departments.

The planners consulted indicated that the area planning process was another important source of information about conflicts (Cowie, 1987, Jackson, 1987, and Leung, 1987). This process, which involves producing detailed land use

plans for specific sub-regions in the municipality, is currently underway in Richmond and Surrey, and is in preparatory stages in Delta. The public meetings which are a part of the process provide, amongst other things, a forum for people to voice their concerns over their neighbour's land use activities. Planners in attendance make note of these complaints and so get a better understanding of what conflicts are occurring in the community.

These and other "formal" sources of information about conflicts, along with the more "informal" sources such as the newspaper, television, or casual conversation, do not provide the detailed and cross-referenced database necessary to develop an historical and current list of specific conflicts, their characteristics, and their locations (Jackson, 1987, Leung, 1987). Files in each department generally contain information on formal government actions and not on complaints which were passed to other departments or for which no response was forthcoming. These files are not linked to a central information processing facility that could be used to match the characteristics of complaint cases or provide lists based on defined criteria. And since many records of complaints end up in the civic address files or some similar storage system, there would be no way to extract information on the occurrence of conflicts without a prohibitive investment of time and other resources in order to sift

through a file system not conducive to such research. The one potential exception to this occurs in Richmond's municipal hall, which for the past several years has had a Geographic Database Management System that is linked to its on-line civic address files. This open-ended system is able to process files based on specified geographic criteria such as zoning, polling divisions and school districts, and then manipulate the geographically displayed data as required. An Information Services representative indicated that the system sees broad use within various departments of the local government (Cordoni, 1987). However, as complete records of all reported residential-agricultural conflicts are not kept and introduced into the program, this excellent information system is apparently unable to provide detailed and comprehensive output regarding such conflicts.

In short, current information sources provide planners with only a broad perspective on the kinds of conflicts that occur, supplemented by more in-depth knowledge of a few examples which are of prominent public concern.

Findings On The Incidence Of Conflict

None of the planners consulted could provide any specific data on the numbers of complaints related to residential-agricultural conflicts, although they all acknowledged the existence of such problems. A senior planner in Surrey indicated that most complaints he was aware of concerned mushroom farming practices, traffic disruptions by farm equipment on public roadways and crop

pilferage, while other potential sources of conflict resulted in relatively few complaints. However, he was unable to provide any numbers. Similarly, a study produced in Richmond stated that in certain areas of that community there were "numerous" complaints associated with the use of noisy farm machinery (Richmond Planning Department, 1986), and a planner consulted in Richmond said that the incidence of conflict varied with the intensity of development in and around the rural-urban interface. But again, no specific data were available. Representatives of local RCMP detachments indicated that there are records of reported trespass, theft and vandalism incidents that relate to residential-agricultural conflict, but unfortunately this information was not available to the public.

From the research it is clear that residential-agricultural conflicts are a continuing source of complaints to the various departments of the three municipal governments. It seems likely that additional conflicts will not be brought to the attention of the local administration, while others may be reported but become forgotten because no official action was initiated. There appears to be no way of determining the incidence of residential-agricultural conflicts without a system of administrative records that: a) could efficiently support such investigation; and b) is provided with comprehensive data on conflicts reported to each government department.

Findings On The Types Of Conflict

The information presented in this section was provided by the planners consulted and by an analysis of community plans and supporting documents. In most cases the conflicts identified below are common to each municipality, although some problems which are particularly pronounced in certain areas are also identified. Planning and urban fringe literature is almost completely devoid of classification schemes or systems in which conflicts may be categorized and analyzed. Russwurm has developed the most useful classifications, although they too are general and do not readily facilitate further analysis. The five categories presented below reflect Russwurm's work but have been adjusted to fit the collected data.

Environmental Pollution

The regular activities of either the residential or farming communities can generate pollutants which degrade the quality of the environment enjoyed by the other. For example, one readily identifiable source of pollution is the application of pesticides to various crops. Though highly regulated in most instances, pesticides can nevertheless leach into the soil and eventually reach bodies of flowing or stationary water. A portion of the chemicals may remain airborne and blow into residential areas, creating anxiety over the potential health hazards. The aerial application of pesticides to blueberry fields is a prominent public concern in the

McLennan area of central Richmond, and has become a key issue in the preparation of the McLennan Area Plan (Richmond, McLennan Area Plan, 1986).

Less frightening, but still troublesome, is a form of pest control involving the periodic flooding of farmland. Common in the production of many crops, this tactic can result in overflowing into adjacent housing if it is at-grade or below the farm and not separated by a drainage channel. The problem is especially pronounced along the rural-urban interface near the northwestern tip of Richmond, and in the south-central portion of the community near Highway 499 (Runka, 1985). Conversely, a planner consulted in Richmond indicated that residential infill along major section-line roads has caused drainage problems for adjacent farmers who must cope with the increased overland flow of rainwater (Jackson, 1987). At a more site specific level, there is the potential for a range of pollutants to escape from the portion of Burns Bog in North Delta used as a solid waste disposal site. Nearby cranberry farms and more distant residential developments could be affected should underground or overland water flow become contaminated after passing over the waste materials.

Municipal Services And Taxation

There are different drainage and water supply system demands for residential and agricultural areas. Basically, the capacities and discharge rates for each general land use are established using different volume maxima and

minima over different time periods. This means that integrating the community network in order to satisfy each group's requirements is an ongoing and costly problem for the municipal engineering and planning departments (Runka, 1985). Planners consulted in Richmond and Delta indicated that the municipal water works systems have historically been oriented towards urban needs, as the high costs of fully servicing agricultural areas has proven to be cost-prohibitive in most cases (Cowie, 1987, Jackson, 1987, Richmond Planning Department, 1986). Agricultural areas are usually the last to receive sanitary sewer services, sometimes forcing people in these areas to rely on more primitive septic tank technology. While the farmers may prefer lower taxes along with reduced levels of local services, as suburbs grow around them and their property values increase for non-farm uses, this preference becomes unrealistic.

Municipal property taxes are based on the property value assessments made by the Assessment Authority of British Columbia. This agency normally assesses the value of property based on its "best use" market value. However, farmers are able to apply for the Farmland Classification, which makes them eligible for a reduction in their assessments. The two basic criteria to be eligible are that the farm must be larger than two acres (although there are exceptions), and the farmer must earn more than \$1,600 from farm gate prices (revenue from the sale of farm

products). The Farmland Classification is based on the theoretical productivity of the farm, which is influenced by farm size, soil quality, slope and other factors. As such, there is no general assessment reduction for farmers, since it will depend on the characteristics of particular farms (Mackie, 1987). The greatest reductions will in general be given to those low productivity farms which are close to high value urban land uses, while the lowest reductions will be given to high productivity farms more distant from urban development. An extreme example provided by a representative of the B.C. Assessment Authority is an assessment recently awarded to a landowner near the Lansdowne Park Shopping Centre in Richmond. If developed, the property could have a market value of up to \$300,000 per acre, with a comparable assessment. Having obtained a Farmland Classification, the landowner now has his property assessed at between \$3,000-\$4,000 per acre (Mackie, 1987). The person's savings on municipal property taxes (i. e. school tax, hospital tax, drainage levies etc.) will therefore be substantial.

The key point to be drawn from this discussion is that some farmers who do not get favorable assessments such as those just described have voiced protest over their high taxes and low levels of municipal services relative to their urban neighbours. From the other perspective, some non-farm residents in Richmond and Delta have complained that farmers are being unfairly subsidized by the

government, and should not be "rewarded" with low assessments because they "choose" not to develop their land for more more lucrative uses. As a result, each side is accusing the other of getting unfair levels of services or taxes.

Negative Impacts On Farming

Planners and planning documents indicate that one of the most frequent problems facing farmers in the three communities is the difficulty of moving farm equipment between fields along well used public roads (Delta OCP, 1986, Jackson, 1987, Leung, 1987, Richmond Planning Department, 1986). This problem can manifest itself in many ways: heavy traffic may prevent slow moving machinery from getting onto or across the road; the possibility of being hit by fast moving cars is real and results in a number of accidents every year; and proper field access may not have been provided in street design, causing delays and irritation for the busy farmer.

Though he was primarily referring to the Delta situation, Evenden recognized the general problem of "a disruptive network of highways, railways, hydroelectric and gas lines, as well as subdivision roads" laid out without apparent compromise for the needs of farmers (Evenden, 1978, p.190). The same kind of problems arise out of poor siting and a lack of corridor approach in the establishment of service and utility rights-of-way which traverse farmland, causing continual field management

difficulties in areas such as Gilmore in South Richmond (Runka, 1985).

Another major conflict revolves around the infringement of private property rights. The planners consulted, representatives of local police detachments, and planning analysts have noted that incidence of farm equipment vandalism, theft of crops, harming of animals, and general trespass have been on the increase in Greater Vancouver and the lower Fraser Valley (Delta OCP, 1986, Diamond, 1985, Richmond Planning Department, 1986, Runka, 1985). Some of the areas where these problems are most pronounced include the rural-urban interfaces in South Ladner, northwestern Richmond (Terra Nova North), and the Gilmore district of South Richmond (Runka, 1985). Possibly the most confounding aspect of these issues is that while each incident tends to be relatively small, the cumulative effects can be quite large and costly for the farmer. Yet because the police and courts must deal with each case as they arise, there is usually little inclination by the authorities to charge the person, owing to the petty nature of the crimes and the costs of prosecution (Jackson, 1987).

One further significant area of conflict arises out of the spreading of pests and weeds from the uncontrolled backyard gardens of houses bordering farmland (Delta OCP, 1986). Similarly, people in the suburbs often let their dogs roam free from their yards, allowing the animals to do considerable damage to carefully tended crops and livestock.

Negative Impacts On Residences

The existence of health hazards from the aerial application of pesticides was briefly noted earlier, but a related risk identified by a planner in Richmond is the danger associated with regular low-level passes by crop-spraying aircraft. The potential damage caused by a crash in a residential district need not be discussed here, but it is a significant concern for fringe residents. In some parts of Richmond where residential and agricultural lands are in close proximity, most notably the McLennan area, pesticide application by fixed-wing aircraft has been banned by Transport Canada in response to the safety considerations (Richmond, McLennan Area Plan, 1986). At the crux of the issue is the need to apply the pesticides from a low enough altitude to reduce the chance of spreading to non-target properties. As low-flying airplanes have been banned in several areas, a number of farmers in Richmond have begun to use helicopters to perform the same tasks, occasionally having to fly below the minimum height restrictions in order to effectively spread the chemicals. The use of helicopters for crop-dusting and spraying is likely to increase in the future, especially as rising insurance costs for fixed-wing crop-dusting aircraft drive more farmers to alternative means.

Not all pesticides are applied by aerial spraying. Some are introduced into irrigation systems and spread in tandem with the water. Some residents are concerned that high

winds could blow the tainted droplets into their yards, posing unknown health risks.

Less dangerous, but possibly more of a continual irritation for some urban fringe residents, are the smells and noises which invariably accompany farming practices (Webster, 1987). A planner in Surrey said that while the majority of people who live near a farm probably become accustomed to the range of odors emanating from their neighbour's barns and fields, some find it more difficult to cope with aromas such as those produced when the mushroom farmers of Surrey seasonally turn over their manure-filled plots to release nutrients and aerate the soils (Leung, 1987). A study prepared in Richmond referred to the "consistent levels of complaints" related to smells and other byproducts of swine and poultry operations within that community (Richmond Planning Department, 1986).

The noises coming from farms can be just as varied and bothersome as the smells. Gas generators and pumps running early in the morning and late at night is a common complaint along the eastern boundary of Richmond's ALR, as are the increasing outcries over the use of helicopters for crop spraying in central Richmond. A more unusual source of noise comes from a type of timed mechanism called a "banger," used to scare away birds. Common in the productive blueberry fields of central and eastern Richmond, these devices periodically emit a loud popping sound which drives the crop-stealing pests away.

Unfortunately they also disturb nearby residents who, if particularly sensitive, will await each subsequent "pop" with as much zeal as the participants in ancient water tortures. Indeed, along with concerns about the aerial application of pesticides, the widespread use of bangers has become the most common source of conflict in Richmond (Jackson, 1987).

Social Alienation

Frustration about what is perceived to be unjust taxation, vandalism, theft, trespass, drainage disruptions, and a host of lesser difficulties has compelled a number of farmers in the region, including some important dairy operators in Delta and Surrey, to move up the Fraser Valley out of the Lower Mainland (Delta OCP Agricultural Statement, 1986, Richmond Planning Department, 1986). Many other farmers with similar complaints remain behind, trapped in what is becoming an economically unsound livelihood without any apparent alternatives (Diamond, 1985).

Having residential and agricultural land uses so close in the urban fringe it is not surprising that a sense of antagonism would form in some areas. Such antagonism is pronounced in Richmond between people living in the predominantly rural eastern half of the municipality, and those living in the more developed, urban region in the west (Runka, 1985). Likely many factors play a part in creating this attitudinal split, but an important element

is the resentment some rural residents feel about the better municipal services enjoyed by people in the more populous western part of town. Further, as the urban west side is seen to be expanding eastward, rural residents may feel that their "territory" is threatened and unprotected (Jackson, 1987). It is interesting to note that those who have settled near the rural-urban interface generally frown upon any further residential development in the area. This is a Catch-22 situation, since the very people who move to the urban fringe to enjoy the open space and aesthetic values of the setting contribute to the reduction and degradation of these same values.

Another conflict related to social alienation is the frustration many members of the food-producing community feel in being unable to get their opinions and needs heard or understood by the local government. This problem was raised continually during discussions with planners in Richmond, Delta and Surrey. As one of them put it: "We don't talk to the farm community, and they don't talk to us." The farmers feel left out of the decision-making process, and point to the urban residents who appear to get their views known to the planning department and council. This problem is of course the result of a two-way lack of communication. While there are fewer links from municipal hall to the farming community than to the urban residents, undoubtedly the nature of farming, with its nearly constant demands on the farmers' time, inhibits them

from getting involved in the local political process. This disparity between how well the urban and rural communities get their voices heard is one of the biggest challenges facing the local planning process.

Rural-Urban Conflict And The Planning Agenda

In attempting to establish a land use context which inhibits the occurrence of conflict, planners have to decide what factors need to be considered in the design of such a context. The research indicates that two key factors are the scale and timing of the land use change associated with each kind of conflict. For instance, in the situation where a large development proposal is being reviewed by the planning department, considerable attention will be placed on trying to adjust the project's design in order to reduce the chance of conflict, or at least mitigate its effects. If soon after the project has been completed unforeseen conflicts arise, generally there will be an effort by the planners to work out a solution with the developer that will resolve the problems as quickly as possible (Murchie, 1987).

Small changes in land use that lead to a conflict, such as the addition of bangers to a blueberry field, can also receive a response from the local planners. If sufficient complaints are received and brought to the attention of the planning department, the lengthy process of public meetings and the drafting of a new by-law may be initiated, although, as will be seen in the next section, this response

is generally not favored by local governments if other options are available. Essentially, conflicts that arise from small changes in land use result in less prompt planning responses than conflicts arising from large-scale land use changes. Additionally, conflicts identified during the pre-approval phase of a development proposal receive more attention than those that have arisen after land use changes not reviewed by the planning department. This is largely explained by the fact that proposed developments under review can be directly influenced by the department, whereas the planners have less control over how people change the use of their land if the change does not require pre-approval and conforms to all existing regulations. Therefore the majority of potential conflicts "get caught in the development approval process" and are acted on at this stage (Leung, 1987). In some cases the conflict may have developed gradually after a land use change in the past, becoming one of those on-going annoyances that plague many people along the rural-urban interface. These situations receive even less attention than the cases mentioned above, primarily because they are neither identified during the planning phase of development, nor are they "new" problems resulting from a recent change in land use.

Conflicts that lend themselves to detailed design solutions such as setbacks or screening command most of the planner's attention in the three communities because

these problems are readily identifiable, and responses tend to yield immediate results. The planners who were consulted generally agreed that these were the most common kinds of conflicts. Those problems which are more "procedural" in nature, like equitably balancing different interests during decision-making, are harder to define and resolve, and are usually put aside owing to the pressures of more routine matters. One planner said that when the procedural problems are not resolved, the people who "scream the loudest and have the most political leverage" will continue to get their complaints listened to and acted upon, possibly to the detriment of other more "quiet" interests. The planners were confident that the system provides for the elected council and the public to act as checks on the planning department to ensure that the weighting of priorities does not become excessively skewed. However, when asked about specific criteria on which these priorities are based, the general response was that determining priorities "is a judgmental call made without specific criteria" (Leung, 1987).

In summary:

(a) conflicts that arise from small-scale land use changes generally result in less prompt planning responses than conflicts arising from large-scale land use changes;

(b) conflicts identified during the pre-approval phase of development usually receive more attention than those that have arisen after land use changes not reviewed by the planning department;

(c) most potential conflicts are identified during the development approval process;

(d) conflicts that lend themselves to detailed design solutions are easier to define and act on than "procedural" problems, and so receive more attention from the planning department.

Findings On Planning Responses

This section provides the research findings concerning planning responses to residential-agricultural conflicts in Richmond, Delta and Surrey. The information is presented in four categories developed by the author, as the literature contains no alternative system for classifying or discussing planning techniques which address the issues of concern. Like in the previous section, the findings are presented in a relatively general and non-systematic fashion due to the lack of more detailed and comprehensive data available in the three communities.

Regulating Land Use Practices

One form of response to residential-agricultural conflict has been the use of regulatory bylaws to restrict the land use practice which has prompted the conflict. For

example, in order to reduce the number of complaints from nearby residents, planners in Richmond have supported the passage of bylaws that restrict farmers from operating bangers and other noisy farm machinery during the evening and early morning hours. In this case, the regulations were used to mitigate the negative effects of these farming practices while still acknowledging the farmer's need to take advantage of the technology.

Often the option of implementing a regulatory bylaw to resolve a conflict is not available to the municipality. The legal powers of local government are narrow and explicitly set out in the Municipal Act. For instance, Transport Canada is responsible for regulating air traffic, so in 1983 when Richmond residents became concerned about low flying crop-dusting aircraft, it was this agency which banned the technique in some parts of the community. In certain situations local officials have the legal authority to address the conflict but will choose not to do so either because they lack data or the expertise, or feel that the issue is too politically "hot" for them to handle.

Local planners consulted during research for this thesis consistently raised three basic concerns about the use of regulatory bylaws to resolve residential-agricultural conflicts. The first relates to the common public perception that regulations are inflexible and often biased. Because regulations restrict or prohibit certain land use practices, some resentment is unavoidable. Yet the bylaw

must appear to be as objective as possible, and affect only those aspects of the problem that require intervention. The planners consulted recognized that completely satisfying these two criteria is not always possible. Accordingly, alternative methods for resolving the conflict are usually investigated before addressing the possibility of drafting new regulations. Indeed one planner said that he had "a real antipathy towards regulations," calling them "a cop-out" if used without first considering other approaches to solving the problem.

The second concern is with the difficulty of enforcing some bylaws. Planners and other officials who prepare regulatory bylaws generally strive to make the text as specific and clear-cut as possible. However, due to the nature of certain issues which demand regulation the wording of some bylaws may not be very precise, leaving enforcement a difficult task. For example, while building setbacks and restrictions on the time of operation of farm machinery can be clearly established and enforced, regulations designed to address public nuisance problems can be very difficult to produce (Webster, 1987). Vague or ill defined terminology, sometimes reflected in similarly ambiguous provincial legislation, can make enforcement difficult or even impossible under the law, and could lead to expensive legal proceedings.

The third concern is associated with the time and costs involved in "re-educating" the public when new

regulatory bylaws are passed by council. This educational process involves informing the affected individuals about the changes, and then explaining the implications of the regulations. While on the surface this exercise seems straightforward, it may involve contacting a large number of people through an extensive public information program. Inevitably some people will not hear of the news and may continue their activities in contravention of the bylaw, setting the stage for further conflict and possible fines. And in spite of all efforts, there are some people who will remain dissatisfied with any bylaw. Given these considerations, planners have indicated that while the power to impose regulatory bylaws is essential to local government, they regard the use of this method to resolve residential-agricultural conflicts as a "last resort" when no other option is available. As a result, there have been "very few" of these kinds of bylaws adopted in Surrey in recent years (Leung, 1987), and in Richmond the adoption of area plans is the main kind of "regulatory" response used by this municipality (Jackson, 1987).

Buffers

Land use zoning is one of the most powerful tools available to planners wishing to establish a land use context that inhibits the occurrence of residential-agricultural conflict. One of the ways zoning is applied to achieve this objective is through the use of land buffers. Based on consultations with planners and a

review of community plans and supporting documents, the research indicates that in Richmond, Delta and Surrey the use of buffers has become the most common planning response to residential-agricultural conflict. Buffers may be defined as any land use, structure, or object whose location and design is intended to separate conflicting or incompatible land use activities and mitigate any associated negative externalities. This rather general definition underscores the fact that buffers can come in many forms, depending largely on the nature of the conflict being addressed. The importance of buffers in local land use planning is illustrated by the following excerpts from community plan policy statements.

- 1) It is Council's policy to ... acquire a buffer between urban and rural uses where existing right-of-ways are not adequate (Richmond OCP, 1986, p.25).
- 2) An effective interface shall be established and maintained to act as a buffer between urban and agricultural land ... (Delta OCP, 1986, p.12).
- 3) ... that the agricultural area be preserved as a distinct sub-region, separated from the more intense urban areas by suburban areas (Surrey OCP Update, 1986, p.4).

The following sub-sections provide a simple typology of buffers that have been used in the selected communities, and notes some of the factors influencing their use.

Barriers As Buffers

A buffer may act as a barrier against people and animals moving between residential and agricultural properties. Common examples include rows of trees, ditches, sloughs, walls, fences and dense vegetation such as hardhack or stinging nettles (Richmond Planning Department, 1986). While these buffers serve to reduce the opportunity to trespass and vandalize, they also help to define property ownership boundaries. This second feature can be quite important, especially in situations where the backyards of houses and adjacent fields have no apparent division.

One of the attractive features of these kinds of buffers is their relatively low costs and modest up-keep requirements. Further, trees and other vegetation used as buffers have an aesthetic value that helps to disguise their barrier function, and can work to reduce noise levels if properly placed and designed. A limitation of these buffers is that they cannot prevent trespass by determined individuals. Sometimes a second barrier is used as an additional deterrent, and in a few cases high fences have been erected as a last resort. Collectively, barrier-buffers are the most commonly used type of buffer.

Open Space As Buffers

The next most common kind of buffer used in the three communities attempts to separate conflicting land uses by distance rather than by barrier. This can have the effect of reducing the intensity of irritating noises,

dusts, and smells, lowering the chances of accidental property flooding, and in certain cases will separate the different land uses sufficiently to dissuade would-be trespassers. The width of a street can perform some of these buffering functions, as do many of the section-line roads in central Richmond (Jackson, 1987), while in other cases greater distances are required to produce a noticeable effect. Parks and pastures have been successfully used in this regard at several locations in the three communities, with the recreational area in north-east Delta being the largest example.

Two of the major drawbacks to these kinds of buffers are the substantial costs of acquisition if the municipality does not already own the land, and the difficulty of preserving the buffer if market conditions dictate an alternative use for the property. Legal measures such as restrictive covenants are being considered in each of the communities as a means of adding some permanence to the buffers and ensuring that they will be used for the intended purpose.

Transitional Land Uses As Buffers

Transitional land uses are sometimes used as buffers. In this context, a transitional land use is an activity that does not pose significant problems for either the farmers or the nearby residents. Two basic examples include Christmas tree plantations in South Surrey, and a golf course located next to some farmland in West Richmond. In

communities such as Burnaby, allotment gardens have proven to be another possible alternative (Diamond, 1985).

An advantage to transitional land use buffers is that the space separating the potentially conflicting activities is put to a productive use by private individuals. Municipal coffers are not depleted, and maintenance of the buffer becomes a regular function of the land use activity. Another benefit of these kinds of buffers is the stabilizing influence they can have on the farming community by reducing the likelihood of further short-run urban encroachment, as opposed to an open strip of land that could easily accommodate a more intense use (Schiffman, 1983).

Transitional land use buffers may be encouraged by the establishment of specialized zoning areas. For instance, the proliferation of hobby farms in Delta has made planners in that community consider creating a zoning class for these part-time farms that will concentrate them into a pre-planned area, possibly near the eastern edge of Ladner where they could serve as a buffer between housing and commercial farming operations. Already Delta has recognized two agricultural intensity zones in its land use plan, and Surrey has made use of similar zoning to distinguish between the agricultural activities that can occur in floodplain and non-floodplain areas.

Land Reserves As Buffers

Given that pressures to convert agricultural land to urban uses will persist in the future, most municipalities have sought to identify stocks of land that could be developed, especially if the anticipated demand is for land hungry single-family dwellings rather than higher density infill. In many instances those buffers that comprise relatively large tracts of land have the additional role of acting as reserves for potential growth to the urban area. When asked about this role, the planners consulted were quick to point out that the purpose of land reserve buffers is not to promote the conversion of these lands. Rather the intention is to relieve the threat of encroachment by establishing specific zones outside of the agricultural area where higher density development could take place if the need was warranted. Surrey has prepared a land use plan which protects its large ALR from encroachment and separates the farmland from high density residential zones. By surrounding the ALR with zones of large lot housing (i.e. one and one-half acre lots), considerable stocks of land capable of subdivision are maintained, and the occurrence of conflicts is thought to be reduced because of the semi-rural lifestyles common of the people who live in these areas (Leung, 1987).

Limited Capacity Infrastructure

In order to prevent future residential-agricultural conflicts it is possible to add design features to housing developments that inhibit further encroachment into the agricultural zone. One of the ways this is being done in projects in South Delta and in Surrey's Nico-Wynd Estates is through the installation of limited capacity infrastructure.

Intended for use in concentrated or clustered residential developments that are adjacent to farmland and parks, the idea is to install water and sewer lines that because of their low capacity can only serve the units they were initially designed for, and cannot support any additional loads or extensions. This provides a disincentive for new developments due to the prohibitive costs of upgrading the piping or establishing an independent link back to the main lines that service the region (Cowie, 1987). In addition, the reduced capacity pipes are sometimes looped away from the agricultural boundary without providing any readily available termination points or access valves from which extensions could be made.

These two approaches would seem to be good ways to define the limit to urban expansion, but planners recognize that they only make future developments more costly, and therefore cannot actually prevent additional encroachment. Each planner consulted noted that limited capacity infrastructure can only inhibit the occurrence of conflicts

in the long-run if they are accompanied by sufficient political will to ensure their long-term effectiveness.

Many new developments in Delta and Surrey are being designed with cul-de-sac roads that, aside from their basic function of serving the transportation needs of the residents, also help to keep urban traffic away from nearby farmland. Similarly, pedestrians are discouraged from gaining access to private fields when sidewalks and paths are only provided on the residential sides of roads (Jackson, 1987). These strategies are thought to be quite effective in reducing the occurrence of conflicts when they are accompanied by one or more of the buffers mentioned earlier.

Public Discussion

No response to residential-agricultural conflict can be completely satisfactory without some input from the people involved in the dispute. Yet as noted earlier the planning process is not necessarily conducted with balanced public input. The problem is not a lack of willingness to listen on the part of the planning departments; it is really more of a dearth of opportunities for people to get together and discuss their differences in the presence of municipal representatives (Jackson, 1987, Murchie, 1987). When planning responses are designed without public input, they may only satisfy one side of the argument, and could in fact address only peripheral issues rather than the real source of the conflict.

Essentially, direct public input in the three communities comes in the form of telephone calls to community planners, through irregular forums provided by rezoning applications and public hearings, and via neighbourhood meetings as part of the area and community planning processes. One of the biggest concerns identified during research for this chapter was that these opportunities for public discussion, while potentially effective, are too infrequent and are primarily intended to allow people to state their opinions, rather than to come to some form of consensus. Often the emotions vented in these meetings serve to further entrench opposing sides and reduce the chances for an improved understanding of each other's needs, goals, and values.

Conclusion

This chapter has described the main research findings regarding administrative records of residential-agricultural conflicts, the types of conflicts observed in the three communities, and the basic methods currently being employed by planners to establish a land use context that prevents and resolves conflicts. All the planners consulted agreed that the planning process has been effective in reducing the occurrence of conflict. Yet in spite of the widespread use of buffers, the facts of incompatibility, encroachment, and misunderstanding continue to transcend the boundaries between farmland and housing. The next chapter outlines alternative planning responses and conceptualizations which

address some of the points raised in this chapter and will hopefully assist analysts seeking to develop improved conflict management strategies.

CHAPTER 4 ALTERNATIVE RESPONSES AND CONCEPTUALIZATIONS

Introduction

The management of residential-agricultural conflicts is dispersed between various agencies and departments within the local government. While in many cases planners do not directly respond to specific complaints, they nevertheless try to keep abreast of the issues and use the means they have available to help reduce the occurrence of conflict.

The use of land buffers has been the main planning approach to preventing and resolving residential-agricultural conflicts in Richmond, Delta and Surrey. Through the use of this technique the planners consulted expressed confidence that the occurrence of conflict is less than it would have been without the use of buffers. The planning departments of the three municipalities have investigated variations in buffer design that would allow a degree of adaptation to the various kinds of conflicts. However, by relying on buffers for a wide range of conflict types the planners may not be taking advantage of other techniques that could improve current strategies. The planners interviewed were aware of this possibility, as one said "buffers are effective, but must be accompanied by other strategies." While buffers have likely been effective in reducing the numbers of conflicts, they do not actually make the conflicting activities more

compatible. Instead they prevent the "incompatible" activities from getting close enough to each other to start a conflict. Other strategies are therefore needed to increase the compatibility of rural and urban land uses, especially if an effective buffer cannot be placed between them. As Runka (1985) notes, "the key compatibility factor is attitudinal, dependent upon a mutual understanding of both rural and urban users to the needs of the other." If attitudes and mutual understanding are key factors in determining compatibility, then planning responses which address these factors could improve the management of conflicts.

From the findings presented in Chapter 3 it appears that there has been relatively little emphasis on bringing the public into the conflict management process beyond the minimum requirements set forth in the Municipal Act. This chapter outlines a number of planning responses and conceptualizations that could help analysts review current conflict management strategies and perhaps improve on them. The first subject addresses a reorganization and expansion of current data collection methods with regards to residential-agricultural conflict. The remaining sections focus on responses that help to prevent the development of conflict through increasing the mutual understanding of the conflicting parties' points-of-view. It should be emphasized that these are not immediately implementable solutions: they are simply ideas and concepts that have

arisen out of the thesis findings, and which can serve as the starting point towards more structured and focused research aimed at designing remedies to specific problems.

Local Level Data Collection

Chapter 3 outlined the basic means through which planners in the three communities identify residential-agricultural conflicts. It was found that while there are limited records kept on complaints that resulted in government action, there are no detailed and cross-referenced systems of files containing information on all reported complaints related to residential-agricultural conflict.

In order to improve the understanding of residential-agricultural conflicts it would seem useful to have a more comprehensive and integrated data collection system that could be used in future research. One of the characteristics of such a system would be that it must acknowledge the compartmentalization of local governments into separate departments, each with its own jurisdiction within the municipality. As Griesener notes: "local government's organization is decentralized with information scattered throughout--collecting these data can be, if not impossible, extremely time consuming and expensive" (Griesener, 1983, p.24). Griesener underlines some of the difficulties associated with manual searches through paper-packed file cabinets which have not necessarily been maintained with an eye towards the particular research subject. While

municipalities such as Richmond have taken significant steps towards remedying this traditional problem, most notably through its computerized Geographic Database Management System (GDMS) and its department of Information Services, there remains the basic problems of collecting the raw data at various points within the administration, and then introducing it into a system of coordinated files.

At the very least there is a need for a written record of complaints. The record should indicate when and where the conflict has taken place, who is involved, who in the government dealt with it, what are the characteristics of the conflict, how it was dealt with, and a notation on the results after government action was initiated. The simplest way of maintaining such a record is through the use of a departmental log of telephone, written and personal complaints related to residential-agricultural conflicts. Minutes of public hearings and other meetings could be periodically reviewed for relevant data and added to the log when appropriate. Interestingly, the Ontario Right To Farm Advisory Committee experienced many of the problems this author faced in trying to collect data on residential-agricultural conflicts. In its 1986 report to the Ontario Ministry of Agriculture and Food the Committee said that it "had difficulty in getting information on the nature and extent of nuisance complaints" (Ontario Right To Farm Advisory Committee, 1986, p.21). Although the Committee conducted an extensive survey to collect data on these

conflicts, it came to the conclusion that "there is an essential need for maintaining more complete records on all farm practice complaints and disputes in the future " (Ontario Right To Farm Advisory Committee, 1986, p.31).

The record of complaints could follow the typology of conflicts outlined in the previous chapter, possibly refining it to conform with the particulars of the local situation. For example, the negative impacts on farms and residences categories could be expanded into checklists having elements such as smells, noises, drainage, lot access, theft, trespass, vandalism, building design, building location, pollution, traffic disruptions and others listed out and given simple classification criteria for the person who records the complaints. Perhaps once a month copies of each department's log could be brought together and then entered into a dedicated file.

A one-time meeting with all relevant departments, including the local police detachment, could establish and implement the strategy. Careful planning would be required in order to fit the program into the administration and make use of existing resources. In order to reduce costs it would be necessary to minimize staff time associated with keeping these records to the point where the record keeping procedure is both efficient and effective.

The resulting database could be used for a one-time study of conflicts and how to improve their management, or it could be used for an on-going review of the issues

involved. As was noted above, Richmond already has in-place a computer system which, if provided with the data, could easily facilitate such research. Furthermore, the Richmond Planning Department has taken the initiative and prepared a background study that identifies many kinds of conflicts which have been observed in the community, and provides suggestions on how buffers may be used to resolve some of them. Delta too has taken affirmative action by preparing an agricultural statement as a supplement to its official community plan. This document addresses conflict issues and outlines many of the concerns of the farming community.

Systems such as the complaint logs described above, or the more advanced record management potential of Richmond's GDMS, could significantly contribute towards increasing the understanding of residential-agricultural conflicts as a step towards improving planning responses. In his discussion of management information systems (MIS), Newkirk notes that two important challenges facing planners are:

- a) the development of a department information policy....; and
- b) to find innovative ways that computers and MIS can be used to improve the quality and quantity of information for planning, management and decision-making (Newkirk, 1987, pp.98-99).

Increased Public Involvement

The choice of a planning response depends on how the problem is defined, and each party will come up with a definition that best supports its interests (Rondinelli, 1973, Christensen, 1985). Homeowners will see residential-agricultural conflict as an issue of noises, smells, property flooding and slow traffic; farmers see it as a continued threat to their way of life, leading to losses of land, crop theft, vandalism, and restrictive demands being placed on "legitimate" work practices; and community groups see the issue as one which threatens neighbourhood character and stability. Planners in Richmond, Delta and Surrey try to see the issues from all of these perspectives in order to arrive at a generally acceptable conflict response strategy.

Public participation in managing conflicts can be used to help the people involved take a step outside of their narrow focus and search for some common ground that may be present (Schon, 1980). Through the use of "principled negotiation," developed at the Harvard Negotiation Project, the people involved in a conflict can be helped to realize any mutual gains that might be possible by avoiding the positional arguments which often prevent such progress (Fisher and Ury, 1981). In their negotiation handbook Getting To Yes, Fisher and Ury emphasize that in conflict situations the people must be encouraged to work together in resolving the problem, focusing on their mutual

interests and generating a variety of possible solutions that can be judged based on some objective standard (Fisher and Ury, 1981). Planners are in a position to bring competing parties together in order to facilitate agreement on a definition of the problem to be solved as part of this negotiation and mitigation process. When arrived at by consensus, the new problem definition may result in an unexpected set of solutions to the conflict in question. For instance, it has been suggested that a greater integration of agricultural and non-agricultural activities would eliminate some of the apparent incompatibilities by fostering greater understanding on both sides of the conflict (Bryant and Russwurm, 1979). When asked about this notion, one of the planners consulted said that it could not work because people's inflexible perspectives and self-interests would prevent them from engaging in effective negotiations. This planner believed that rural and urban land uses must be separated if conflicts are to be avoided.

Public involvement in the drafting of community plans is an accepted norm in the three communities and is required by the Municipal Act. Unfortunately, most of this public participation ends with the publication of the OCP. For example, three out of four public participation methods adopted as policies in Surrey's OCP promote input only during the preparation of the plan (Surrey OCP, 1983, p.236). The fourth method, questionnaires, is notorious for

producing misleading results, and only represents a limited, one-way form of communication. As noted in Chapter 3, the main sources of public input after community plans are completed are through telephone calls and infrequent hearings or panel discussions where residential-agricultural conflicts may be of only peripheral concern. There is general agreement among the planners consulted that the farming community has much less input into municipal decision-making than their urban counterparts. This is in part due to their lack of a coordinated voice in municipal hall, but the main reason for their low political influence is their relatively small numbers. Council skews its attention in favour of the larger and more vocal constituency: the non-farm residents along the rural-urban interface. It makes a kind of good political sense when a restrictive bylaw is implemented to "zone-out" certain important but "offensive" farm practices within an ALR, as long as there is evidence that the majority supports the decision (Glover, 1979). Unfortunately the farmers tend to be in the minority. Such responses are inadequate when all interests have not been fairly represented in the planning process.

A balance of input from each of the conflicting parties is essential if conflicts are to be resolved from more than just one perspective (Cooley, 1979). It should also not be assumed that each member of the public will have only one perspective on the issue. People living in rural

eastern Richmond have a close identification with their portion of the municipality, but many also have similar feelings for Richmond as a whole. Where there are strong neighbourhood and municipal identities, there is a need for a balance of area-wide and neighbourhood interests in conflict management (Lang, 1976).

An On-Going Process

If the public is to be involved in conflict management, hence in the identification of problems, the generation of solutions, and in the provision of feedback, an "active process" is required, where input is regular, structured, and yields visible results. By pursuing public participation, even from those groups who seem reluctant to get involved, planners will not only receive more representative input, they will help to make people better understand their community plans, they will generate trust towards municipal hall and build political support for their actions, and they will get valuable feedback about how well the conflicts are being handled (Forester, 1980, Glass, 1979). One planner suggested that regular public involvement is a good idea, but should be structured around particular issues of concern to the affected people (Jackson, 1987). He warned that a program of regular meetings to discuss the general topic of residential-agricultural conflict would not get as high a turn-out as would more focused, issue-specific meetings.

Constraints To Public Involvement

Few people would dispute the assertion that public participation in local government is a good thing: questions mainly start arising when it is necessary to determine how much public participation is appropriate, and how shall it be conducted.

There are at least two basic constraints to the kind of public participation described above. The first is the limited budget of the local administration. There are significant costs associated with advertising, staff salaries, handout and presentation materials, rental of meeting space and other considerations. Costs would increase if a professional negotiator was brought in to help the conflicting parties sort out their differences, and the opportunity costs of the time spent on conducting public meetings during normal office hours must also be taken into account. As one planner remarked during the course of research for this thesis, a government sponsored on-going public participation process that is oriented exclusively towards residential-agricultural conflicts would be "a luxury the municipality couldn't afford."

The second basic constraint is that most members of the public would have little technical understanding of either the planning process or the wide range of laws, regulations and political dictates under which planners must act. Certainly there are some people who would have no trouble contributing input that takes these concerns into

consideration, but this is likely the exception rather than the norm. If people with valid opinions but little technical knowledge were to be instructed in this regard, the public education process could take longer than the public participation process, making the costs of the project prohibitive and unrealistic. For public participation to work, it must have many of the characteristics outlined earlier while taking advantage of existing communication channels within the community. Where new links between the government and the public are required, the process should encourage the conflicting parties to work together and lay the groundwork for a solution prior to bringing the administration in to sort out the details of law and application.

Making Expectations More Realistic

Each of the planners consulted noted that residential-agricultural conflicts often arise because new residents are uncertain about what to expect in their rural-urban fringe neighbourhood. People move to the fringe for many reasons, including the search for the amenity values of the rural setting and the desire to get away from the pressures of city living. These and other features are indeed present in abundance, yet they must often be taken along with the noises, smells and other annoyances described in Chapter 3. The realities of living along the rural-urban interface may be unacceptable to some residents who had not anticipated them, and if they are unwilling to move

again, they may choose to fight for what is perceived to be their "rights" to an environment that fits their preconceptions. In some cases these protests would be based on farming practices that are truly inconsiderate or even irregular, but the problems might not have arisen at all if the people had been prepared for the above conditions. Conversely, certain conflicts, especially those involving smells and noises, may not have arisen if the farmers were more aware of their suburban neighbours' perspectives on their activities. Some traditional techniques, such as the discharge of firearms to frighten away birds, have been continued without any adjustments to the facts of having many non-farm residents nearby, prompting Richmond Council to pass a bylaw restricting this practice (Diamond, 1985). A regulatory solution might have been avoided if the farmers had voluntarily restricted the practice, explained its necessity to their neighbours, or found another less controversial technique to replace it.

Planners are just now starting to realize the role they could play in raising the public's awareness about life near the rural-urban interface. Chilliwack has a simple program already in-place that may serve as model for similar activities in Richmond, Delta and Surrey. Called Agri-Scope, it is a public awareness program aimed at increasing people's understanding of farming practices and the contribution agriculture makes to the community (Richmond Planning Department, 1986). Information booths are

set up and pamphlets are distributed, especially in those areas which experience a significant turn-over of households and new development. The program could easily be expanded to include the agricultural community, explaining how both farm and non-farm residents need to adapt to each other's presence near the rural-urban interface.

Even more proactive is the agricultural use notice seeing growing application in several California and Oregon communities.

The agricultural use notice is a warning notice, a requirement imposed by local ordinance; to be placed in contracts of sale and parcel deeds; along with other actions, it will forewarn prospective purchasers of property adjacent to commercial agricultural land of the potential problems associated with such purchases, including the sounds, odours, dust and chemicals that accompany agricultural operations (Schiffman, 1983).

The agricultural use notice serves two purposes. It lets the buyers of property near the rural-urban interface know what they are getting into, and because it is read and signed by the buyer, it serves as a legal document that the farmer might use in his defense should nuisance complaints be lodged against him by his new neighbours. The timing of the notice is of special importance. In its current application it is read and acknowledged at the time of title conveyance. Yet it would best serve its purpose prior to any formal decision to buy the property in question. Further research is needed to ascertain the applicability of the notice in the B.C.

context. Agri-Scope and the agricultural use notice are but two of many techniques for raising public awareness about what can be expected when living in the rural-urban fringe. Planners in the rural-urban fringe of Vancouver could adapt these tools to suit the conditions of their respective communities, and for a relatively small investment they could well see a significant reduction in the occurrence of residential-agricultural conflicts.

Regional Planning

The powers of British Columbia's regional districts have always been less than what one might expect in a true regional government. Over the past decade these powers have been reduced to the point where the official regional planning function of the districts was eliminated a few years ago. The end of regional plans was greeted with mixed reviews, but did not seem to stimulate any great regret in municipal governments. When asked about the value of regional planning in the context of conflict management, one of the planners consulted made the following statement, which was consistently echoed by the other planners:

"Regional districts are useful for service delivery, and regional land use planning is a good idea in theory, but in our situation regional plans would only inhibit the (local) planning process."

Some analysts have taken the opposite perspective. They would suggest that many of the factors which lead to residential-agricultural conflicts transcend municipal boundaries and operate at the level of the urban region. Therefore, in order to control these factors and facilitate effective local responses, a regional perspective on land use policy must be part of the planning process (Russwurm, 1977, Jackson, 1973, Bryant et al, 1982, Furuseth and Pierce, 1982).

One clear fact is that regional plans are no longer being made in B.C. How then can urban fringe municipalities benefit from the existing regional district structure? Firstly, the regional district can be a vehicle through which the various communities can get together and co-ordinate their management strategies. Manitoba's Planning Act lays out criteria for joint planning at the local level (Selwood, 1981), and though similar legislation does not exist in B.C., there is nothing prohibiting municipalities from co-operating amongst themselves on a voluntary level through the auspices of the regional district.

Working with the regional district could help bring people together to discuss issues of common concern and to see how the various municipalities apply their solutions. The regional district could provide some guidance to local land use decisions that affect regional growth management. Furthermore, a cooperative effort between municipalities

and the regional district could be used to promote greater understanding about the needs, values and rights of farmers and residents inhabiting the rural-urban fringe. It would be simple to state "we need more regional plans," but given the current political climate, these "softer" forms of regional planning and cooperation would seem to be practical alternatives.

The Green Zone Committee

British Columbia is fortunate to have an agency directly concerned with the relationship between farming and urban land uses. Formed in 1977, the Green Zone Committee represented a provincial response to what was perceived to be inadequate municipal regulations pertaining to the siting of farm buildings, livestock and processing equipment. Meeting approximately eight times per year, the Committee is comprised of four individuals: the chairman, who is a full-time representative of the Ministry of Agriculture and Fisheries; an appointee from the B.C. Federation of Agriculture; a representative from the Agricultural Land Commission; and an appointee from the Agricultural Engineering Branch. Though there is no longer a representative from Municipal Affairs, there remains a close liaison between the Committee and this Ministry.

One of the Committee's earliest achievements was the development of the Minimum Distance Separation Formulas. These could be used to determine how far buildings along the rural-urban interface should be set back from their lot

lines, and to establish the minimum distances that should separate farm and non-farm activities. The formulas were intended as guidelines for local governments in their drafting of bylaws to reduce conflicts between farms and adjacent properties (Glover, 1979). Similar minimum distance specifications have been included in the Ontario government's policy statement on agriculture and rural land use planning entitled Foodland Preservation, a document which replaces the Food Land Guidelines adopted in 1978. Since the enactment of Bill 62, the Committee has expanded its scope of concern and become more of an advisory body for provincial agricultural policy within the Ministry of Agriculture and Fisheries (Sands, 1987).

The Green Zone Committee has been instrumental in several recent changes to the Municipal Act. One such change that has particular relevance to residential-agricultural conflicts is the revision of Section 977 (Intensive Agriculture). This Section allows the Minister of Agriculture and Fisheries, or a local government with approval of the Minister, to designate intensive agricultural areas within the Agricultural Land Reserve. This represents a reduction in municipal government's powers to independently zone and regulate land use activities inside the ALR. Indeed, one planner suggested that the legislation is so restrictive for local government that it in effect "introduced another element of conflict"

into the process of land management in the urban fringe (Leung, 1979).

The intensive agriculture designation is specifically aimed at permitting certain agricultural uses (i. e. poultry and mushroom farming) that are commonly involved in conflicts. While the designation would protect farmers on one level, it is complemented by the Minister's ability to make certain the operations are conforming to a set of farming practice guidelines developed by the Committee (Sands, 1987). Local governments therefore have the opportunity, if they wish, to protect the integrity of their intensive agricultural areas and ensure that nearby residential areas are not being subjected to the effects of unacceptable farming practices. The major difference between the old and new versions of Section 977 is that municipalities must now work more closely with the Ministry in their efforts to achieve these objectives. This portion of the Municipal Act is now being changed once again in order to make it work within the context of municipal planning and decision-making (Sands, 1987).

Essentially the Green Zone Committee has been laying the groundwork for comprehensive right to farm legislation. Such legislation has been used in the United States since 1971, and more recently in provinces such as Manitoba and Quebec, as a means of protecting farms from restrictive bylaws and nuisance actions. In Ontario, the Right To Farm Advisory Committee has studied residential-agricultural

conflicts and how they affect the agriculture industry. This committee has prepared a number of recommendations to the provincial government regarding the introduction of right to farm legislation. The Green Zone Committee, its code of farming practice guidelines, and the anticipated right to farm legislation in B.C. represent a resurgence of interest in provincial involvement in local land use management (Lyon, 1983, Robinson, 1979). Further changes to the Municipal Act along these lines could occur in the near future, and would significantly affect conflict management practices and responsibilities. Some analysts see a similar trend in Ontario, where the Ontario Planning Development Act of 1973 and, depending on how it is interpreted, the Planning Act of 1983 recapture certain land use decision-making powers to the provincial legislature (Cullingworth, 1984, Wronski and Turnbull, 1984).

Local governments are not directly involved in forming provincial agricultural policy. Yet they are able to make their concerns heard through the Union of B.C. Municipalities and the Ministry of Municipal Affairs, both of which are in regular contact with the Green Zone Committee and other relevant agencies. The rural-urban fringe communities play a more direct role in the designation of intensive agricultural areas and the application of local setback and farm practice regulations. Local decision-making autonomy in these matters is now less than it was prior to Bill 62, but municipal governments

are still able to exert influence on the conditions that lead to conflict situations.

The Agricultural Environmental Services Program

The agricultural industry has developed and sponsored its own procedure for dealing with residential-agricultural conflicts. Called the Agricultural Environmental Services Program (AESP), it has proven to be an effective way to resolve conflicts without having to turn to government-imposed solutions. The procedure is quite simple. A complaint about a farming operation is first received by the municipality, then passed on to the AESP. Next, a B.C. Federation of Agriculture-approved inspector is sent to the site to see if Green Zone Committee, Waste Management, Municipal and other guidelines for acceptable practices are being followed. If the guidelines are complied with, such a finding will work in the farmer's favour when the local government decides on a course of action. Should the guidelines not be met, the inspector and his colleagues, all of whom are involved in the agricultural industry, will first consult with the farmer in an effort to come up with a workable solution. Most often this has proven to be possible, and the farmer has made adjustments in order to comply with the guidelines. In those cases where compliance does not ensue, the information is given to the Ministry of Agriculture and Fisheries, which may then require compliance via the issuing of a conditional operating permit. In extreme cases, the Ministry may

suspend operations for a short period of time (Sands, 1987). The AESP is a province-wide program and has seen some limited application in the Lower Mainland, most recently in cases involving the operation of greenhouses in Delta. Increased use of the program is feasible, and could provide an effective supplement to local planning strategies.

Conclusion

This chapter has briefly outlined several alternative responses and conceptualizations to current conflict management strategies employed in Richmond, Delta and Surrey. The responses discussed above arose out of a bringing together of the literature and the research findings; more study is required to accurately determine their need, their feasibility, and how they could be implemented. Hopefully by raising these points analysts will be stimulated into conducting such research.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Introduction

In the original outline of this thesis it was anticipated that a number of conclusions and recommendations would follow from the research. The conclusions would address the strengths and weaknesses of current planning responses to residential-agricultural conflict, and the recommendations would deal with specific means to improving the management of these conflicts, and as such, improving that part of municipal planning which influences land use in the rural-urban fringe. As was described in Chapter 1, the thesis purpose and objectives had to be revised in the light of available data, literature support and other considerations. It is now appropriate to repeat the revised purpose and objective for this study.

Purpose: using an account of local planning experience to document the lack of research residential-agricultural conflicts are receiving in the Lower Mainland with regards to data collection and investigation into alternative conflict management techniques.

Objective: the generation of descriptive data and observations that could be used to support more substantive and controlled analysis.

The research and findings have stayed within the intended scope of the study and have achieved the purpose and objective as stated above. Below are the conclusions and recommendations based on the thesis findings.

Conclusions

Two main conclusions result from this thesis. The first is that in the municipalities of Richmond, Delta and Surrey the local governments do not have comprehensive records on the incidence of residential-agricultural conflicts occurring in the respective communities. While some records are kept on complaints which prompt government responses, in none of the administrations is there a system of detailed and cross-referenced files containing information on all reported complaints associated with such conflicts.

Secondly, it is evident that the planning departments of the three municipalities have relied on the use of land buffers to both prevent and mitigate the effects of residential-agricultural conflicts. The research indicates that a number of alternative and supplementary responses to these conflicts have yet to be tried.

Recommendations

It is recommended that the planning departments of Richmond, Delta and Surrey become more aware of the precise extent and characteristics of residential-agricultural conflicts occurring within their communities. Associated with this, it would be useful to have a more detailed

understanding of the numbers and types of complaints generated by these conflicts.

It is further recommended that the three planning departments consider the application of new and perhaps innovative conflict management techniques. This may involve changing the emphasis from one type of response to another, it may involve trying an altogether new approach to preventing and resolving conflicts, or it may be some combination of both of these. Regardless of the method employed, experimentation with or at least a study of new conflict management tactics may contribute towards reducing the occurrence of conflict in the future.

Closing Remarks

As the urban area expands it is becoming increasingly difficult to maintain traditional expectations of what it means to live and work in the rural-urban fringe. Farmers must respond to continued urban encroachment that challenges their lifestyle and threatens to make their already unstable farms non-viable. Suburban non-farm residents are being subjected to externalities generated by intensifying farm operations, and may soon see some of their legal recourses diminish with changes to existing legislation.

Municipal planners are forced to temper their desire to help these groups adapt to each other with the realities of operating within the framework of provincial legislation, a fixed budget, and an imposed political agenda. The very nature of planning, with its constant

stream of "routine" problems, precludes planners from spending much time reflecting on how well real-world problem-solving matches the ideals presented in the literature. Nevertheless, if there is a desire to improve the management of residential-agricultural conflicts and prepare for increased development pressures in the rural-urban fringe, planners will have to apply their skills to improving the process through which these complex issues are addressed. I hope that planners and independent researchers will be interested enough to carry on from this study and perform the in-depth analyses that will provide the basis for an effective, long-term conflict management strategy.

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