

Lost Landscapes of the Market Gardeners:

A Qualitative Historical GIS Examination of the Demise of the Chinese and Japanese Market Gardening Industries in the North and Central Okanagan Valley, British Columbia, 1910s-1950s

by

Catherine Jane Kyle

B.A., University of Northern British Columbia, 2004

MGIS, University of Calgary, 2008

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ABSTRACT

Chinese and Japanese market gardeners in the north and central Okanagan Valley, British Columbia, Canada operated farms of various sizes growing vegetables for both the local and distant markets for over a century and a half. The relationship between these market gardeners and the dominant (white) society varied over time; political circumstances beyond the valley and even beyond Canada's borders contributed to the tumultuous nature of the local market gardening industry. Yet despite these challenges the industry was widely supported and endured for many decades. Eventually most of the market gardens closed and the industry ceased to have a visible presence on the landscape. Despite the important role that these market gardeners played in helping to establish the Okanagan as an agricultural centre, their contributions are often overlooked and the agricultural history of this valley remains ostensibly white. Focused on the period from the 1910s through the 1950s, this research demonstrates that a complex array of governance, technological innovation, infrastructure development, and a changing population demographic, combined with a lack of a stable land base, precipitated the demise of the Chinese and Japanese market gardening industry.

There were five approaches to data collection: archival research, cultural expert interviews, careful examinations of written reminiscences and local histories, site visits, and embodied research. Historical GIS provided the structure for organizing and analysing information acquired through the data collection process; landscape phenomenology provided the theoretical structure for interpreting the results of the GIS and qualitative data analysis.

A changing population demographic resulted in labour issues and increasing density led to greater pressure on available land. Race-based government legislation played an important role in the ability of Chinese to survive in the market gardening industry; for both Chinese and Japanese increased government control on the industry coincided with the overall decline. Improved and expanded transportation systems made distribution of Okanagan produce easier, but also resulted in easier importing of cheaper vegetables from elsewhere, which also coincided with increased use of refrigerators and grocery stores. Small farm operations were often unable to invest in technological improvements that would allow them to remain competitive.

PREFACE

This research was approved by the University of British Columbia Okanagan Campus Behavioural Research Ethics Board.

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DEDICATION

For Chris and Henry.

CHAPTER 1 INTRODUCTION

“Landscapes are created by people – through their experiences and engagement with the world around them” (Bender 1993:1). Often, minority experiences are less visible on the landscape than those of the majority. This is truer when desiring to understand historical experiences of place through studying remnant landscapes. Individuals and governments strive to preserve pieces of the past through various commemorative efforts, such as preserving or reconstructing old buildings, posting signage, constructing monuments, or through the establishment of zoning bylaws to preserve entire neighbourhoods. All of these efforts are undertaken with the idea of developing a greater understanding of the past. However, as evidenced through numerous books, articles, and museum exhibits, “one of the most fundamental assumptions about the settlement of the Okanagan Valley has been its identification with Whiteness” (Barman 1996:8). Here and elsewhere commemorative efforts tend to favour majority experiences (Nora 1989; Reyes 2010).

As early as the 1860s, and persisting in some small ways through the present, Chinese and Japanese market gardeners operated farms of various sizes throughout the north and central Okanagan Valley, British Columbia, Canada, serving both local and distant markets. The relationship between the participants in this market gardening industry and the dominant (white) society varied dramatically over time. Political conditions outside of the industry, outside of the valley, and even well beyond Canada’s borders frequently contributed to the tumultuous nature of the local market gardening industry. Fueled by widespread racist attitudes of the day and a belief that Chinese and Japanese market gardeners presented unfair competition due to their lower standard of living and hard work ethic, various government entities, civic groups, and trade organizations took action to impede the success of the

Chinese and Japanese market gardening communities. Yet despite both official and unofficial attempts at suppression the industry endured for many decades. Overtime most of the market gardens closed, farmers retired or passed away, and the industry ceased to have an obvious visible presence on the landscape.

While various methods have been developed over the past few decades that seek to recover marginalized or minority voices, few have successfully done so while also providing the geographical context necessary to understand non-dominant experiences of place, an important factor in landscape formation. Understanding the experiences of minority populations in times past, especially in rural and remote areas, often requires the use of non-traditional documentary records and other sources of information.

One approach that allows for a greater focus on minority experiences is landscape phenomenology, which examines people's everyday lived experiences rather than generalized experiences that are typically representative of majority populations. By allowing for the incorporation of different types of information that reveal a greater complexity of experiences, landscape phenomenology moves away from traditional interpretation models that reinforce existing narratives. Similarly, qualitative geographic information systems (GIS) arose over the past two decades out of practical attempts to incorporate a greater range of data and analytical processes into GIS. It encompasses a wide body of research that includes GIS using qualitative data sources or other qualitative forms of evidence; GIS incorporating qualitative data analysis; the incorporation of multiple epistemologies into GIS research; and research that works to acknowledge, incorporate, or examine alternative ways of knowing (Elwood and Cope 2009). Although landscape phenomenology has frequently

been utilized for understanding historical events, existing qualitative GIS research has primarily been focused on current events or the fairly recent past.

Historical GIS is a way to examine, evaluate, and understand historical events. Due in part to its use of visualizations, this approach is more illustrative and compelling than traditional historiographic or narrative methods for historical analysis. While historical GIS has contributed to the development of new approaches in historical research, its use is still limited by what is available in the historical record, which is inherently biased and tends to favour existing dominant narratives. By providing methods for diverging from the systematically collected documents that are often favoured by GIS research, qualitative GIS has the capacity to overcome many of the pitfalls of current approaches in historical GIS. To date only a handful of studies have attempted to bring together the principles of qualitative GIS with the techniques of historical GIS.

This research investigates whether a qualitative historical GIS, guided by landscape phenomenology, can not only recover marginalized voices from the past but do so within their proper geographical context, thus enabling an understanding of place-based experiences of non-dominant populations.

This question is asked and answered through a case study that explores the demise of the Chinese and Japanese market gardening industry that once played an important role in vegetable production in the north and central Okanagan Valley. Although their presence in the valley extends over a century and a half, the focus of this analysis is the period from the 1910s through the 1950s. The start date for this research was selected because prior to the second decade of the twentieth century very little data is available that can be used for mapping the locations of market gardens. The end date coincides with the first decade after

Chinese immigration resumed and after the end of World War II when many Japanese were relocated. The industry was already in steep decline at this point and patterns of immigration and settlement began to shift dramatically. However, some records after this date were included in cases where the farm continued operating in the subsequent decades. These records were not sought out but were included if located in the course of research. The work disseminated in the following chapters represents the first example of qualitative historical GIS in a rural and remote setting focused on two different ethnic minority populations, providing solutions and outlining limitations for GIS research in these conditions.

1.1 Defining Market Gardening

Market gardens are small farm operations that are usually located within close proximity to an urban community but can also service markets farther away if transportation and distribution systems exist. They are typically 5 to 20 acres in size and grow a variety of vegetable crops for market (Ferguson 1948). Early in the research process it became clear that the term “market gardening” needed to have a broad definition. Accordingly, I extend this definition to include a range of commercial vegetable gardening operations that existed in the study area. A third generation market gardener defined it very simply: “Well, market gardening is growing vegetables and selling it” (I3BL 2014). Others took this broad view as well; IIMJ (2014) began by talking about selling to the packing houses. She further explained that after competition from California increased, her family started selling directly to local stores for many years. Over time, that also became unprofitable. Around this time, in the early 1970s, the farmers’ market movement began to increase. Seeing the possibilities, her family was instrumental in establishing the Armstrong Farmers’ Market, which is still in operation today. One participant initially differentiated between growing crops for the

packing houses or canneries and “full time market gardening.” However, she later noted that even on the properties where her father was growing mainly for the packing houses or canneries, he would have the occasional customer stop by to purchase produce, and that when he was engaged in “full time market gardening” the excess produce went to the packing houses (I12ST 2014).

Intercropping, the growing of vegetable crops or berries between rows of orchard trees, was a common practice throughout the region and provided much needed income while orchards were becoming established. There are also some instances of sharecropping/intercropping, where the crops for which the sharecroppers were responsible for were only those that were grown between the trees, typically onions. Small operations, such as a single crop in a backyard garden, to large operations, such as many acres of a single crop, vegetable farming that was marketed directly to the packing houses or individual grocery stores are also included in my definition of market gardening.

1.2 Research Overview

While the existence of Chinese market gardens has been well documented (e.g. Dunae et al. 2011; Ward 2002; Roy 1989), the factors which affected their success and failure have not been critically examined. The Chinese first entered the industry in British Columbia in the mid-nineteenth century (Morton 1974). Chinese participation in market gardening has been described as being one of their “traditional menial and non-competitive occupations” (Roy 1989:74). By the 1920s Chinese market gardeners were supplying over 90 percent of vegetables to the Vancouver market and over 55 percent of the potato crop provincially (Morton 1974). Because of their monopoly in frontier communities like Barkerville, the Chinese market gardeners were able to control prices (Roy 1989). Dunae et

al. (2011) describe the Chinese market gardens of Victoria as a mechanism for extending the Chinese presence beyond the confines of Chinatown. Many of these market gardens operated on land rented from prominent citizens, such as former Governor Sir James Douglas and other important officials.

Chinese vegetable peddlers also played an important role, not just in the distribution of market garden produce but also as purveyors of other small household items. In a recent survey of archaeological work in British Columbia, Ross (2015) describes the cultivation of vegetables by Chinese near the Musqueam reserve in Vancouver, noting that the proximity of the gardens to the reserve later led to some intermarriage between Chinese men and Indigenous women.

Japanese involvement in market gardening in British Columbia is less well documented compared to the Chinese. Among the first agricultural pursuits of the Japanese was berry farming in the Fraser Valley (Ward 2002). In the first years that Japanese were engaged in berry farming in the Fraser Valley, beginning about 1903, the industry grew substantially and its success was widely advertised in Japanese newspapers as a reason to settle in Canada (Adachi 1991). By the 1930s, agriculture was considered to be an important occupation for Japanese. However, Sumida's (1935) detailed examination of Japanese occupations in British Columbia only mentions a handful of examples of market gardening among other types of agricultural pursuits. For vegetable crops, intercropping was a common practice among the Japanese in the Okanagan, growing crops such as onions and tomatoes to satisfy the needs of the packing houses and canneries. Around 1910, when the first canneries began opening in Kelowna, it was Japanese farmers who responded to the call for growers to take on the task of providing tomatoes to the canneries (Hayes 1961).

Opposition to Chinese market gardeners was strong throughout the province, with support for anti-Chinese legislation coming from many trade organizations including the British Columbia Fruit Growers' Association and local Boards of Trade (Roy 1989; Ward 2002). An example of the types of actions taken by the government can be seen in the appointment of a sanitary inspector in 1896. The appointee, Clive Phillips-Wolley, was anti-Orientalist. As a result, he was careful to document all occurrences that could be seen as unsanitary and possibly detrimental to public health. Of particular concern to Phillips-Wolley were the methods Chinese gardeners used, especially claims of using human and animal excrement on crops as fertilizer and urine for watering purposes, raising concerns over the risk of typhoid (Roy 1989). Hostility towards Japanese farmers occurred throughout the province but amplified later compared to hostility towards the Chinese (Adachi 1991). As late as 1927 there were efforts to stifle Chinese and Japanese competition through proposed provincial legislation to ban Chinese and Japanese from owning, renting, or leasing land (British Columbia 1927).

I will elucidate the complicated relationship that existed between four factors that precipitated the demise of the Chinese and Japanese market gardening industry in the north and central Okanagan Valley. These factors, identified through preliminary research and secondary source material focused on Chinese and Japanese history in British Columbia and agricultural history of the Okanagan Valley, are governance, technological innovation, infrastructure development, and a changing population demographic. I consider how each factor, combined with the lack of a stable land base, contributed to the demise of the market gardening industry and the subsequent erasure from the visible landscape of the Chinese and Japanese market gardening communities. Geist and Lamblin (2002) take a similar approach

in their work on understanding factors contributing to tropical landscape change, particularly deforestation, which culminated in what they term “cascade effects,” where interacting factors effect land use change in different ways and to different degrees. While their approach is quantitative, actually determining a percent contribution of each factor, I take a mixed methods approach incorporating both quantitative and qualitative methods to critically examine the impacts of these four factors. I draw from a qualitative GIS understanding of mixed methods, where projects “weave together diverse research techniques to fill gaps, add context, envision multiple truths, play different sources of data off each other, and provide a sense of both the general and the particular” (Elwood and Cope 2009:5).

In order to understand what precipitated the demise of the Chinese and Japanese market gardening industry, a number of questions will be addressed.

- (1) Where were market gardens located? What type of land tenure was in operation? Were there differences in location and land tenure type between Chinese and Japanese market gardeners? How did this differ across the study areas? How did this change over time?
- (2) How did each of the four major factors (governance, technological innovation, infrastructure development, and changing population demographics) contribute to the demise of the market gardening industry? Are these effects visible in the memory of the landscape as reflected in changes to the distribution, extent, and composition of market gardens over time?
- (3) How did the market gardeners experience the changing landscape as the impacts of the four factors took effect?

Responses to each of these questions will be presented in the results and discussion chapters.

Using GIS, I identify changes to the landscapes of the market gardening industry, highlighting differences in the extent, distribution, and composition of the industry over time. Due to the challenges of locating sufficient data for two different ethnic minority populations

living in rural and remote areas in times past, a broad range of sources are used to ensure that all voices are included. The results of the GIS analysis will be combined with cultural expert interviews and other contextual data to explain landscape change overtime and to assess the role of each of the four factors (governance, technological innovation, infrastructure development, and a changing population demographic). Using site visits and an exercise in embodiment, I gain an understanding of the experiences of the market gardeners which further aids my analysis.

I am drawing from an understanding of governance as “all processes of governing, whether undertaken by a government, market or network, whether over a family, tribe, formal or informal organization or territory and whether through laws, norms, power or language” (Bevir 2013:1). A human geographic interpretation of the concept of governance that is particularly relevant to my findings is “the processes of goal-orientated coordination and management involving governmental and non-governmental actors” (Castree, Kitchin, and Rogers 2013:195). There are multiple “goals” in this case that can be identified. One was to sustain the idea of a “White Canada Forever!” (Ward 2002). Another was to develop the Okanagan as a major centre of agricultural productivity (Barman 2006; Ormsby 1935a). The government actors included municipal, provincial, and federal levels of government, and the non-government actors included the various marketing boards, inspection agents, and organizers that worked to control all aspects of the agricultural industry.

By technological innovation I am referring to the wide-scale development of irrigation systems, mechanization of various aspects of the agricultural industry, overall increased complexity in the organisation of the industry, and the development of refrigeration technology that enabled the shipping of more perishable products. Infrastructure

development refers primarily to the construction of faster and more reliable transportation systems that improved accessibility to markets, particularly rail and road networks.

Population demographics includes changes to the overall numbers and structure of the market gardening population, but also considers population changes, especially growth, in the wider community as this affected the potential market for produce and created added pressure on the land.

Further to testing new methods in qualitative historical GIS, this dissertation is the first work that critically examines Chinese and Japanese participation in agriculture in the Okanagan Valley. Prior to this research, no other effort has looked specifically at Chinese and Japanese market gardeners in this area or considered their role in establishing the Okanagan as the agricultural centre it is today. A further rationale for situating this research in the Okanagan Valley is that despite the extensive documentation of historical events by amateur historians and the existence of numerous archives there are relatively few academic historical examinations of the valley. A handful of articles have been published focusing on the local Chinese populations in Kelowna (Wong 1999; 2014; Mann 1982) and Armstrong (Critchley 1999). Three books that I used extensively collected the memories of Japanese in the valley (Hoshizaki 1995; Ouchi 1982; LCMA 2013). These are valuable contributions to the effort to document the history of non-Whites in the valley but continue to exist as isolated examples known mainly to those directly involved in producing them.

My dissertation represents one of the first significant studies that successfully incorporates qualitative sources within a GIS framework that specifically focuses on rural rather than urban environments, ethnic minorities rather than dominant populations, and a historical time period rather than the present or very recent past. The use of qualitative

research methods and qualitative sources is a necessity, due to a lack of alternatives, but also intentional in that it provides access to individual and group lived experiences, a major aim of landscape phenomenology research. The use of GIS to organize and visualize the results that contain explicit spatial information allows for a much more accurate depiction of where market gardening occurred and how this changed overtime. This not only answers specific research questions, it also provides a structure for framing the experiences of market gardeners and their descendants.

1.3 Study Area

The north and central Okanagan Valley is situated on the Interior Plateau of British Columbia (Figure 1.1). Historian Margaret Ormsby, heralded as British Columbia's Historian of Record (Marshall 1997), undertook some of the earliest and most enduring academic histories of the Okanagan in the early and middle twentieth century. My use of the term "Okanagan Valley" draws directly from Ormsby's 1931 UBC Master of Arts thesis.

The Okanagan Valley of British Columbia is bounded on the east by the Gold Range Mountains, and on the west by the Cascades. It includes all the land drained by streams flowing into Okanagan Lake and Okanagan River north of the International Boundary Line, and therefore extends from the forty-ninth parallel northward to the city of Armstrong where a height of land divides the watersheds of the Columbia and Fraser rivers. As the exact boundaries of Okanagan Valley have never been defined, the name is also applied to the land due north of Armstrong towards Sicamous which is drained by the Spallumcheen River, and the region southwest of Penticton which is watered by the Similkameen River. As the conditions prevailing in these two smaller valleys are similar to those in the larger one, and as the districts are not separated from one another by natural barriers, the term Okanagan Valley as used in this study includes the entire area. (Ormsby 1931:1)

At the time Ormsby was writing, the term "Gold Range Mountains" applied to what is now known as the Monashee Mountains (BC Heritage Branch 2016). It is important to note that my research is limited only to the north and central portions of the Okanagan Valley, not the

entire area described by Ormsby. The importance of her description of the Okanagan to my research stems from my inclusion of the northern reaches of the valley in my study area.

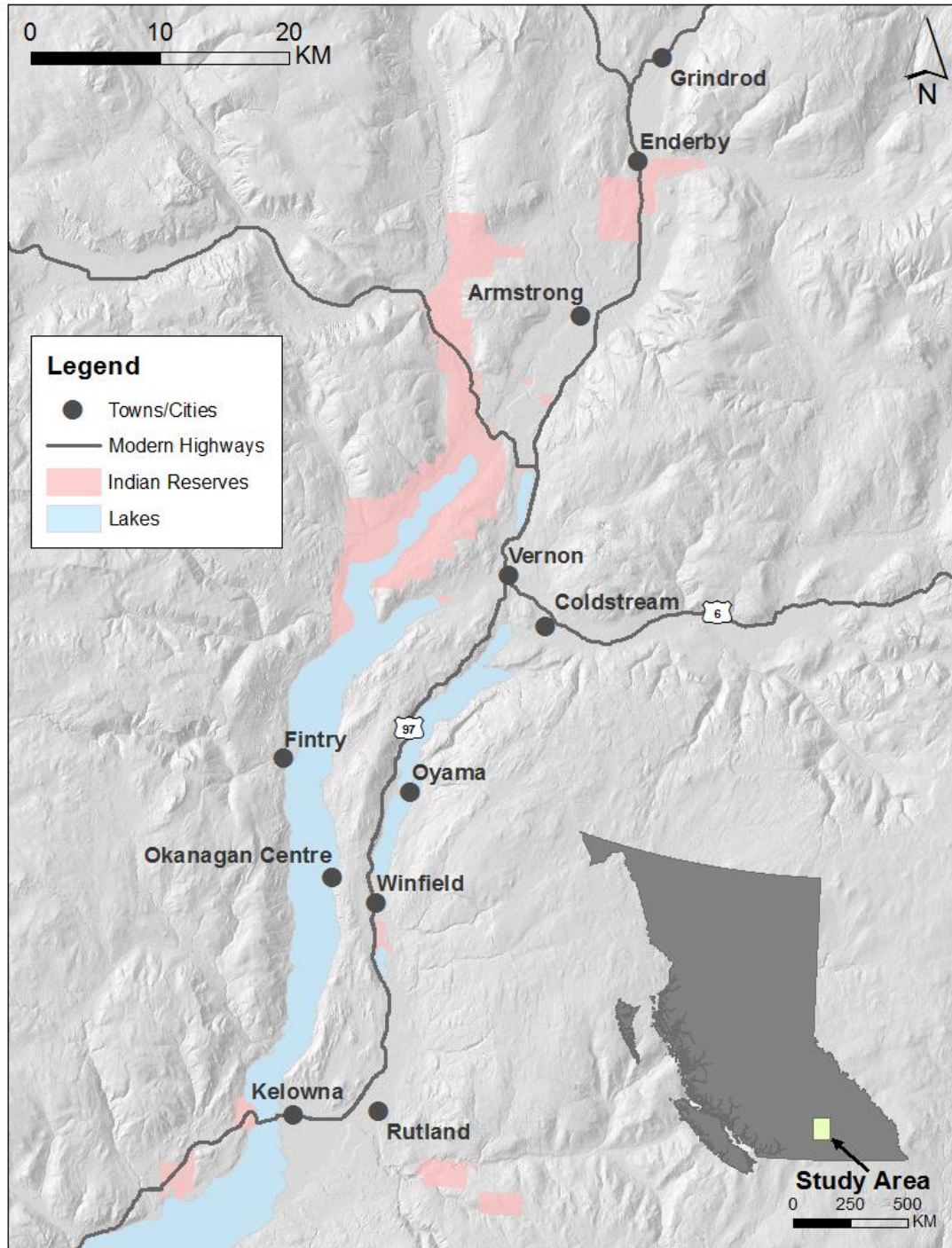


Figure 1.1: Overview map of research area. (Cartography by author. Map created in ESRI ArcGIS 10.2. NAD 1983 UTM Zone 11N. Data acquired from BC Data Distribution Warehouse and Natural Resources Canada.)

Further evidence for including the areas to the north and east of Armstrong as being ‘in the Okanagan’ is drawn from the name of a newspaper. *Walker’s Weekly*, which later became the *Enderby Press*, and the *Armstrong Advertiser*, still in publication today, jointly published as the *Okanagan Commoner* for a number of years. Later, when the *Armstrong Advertiser* burned down in the early 1920s, the newspapers again jointly published as the *Okanagan Commoner* while the *Advertiser* was rebuilding. Both Armstrong and Enderby are located in the far northern reaches of my study area.

Finally, in the 1950s the provincial government included the areas of Spallumcheen and Shuswap as being located within the Okanagan Valley in a 1952 circular titled *The Okanagan Valley of British Columbia, Canada*. In this publication, the Ministry of Agricultural provided summaries describing communities from Salmon Arm to Kelowna. This document, part of the *Agricultural Settlement Series*, was an advertisement demonstrating the bountiful existence that prospective farmers and their families could expect if they relocated to the area. The first image in the booklet, showing flowering apple trees, is titled “Bountiful Okanagan.”

Currently, the area included in Ormsby’s Okanagan overlap three regional districts: the Regional District of North Okanagan, the Regional District of Central Okanagan, and the Regional District of Okanagan-Similkameen. Together, these areas encompass approximately 215,000 hectares (8,200 square miles). My study area includes communities and rural areas that are located in the North and Central Regional Districts, from Kelowna in the south to Grindrod in the north. Unless relevant to the discussion, the modern name for communities will be used throughout. The GIS results are divided into four sub-sections: Kelowna, Lake Country, Vernon, and Armstrong-Spallumcheen.

Table 1.1: 2015 population figures for modern communities (BC Stats 2016).

Community	Population
Kelowna	124,378
Lake Country	14,035
Vernon	40,497
Coldstream	10,821
Armstrong	4,951
Spallumcheen	5,207

Kelowna is the most southerly community in the study area. The city limits for present-day Kelowna encompasses the historic communities of Rutland, Okanagan Mission, East Kelowna, Benvoulin, Glenmore, Ellison, and others. To the north of Kelowna is Lake Country, which includes the current and historic communities of Winfield, Okanagan Centre, and Oyama. North of this is the city of Vernon, which is surrounded by the modern and historic communities of Coldstream, Swan Lake, Lavington, and Lumby, and includes the neighbourhood of Bella Vista which was a major Japanese market gardening area. The city of Armstrong and rural areas of Spallumcheen cover the remainder of the study area, extending north to the community of Grindrod.

The physical geography and the geology of the valley have contributed in various ways to the successes and failures of the agricultural industry. While market gardening is less susceptible to changing environmental conditions than other aspects of the agricultural industry such as orcharding, it is still important to consider some of the potential contributions of the geomorphological history of the valley. These include environmental impacts such as weather and climate, and also the potential effects on the transportation of products and the accessibility of the valley for new farmers.

Climatic conditions for early fruit and early vegetable growing are the most favourable in the Okanagan; the general elevation of Osoyoos Lake is 905 feet, and this, combined with the equable climate, ensures splendid opportunities for the growing of apples, peaches, and apricots; the earliest sweet cherries in Canada are produced in this area. Cantaloupes and tomatoes are being extensively grown. (Ministry of Agriculture 1952:13)

Described as “a broad irregular depression” (Department of Agriculture 1952:3), the Okanagan Valley is bounded by a series of mountain ranges on both sides that have had important effects on the settlement of the valley in regards to influencing weather patterns and also in respect to access. To the east and north of the Okanagan Valley lies the Omineca Belt, a series of mountain ranges that include the Purcell, Selkirk, Monashee, Cariboo, and Selwyn Mountains. Of these, the Monashee Range forms the eastern side of the Okanagan Valley. To the west is the Intermontane Belt, portions of which extend as far north as the Yukon. The Interior Plateau lies immediately to the west of the Okanagan Valley (Roed 2011). The most prominent geographical features in the valley are the numerous large lakes. At 120 kilometers long and averaging 3.5 kilometers in width, Okanagan Lake is the largest in the region (Roed 2004). Other major lakes in the region include Kalamalka, Skaha, and Osoyoos Lakes.

Soil deposits can affect the viability of a region for agricultural production. The particular composition of soils varies throughout the valley. The area around Kelowna, the widest point of the valley, is dominated by “coarse-textured, rapidly drained soils” and requires irrigation (Luttmerding 1995:57). Further north towards Vernon and Armstrong, some areas are more appropriate for forage that can be grown without irrigation, whereas other areas are similar to Kelowna as they are “rapidly drained” and therefore require irrigation. The necessity of irrigation led to investment in irrigation infrastructure to make these areas feasible for farming.

While the Okanagan Valley has long been acknowledged as a dry belt, this moniker does not truly represent the whole valley. “The territory from Sicamous to Osoyoos at the International Boundary, known as the Okanagan Valley, has within its boundaries very varied climatic conditions” (Ruhman 1927:11). Even during the early years of the industry the variation in climatic conditions was acknowledged to affect the production of certain crops (Ruhman 1927).

1.4 Dissertation Organization

This dissertation is organized into seven chapters. The first chapter provides an introduction, presents the research questions, and describes the study area. The second chapter presents a broad historical introduction to the research topic. Aspects of Okanagan history closely linked to the four factors of governance, infrastructure development, technological innovation and a changing population demographic are included in this overview. Reviews of the essential and recent literature on landscape phenomenology, qualitative GIS, and historical GIS are presented in the third chapter.

In the fourth chapter, the methods are described. The theoretical framework, landscape phenomenology, and the main methodological approach, qualitative historical GIS, are revisited. The main methods of data collection are described individually. The chapter concludes with an examination of the steps involved in the GIS processing.

The results and discussion are divided into two separate chapters. Chapter five summarizes the qualitative and quantitative results. Chapter six is further divided in to a discussion of the case study results, where I begin developing a new narrative sensitive to the experiences of Chinese and Japanese market gardeners of the north and central Okanagan valley, and an assessment of qualitative historical GIS reflecting on this project and on the

challenges I encountered which can serve as examples to others. Chapter seven concludes by highlighting the original contributions of this dissertation, clarifying limitations, and making recommendations for future work.

CHAPTER 2 HISTORICAL BACKGROUND

This chapter begins by outlining the settlement history of the Okanagan including an analysis of the demographic changes over time, and an overview of the development of transportation infrastructure. The next section focuses on agricultural development of the valley and the construction of irrigation infrastructure. Following this, I provide a history of the Chinese and Japanese in British Columbia and the Okanagan. It is important to treat each ethnic group separately because their motivations for coming, laws pertaining to immigration and property ownership, and types of occupations they engage in often differ. A brief history of Japanese and Chinese participation in the agricultural industry in the Okanagan is followed by the final section, which describes the status of market gardens both locally and globally.

2.1 Settlement History of the Okanagan

The Okanagan Valley has had continuous human occupation for more than 11,000 years (Rousseau 1993). The southern and central part of the Okanagan Valley is the homeland of the Syilx people; north of this is the territory of the Secwepemc. Since the retreat of the glaciers, the Indigenous populations of the valley have adapted continuously to changing environmental conditions. They subsisted on a variety of resources including fishing, hunting, and gathering (Kennedy and Bouchard 1998; Louis 2008). Industrial agriculture was not part of their traditional subsistence but some horticulture and cattle rearing were undertaken shortly after contact with Europeans (Louis 2008).

The first documented occurrence of white men in the area occurred in 1811 with the arrival of some American fur traders. This led to the establishment of the Hudson's Bay Brigade Trail in 1826, an overland trail that allowed the passage of furs and supplies between

more northern areas of central British Columbia and Fort Vancouver, located at the mouth of the Columbia River (Ormsby 1949; Webber 1999). The Brigade Trail is important to the story of the Chinese and Japanese market gardeners in the valley because it marks the beginning of European transportation infrastructure development. This trail, and many others like it, was abandoned by the 1870s as more advanced transportation infrastructure was developed (Harris 1983).

While many settler accounts describe the difficulties faced in establishing farms and constructing homes in the Okanagan, perhaps even more challenging was the issue of accessing the region in the first place. William's 1882 British Columbia Directory describes the possible routes by which early settlers accessed the Okanagan:

These Valleys are reached by different routes, first by trail striking eastward from Fort Hope, on the Fraser River, twelve miles below Yale. This will be found a pleasant journey during the summer and early autumnal months. Settlements may be reached from Hope to Princeton on the Similkameen River, 66 miles; thence 40 miles to Keremeos; thence 24 miles to Penticton, at the lower end of the Great Okanagan Lake; thence 35 miles to Okanagan Mission. From Okanagan Mission to Spallumcheen the distance is 50 miles over a first class wagon road, and through partially settled country. The fore-mentioned route, leaving the Fraser at Fort Hope, is the shortest way to access the great valley of the Okanagan and its adjacent routes. (1882:304)

Oblate missionaries arrived in 1858 and over the next two years worked to establish a mission (Ormsby 1953). Some evidence exists of Jesuit missionaries operating a small mission further south for approximately three years in the 1840s (Ormsby 1949). The first pre-emption claims were filed beginning in 1860 for land at the mouth of what was then called River De L'Anse Au Sable, now Mission Creek, running through modern day Kelowna (Cox 1860 [Ormsby 1935b]; Buckland 1926a, 1926b). Organized attempts by the colonial government to populate the interior of British Columbia date back to at least 1849 with the establishment of the colonial government on Vancouver Island. However, these

efforts had limited success until the gold rush of 1858. Koroscil (2003) argues that the gold rush created the initial pull factor the government needed to attract settlers to the Interior. While the arrival of permanent European settlers began in the late 1850s and early 1860s, it was not until the 1880s and 1890s that significant changes to the landscape began to take effect. In the initial 30 or 40 years of settlement most Europeans practiced cattle ranching as their main agricultural activity and some participated in fruit ranching, the precursor to the orchard industry which was unirrigated or hand irrigated fruit farming on a very small scale. Beginning in the late 1880s, construction of irrigation infrastructure began all over the valley, leading to major changes to the landscape (Koroscil 2003).

Settlement in the Okanagan was not an easy undertaking. Ormsby (1930:19) argues that “there must be something admirable in the character of a man who could take up a piece of waste land and continue to live on it for so many years, and by industry and intelligently directed effort, convert it into valuable property.” She further notes that “it is men like these who are of real worth in a community” (Ormsby 1930:19–20). Similar sentiments were expressed by an early settler recalling his boyhood days in the Okanagan at the turn of the last century. He noted that “the Okanagan was not, at that time at least, a four season playground. It was, to the early settlers a four season battleground. The battle was against heat and cold, drou [sic] and the bush” (Conroy 1973:33).

Population figures in rural and remote areas in early British Columbia can be very difficult to determine. The 1874 federal voters list is the earliest known list of its kind that included the Okanagan. It recorded eleven eligible voters in the Okanagan (Agnew 1927). The first Census of Canada that included British Columbia was not conducted until 1881. While the information contained in this document is useful it is also difficult to establish the

precise geographic location of individuals. Censuses for 1881 through 1951 were examined at the most detailed data level available. For the census years 1881 through 1921 nominal level data were reviewed, which list individuals by name; for the census years 1931, 1941, and 1951 summary data tables were reviewed because nominal level data is not yet available. Table 2.1 provides a summary of the population data at census district level. For the 1931–51 censuses the terms “District” and “Division” were used interchangeably within census documents; no explanation or clarification was given. *Appendix A* provides a detailed population chart.

Table 2.1: Population figures at the district level in the Census of Canada - 1891–1951.

	District Name	Total Pop (District)	Chinese (District)	Japanese (District)
1881	Yale	9,200	1,156	not reported
1891	Yale	13,661	1,377	not reported
1901	Yale & Cariboo	61,889	3,744	282
1911	Yale & Cariboo	56,382	2,287	314
1921	Yale	35,698	1,074	588
1931	Division (District) 3	40,523	1,032	553
1941	Division (District) 3	61,605	692	778
1951	Division (District) 3	77,686	443	2,188

Provincial directories are another source for early population information. Table 2.2 reports numbers of individuals listed in four early directories that include the Okanagan. Also summarized are occupations recorded in those directories. Some individuals had more than one occupation. For example, a single individual may be recorded as both a farmer and a mill owner. It is helpful to think of each individual as a household, rather than a single person, as these documents typically only list the male head of house. Each of the white men listed likely had a wife, children, and possibly household staff that were not included in the directory. In the decade following the publication of the 1877 directory, the population in the region quintupled. While the percentage of those involved in agriculture remained high,

between 50 and 85 percent, by the midpoint of the decade the different types of occupations increased dramatically. Occupations were not listed for 1877 but for 1882 most individuals were engaged in agriculture or else described as labourers, possibly in agriculture, as well as carpenters or miners. By 1884 there were traders, engineers, clerks, gentlemen, and a teacher, showing a rise in occupations associated with a larger, more settled population. By 1887 the number of occupations had grown to include barkeepers, hotel keepers, surveyors, a sailmaker, a sawyer, a barber, and a cabinet maker. It is not explained in the guides why “Chinese” was noted in place of occupation in some cases.

Table 2.2: Summarizing occupations as reported in early provincial directories for the Okanagan and Spallumcheen areas (Hibben 1877; Williams 1882, 1885; Mallandaine 1887).

	1877-8	1882		1884-85		1887	
		Ok	Spall.	Ok	Spall.	Ok.	Spall.
Individuals Listed	49	75	48	88	118	77	163
Farmer/Herder/Stock Raiser		51	42	53	72	52	85
Labourer		13	3	18	27	12	32
Carpenters		3	2	3	8	3	6
Miner		2	-	5	-	3	2
Mill Owner		6	-	6	1	6	1
Trader/Store Keeper		2	-	4	2	2	7
Blacksmith		2	1	2	1	2	5
Teacher		-	-	1	-	1	1
Postmaster		2	1	2	1	3	1
Engineer		-	-	1	-	1	1
Clerk		-	-	1	-	-	-
Hewer		-	-	1	-	1	-
Gentleman		-	-	-	2	-	1
Painter and Paper Hanger		-	-	-	1	-	-
Sailmaker		-	-	-	-	-	1
Barkeeper		-	-	-	-	-	2
Hotel Keeper		1	-	1	-	3	2
Horse Breaker		-	-	-	-	-	1
Cabinet Maker		-	-	-	-	-	1
Surveyor		-	-	-	-	-	4
Mill Sawyer		-	-	-	-	-	1
Barber		-	-	-	-	-	1
Chinese		-	-	-	3	-	5

Figure 2.1 is a line graph comparing Chinese and Japanese population change over the course of eight censuses for the census district that includes the Okanagan Valley. Figure 2.2 also shows Chinese and Japanese population change but for provincial level data only. Figure 2.1 must be interpreted with caution because the district boundaries changed over time. However, a general trend of Chinese population decline starting in 1901 and the Japanese population steadily increasing overtime can be seen. In comparing Figures 2.1 and 2.2, the local trend differs visibly from the provincial trend. The Japanese population in the Okanagan rose steadily and experienced a dramatic increase between 1941 and 1951 as many Japanese relocated to the area during and after World War II. Provincially, the Japanese population declined considerably in that same period as many Japanese returned to Japan, either by choice or force. The Chinese population increased slightly between the 1941 and 1951 censuses as immigration resumed in 1948 after the lifting of the total ban on Chinese immigration that had been in place since 1923.

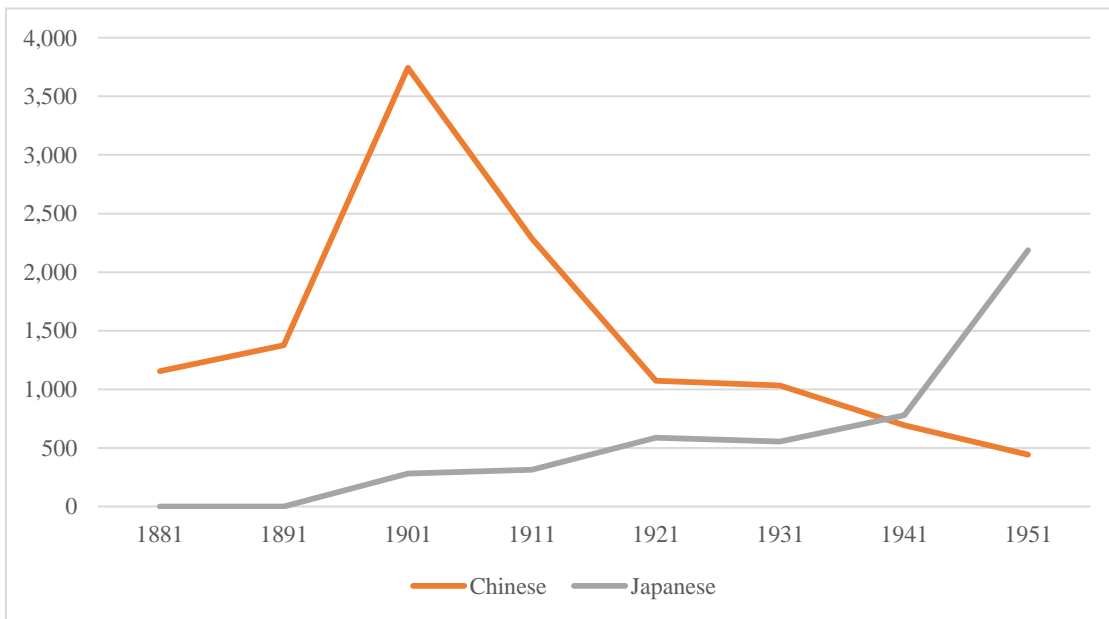


Figure 2.1: Comparing Chinese and Japanese population change for Yale (1881, 1891, 1921) Yale & Cariboo (1901, 1911), and Division 3 (1931–51).

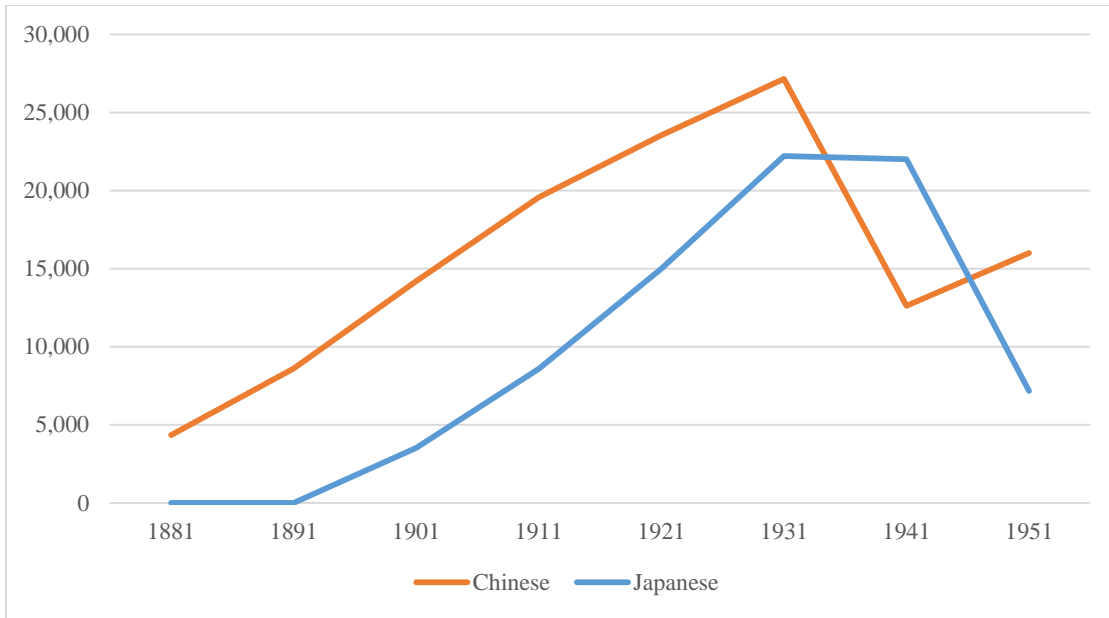


Figure 2.2: Comparing Chinese and Japanese population change for British Columbia, 1881–1951.

Figure 2.3 depicts the breakdown of the population in five or ten year age groups, a method of dissemination used in some early censuses that attempts to group populations into functional units by generation. Unlike the Chinese population, Japanese age groups are moderately steady for the three censuses included in this figure, indicating that the population was spread over a wide range of ages except for a noticeable increase in the 1931 census for males between 25 and 54. For the Chinese population, it is significant to note that the census data supports the popular understanding that most were adult males. Furthermore, the largest proportion of Chinese persons aged one whole group between census years. In 1931, a full eight years after the Chinese Immigration Act (Canada 1923) effectively ended immigration, 28.4 percent of Chinese were in the 25–34 age group. A decade later, eighteen years into the exclusion period, 39.5 percent of Chinese were in the 45–54 age group. This trend continued in 1951, with 21 percent of Chinese now falling into the 55–64 age group. This demonstrates that the Chinese population was aging and no new immigrants, particularly young men, were coming over from China to take the place of aging labourers.

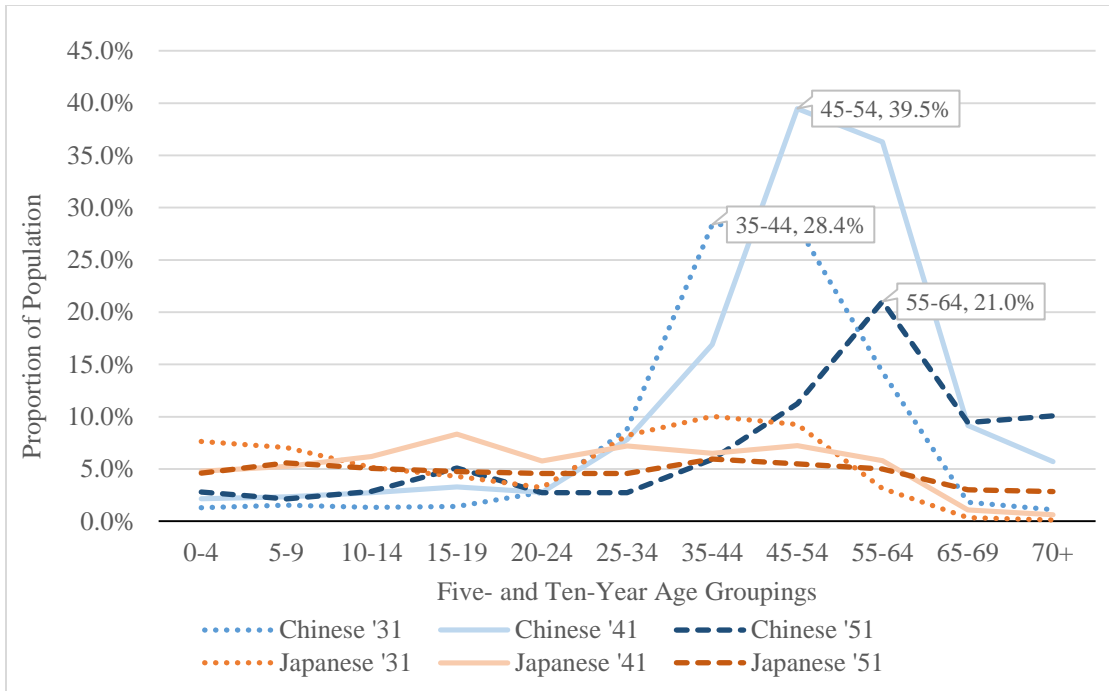


Figure 2.3: Five- and ten-year age groupings for Chinese and Japanese at the provincial level for census years 1931–51.

The trends identified in Figure 2.3 can be further visualized in simplified age-sex population pyramids presented in Figure 2.4. These pyramids show trends only; the data are not normalized and therefore not directly comparable. The disproportion between males and females in the Chinese population is in stark contrast to both the Japanese and Provincial totals. In addition, in 1941 there are effectively no Chinese females in the 20-24 age group. This census occurred eighteen years into the exclusion period; therefore, any females included were either resident in British Columbia prior to the act being enforced or were born after it. All three Chinese pyramids are indicative of a diminishing population. For both the Japanese and Provincial totals it is more difficult to interpret the shape of the pyramid as these would be affected by ongoing immigration. The Japanese population pyramid for 1951 is indicative of a stable population but it still top-heavy. The Baby Boom in the post-World War II era is visible in the 1951 population pyramid for Provincial totals.

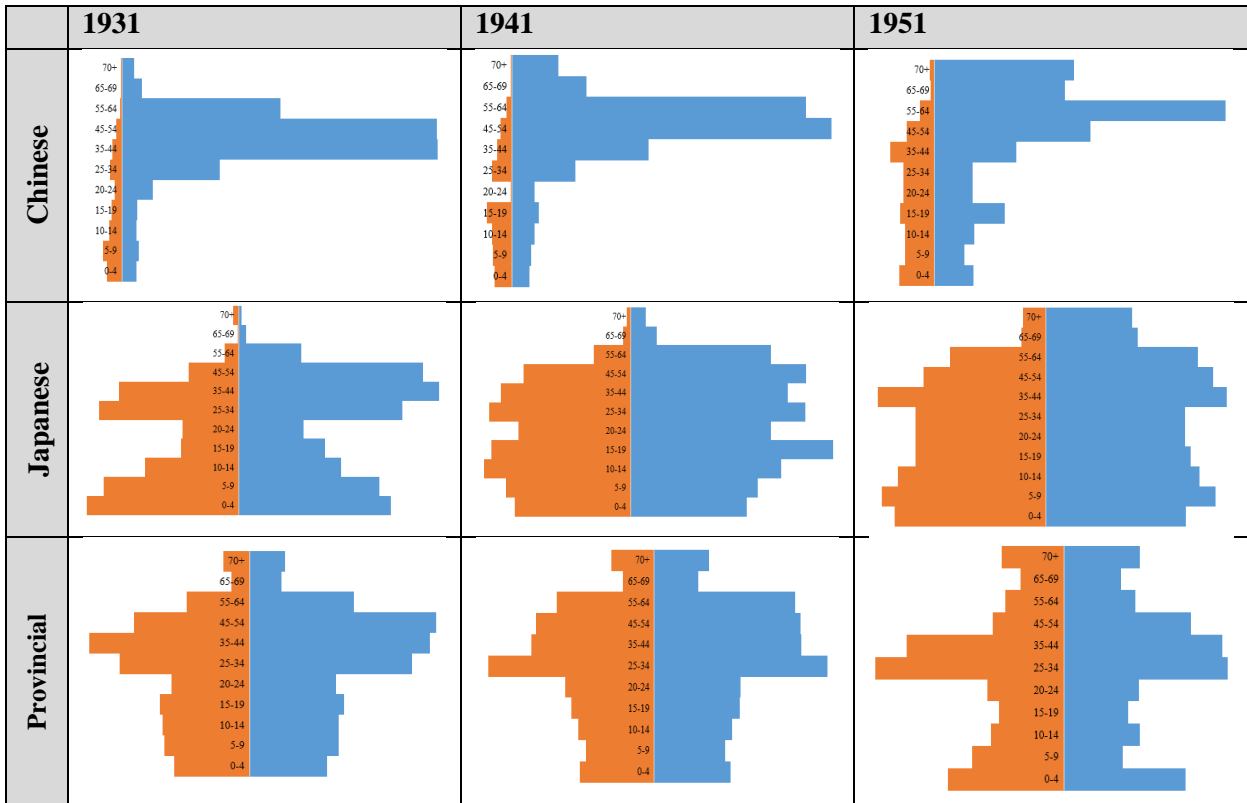


Figure 2.4: Age-sex population pyramids for Chinese, Japanese, and provincial totals for 1931, 1941, and 1951. Females appear on the left-hand side of the midline; males appear on the right-hand side of the midline.

Over time, a growing and diversifying population leads to the development of increasingly complex transportation infrastructure. Harris observes that while many simple, non-mechanized forms of transportation were sufficient at the local scale, such as canoe brigades or ox teams, “such transportation was insufficient when an advanced industrial technology began to penetrate the Cordillera in the last third of the nineteenth century” (1983:3). It was a technological and political challenge to build modern transportation infrastructure, such as railways and steamboats, which could meet the demands of the new settlers and allow development of the interior regions to continue. Notwithstanding significant achievements in some parts of the province, it took many decades for this type of infrastructure to reach the Okanagan. Harris (1983) contends that this was because the

greatest efforts were focused on regions that were important to the continuing gold exploration and other industries along the Fraser and Thompson Rivers.

For a few decades, the main road access to the Okanagan was a wagon road that ran from Kamloops following the old Hudson's Bay Brigade Trail to the O'Keefe Ranch, located at the north end of Okanagan Lake, continuing south through present-day Vernon all the way to the Mission, which is located towards the southern end of modern Kelowna (Cowan 2001; Harris 1983). Later, another wagon road was constructed along the west side of Mara Lake, at the far northern reaches of the Okanagan Valley, which connected the Okanagan to the newly completed Canadian Pacific Railway line at Sicamous.

All shipments to the Okanagan took a complicated multi-modal route of boats and wagons from the Coast. Depending on the size and weight of the item, the exact route varied (Cowan 2001). For example, Brent (1935, 1953) recalled assisting his father in transporting the first millstone to the valley in 1871. By the time the millstone reached the head of the lake it had already travelled by water from San Francisco to Fort Yale on the Fraser River; by freight team over rough wagon roads to Savona's Ferry; by water again to Enderby; then by homemade wagon along a route with no existing wagon road. The millstone was then rowed down the lake in a boat before making the final leg of its journey by wagon.

The importance of establishing a railroad connection was recognized soon after settlement began but it took many years for this to materialize. The *Vernon News* referred to the development of a railroad connecting the Okanagan and Kootenay regions as being a "valuable franchise," noting that the "importance of this project...can be easily appreciated [as] it will furnish Nelson and surrounding towns with all kinds of market produce at cheap rates and add a new, near and valuable market for the Spallumcheen and Okanagan districts"

(*Vernon News*, September 3, 1891). After a few failed attempts at securing funding and political support, it was not until 1890 that construction began on the first stretch of railroad into the Okanagan, which was completed in 1891 (Morkill 1929; Cowan 2001). This railroad arrived just in time to support the rapidly expanding fruit growing industry in the valley (Pooley 2012). To speed up construction, the contractor requested permission to “[place] the line anywhere that was appropriate” and the government permitted this and withheld granting land title to new homesteaders until the railway was constructed (Cowan 2001:97).

Construction of the railroad was a major undertaking that also resulted in the establishment of a new town site, Armstrong (Cowan 2001). To connect the railroad to the developing area that is present-day Kelowna, a sternwheeler called *Aberdeen* was launched in 1893 by the Canadian Pacific Railway (Pooley 2012). Prior to this, a number of steamboats had plied the lake, starting with the *Mary Victoria Greenhow* in 1878 (Weeks 1935). However, it was the completion of the railroad connection at Okanagan Centre that led to the establishment of regular steamboat service (Webber 1999). The establishment of the rail connection to the Okanagan profoundly contributed to the emergence of the landscape we see today (Barman 1996).

In 1919, the Okanagan entered what Ian Pooley (2012) calls the second phase of transportation development. At this time the Canadian National Railway (CNR) commenced construction of a branch line all the way to Kelowna, which was completed in 1925. This line competed directly with the Canadian Pacific Railway’s (CPR) existing rail and sternwheeler route. The CNR line, with reduced service in the later decades, ran until 2013 and only recently the tracks were removed (Seymour, *Kelowna Daily Courier*, November 15, 2015; Moore, *Castanet*, November 13, 2015).

Until the 1920s, roads at the local level existed mainly as an extension of the larger inter-regional systems of rail and steamboat (Harris 1983). Horse and buggy, or horse and sleigh in the winter months, were the most common means of transportation for longer distances for residents of both rural and urban areas (Collett 1967). Taylor sums up the changes to transportation infrastructure in the Kelowna area, stating that “our magnificent Percheron horses, the pride of the teamsters who looked after them, have given way to the ugly but useful tractors, and trucks now haul the fruit to Kelowna” (1964:106).

Prior to 1905, all road construction was undertaken by the Department of Public Works. However, with the increasing rate of land development in the early twentieth century conducted by private land companies, an increasing amount of road construction began to be done by private enterprises (Watt 1963). The role of transportation development as a mechanism for bringing in agricultural labour cannot be overlooked. Many Chinese and Japanese sought work in the agricultural industry after passing through the area doing road or rail construction work. Denbei Kobayashi, who later became one of the largest landowners in Lake Country, first arrived as part of a CPR work gang in 1907. He met Japanese working in the orcharding industry and learned that safer conditions and comparable wages were available. He quit work with the CPR and joined the Japanese crew at Coldstream Ranch, soon after followed by his brother and others who he helped recruit and sponsor (Hoshizaki 1995; Ouchi 1982).



Figure 2.5: This image of a highway work crew highlights the difficult terrain in the Okanagan. (Photographer unknown. “(Relief Projects – No. 130). Widening the Kelowna-Vernon Highway.” Image No. PA-037242. Photo courtesy of the Canada Department of National Defence / Library and Archives Canada. Copyright expired.)

As the transportation infrastructure developed, reliable transportation of people and goods was still subject to weather conditions. Pearson recalled how impassible the roads could become. “When the snow melted and the frost came out of the ground, the roads were quagmires. The mud would suck your footwear off. The buggy ruts were eighteen inches deep” (2001[1984]:31).

Jean Barman (2010) frequently emphasises the central role geography has played in influencing the trajectory of settlement and growth in British Columbia. For much of its length, the Okanagan Valley is relatively steep-sided and narrow, between 3 and 5 kilometers in width except for the area around Kelowna where it reaches a maximum of approximately 16 kilometers across (Kerr et al. 1985). The steep valley walls and narrow valley bottom have led to a concentration of settlement in the valley bottoms. Transportation corridors also vie for space on the relatively narrow valley bottom, first trails, then wagon roads, railroads,

and now highways. In addition to placing strict limits on where settlement could occur, the complicated geography of the area hampered efforts to connect the valley's growing population with major centres and transportation corridors. Cole Harris (1983:3) notes that since the first explorers arrived, "British Columbia has embodied a problem of movement that externally has been a function of distance, and internally of rugged terrain."

2.2 Agricultural Development in the Okanagan

The organized collection of plants for food consumption, medicinal, and spiritual purposes has long been part of the traditional lifestyle of the Syilx people. Beginning at least as early as the 1840s, Syilx people were also practicing some forms of European-style agriculture. In a journal kept by fur trader John Todd, he describes seeing Chief N'Kwala growing potatoes in the Kamloops area as well as observing the operation of a simple plow in the North Okanagan (Louis 2008). The potential for agricultural development in the Okanagan Valley was noted by colonial authorities as early as 1860. Barman (2010) reports that Colonial Governor Sir James Douglas, in a letter to the Duke of Newcastle, expounded the possibilities for agriculture in the area, specifically emphasising the grasslands as good pasture but also noting the possibilities for cultivation.

Hibben's 1877 *Guide to British Columbia* describes the region as "very fine stock country, and will also produce grain" (1877:64). Other crops being produced in the region by that time are reported as "oats, barley, Indian corn, potatoes, tomatoes, musk-melons, water-melons, grapevine, tobacco" (1877:65). By 1882, a variety of fruit and grain was being in grown in the Spallumcheen area. The gardens at the Roman Catholic Mission in what is now Kelowna are cited as evidence that "this Valley can produce anything that can be grown in temperate climes" (Williams 1882:305). However, the same guide later notes that irrigation

was necessary and that due to the size of cattle herds the natural grazing land was enough to support the livestock without supplemental feeding certain times of year, implying supplemental feedings were needed at other times.

Cattle ranching and stock farming were the first industrial scale agriculture practices in the valley (Swalwell 1939; Ormsby 1930; Thomson 1985). Thoroughbred stock are reported to be in the Salmon River Valley in the northern part of the Okanagan by 1882. This stock may be among the first thoroughbreds in British Columbia (Ormsby 1930). The success of the cattle industry in attracting more settlers to the area also contributed to its demise. As reported in the 1884–85 British Columbia Directory, “the cattle business is as flourishing as ever. At the same time the ranges are becoming more and more confined, as the web of settlement encloses them around” (Williams 1885:207). The 1891 Census shows a variety of livestock in the area within a few decades of European settlement.

Table 2.3: Select agriculture statistics from the Third Census of Canada (1891).

	Human Pop.	Horses	Oxen	Milk Cows	Cattle	Sheep	Swine	Chickens
Okanagan Mission	348	1029	2	128	5275	261	1396	2109
Spallumcheen	1342	1049	16	288	1642	669	2122	5485

Wilson (1989) claims irrigation to be the major contributor in the shift from cattle ranching to other forms of agriculture, mainly fruit growing. As one early resident recalls, “irrigation was the miracle which made the arid valley blossom, causing life to spring where drought had been” (Harris 1981:40). Initially, all irrigation in the valley was carried out by open ditch and flume irrigation, a method which experiences a significant amount of water waste due to evaporation and leakage. Of the many difficulties faced with ditch and flume irrigation, flat land was one that was perhaps among the greatest to overcome. Taylor

(1964:106) referred to irrigation by ditches as an “endless business” on flat land. In the first few decades of irrigation development in the valley, significant energy was directed at developing new technologies that were more efficient. This process resulted in lasting changes to the landscape, principally the proliferation of orchards and vineyards (Wilson 1989, 1994).

It was not until the 1890s that the agricultural industry was sufficiently developed to have enough surplus to ship to other parts of the province. Some reports state that it was in 1897 that the first train load of Okanagan produce, potatoes grown in the Fintry area, was shipped to the Kootenays to fulfill the needs of the mining towns. At the time the shipment was prepared the Canadian Pacific Railway had not yet determined freight rates out of the Okanagan area (Gellatly 1952). Other reports place the date earlier in 1893, and note the inclusion of other vegetable products in the shipment (Dendy and Kyle 1990; Buckland 1951).

The land and climate in the north of the Okanagan was better suited for mixed farming activities that included wheat, cattle, and vegetables, rather than orcharding. Heal (1952) contends that the farmers were strictly market driven in their choice of crops and in particular were responsive to the needs of mining towns in the Kootenay and Boundary regions and later as far as the Northwest Territories. He notes that mixed farming became popular because it allowed the farmer to be flexible in meeting the needs of the miners. Business grew rapidly during this time. For example, one farmer’s shipments increased from five carloads of product in 1899 to two hundred carloads four years later. This rapid increase in production in the Spallumcheen area contributed to the influx of Chinese labour during the early part of the twentieth century (Heal 1952).

In the first decade of the twentieth century, there was a proliferation of orchard development. During this same period, there was a steep increase in land prices over the course of a decade, from one dollar per acre in 1898 to \$1,000 an acre in 1908¹ (Ormsby 1939). Apples were a major crop produced by the orcharding industry but they were not the only crop. Pears were another important product and the largest producer of these for the first half of the twentieth century was the Bankhead Orchard in what is now Kelowna. Claude Taylor (1964) notes the constant financial uncertainty that the Bankhead Orchard faced, again pointing to mixed farming as a solution in difficult years. He states that in addition to fruit trees they also had dairy cattle, pigs, and ponies, sold ice from their pond, and grew crops like tomatoes, potatoes, and corn. Table 2.4 provides some figures for agriculture products for the Okanagan Mission and Spallumcheen sub-districts as reported in the 1891 Census of Canada.

Table 2.4: Select agricultural statistics for field crops from the Third Census of Canada (1891).

	Human Pop.	Peas (Bushels)	Beans (Bushels)	Corn (Bushels)	Potatoes (Acres)	Potatoes (Bushels)	Turnips (Acres)	Turnips (Bushels)
Okanagan Mission	348	3	112	346	39	7922	13	6,149
Spallumcheen	1,342	858	66	79	145	18,305	46	10,645

Figures at the sub-district level are not available for market garden production, but at the district level Yale is reported to have had 32 acres of vegetable producing market gardens and 10 acres of small fruit producing market gardens. 12,503 bushels of orchard fruit were also produced at that time, including apples, peaches, pears, plums, and cherries (Department of Agriculture, Census Branch 1891).

¹ \$1.00 in 1898 is equivalent to \$28 in 2015; \$1,000 in 1908 is equivalent to \$22882.26 in 2015 (Edvinsson 2015).

The Interior Vegetable Marketing Agency Co-Operative (also known as the Interior Vegetable Marketing Board, here after IVMB) was formed in 1935. It has a complicated jurisdictional history as it was formed in response to the British Columbia Natural Products Marketing Act of 1934 as well as the federal Natural Products Marketing Act of 1934 (British Columbia 1934; Canada 1934; Roy 2003). The federal act was deemed *ultra vires* by the Supreme Court of Canada in 1936 and the provincial Natural Products Marketing Act of 1931 that had previously been repealed by the federal government was reinstated (Ormsby 1939). This organization continues today under the name Okanagan Grown Produce Ltd. Their website reports that the original intention of the organization was to “act as brokers in the buying and selling of vegetables...and to carry on the business of importer, exporter, buyer, seller, handler and trader of fruits, vegetables, farm, and garden produce” (Okanagan Grown 2016).

In 1936, following the repeal of the federal act, the provincial act was significantly amended to include specifications on what constituted marketing, specifically the addition of definitions relating to transportation of goods. The act defined a vehicle as “any motor-vehicle, wagon, railway-car, ship, boat, or other thing in which any natural product can be transported” (British Columbia 1936:139). The amendments also included a clause “to require any or all persons engaged in the production, processing, or marketing of the regulated product to register with and obtain licences from the board” (British Columbia 1936:140). Both these amendments appear to be in response to actions by Chinese market gardeners in the Lower Mainland who attempted to circumvent the regulations in many different ways (Roy 2003:136–144). This legislation resulted in tensions in the market gardening industry in the Lower Mainland and had repercussions locally in the Okanagan.

Throughout this period of development in the Okanagan there were fluctuating economic conditions in all aspects of the agricultural industry, not just market gardening. Despite continual efforts by both government entities and the farmers themselves to control the market, there were times when the price product could be sold for was less than the cost to grow it in the first place. This contributed to the desire among orchardists for greater cooperation in the industry of which various attempts occurred throughout the 1920s and 1930s (Ormsby 1939).

2.3 Chinese in the Okanagan and British Columbia

For the eastern visitor, entering for the first time the fertile Fraser River or Okanagan Valleys of British Columbia, one of the most significant landmarks is the rural mail-box, or rather, the name on the mail-box. To one accustomed to the stenciled McDonalds, Smiths, Fauberts, Virilenkos, and Larsens along the rural routes of the East and Prairie West, the Jungs, Yuens and Quongs ... strike gong-like on the consciousness. For here in British Columbia lies China in Canada. Here, ironically enough, the Chinese have found the "Land of Gold" many of them sought so fervently on their first coming to this country. (Mason and Scully 1939:No Pagination)

The first documented presence of Chinese in British Columbia dates to 1788 with the arrival of a British explorer, Captain John Meares, on the west coast of Vancouver Island. Along with Meares came fifty Chinese to work as carpenters and labourers (Chan 1983). However, the first major influx of Chinese did not occur until eighty years later with the Fraser River Gold Rush of 1858. This gold rush followed the demise of the California gold rush of 1849, which resulted in many miners of all ethnicities making their way to the newly discovered gold fields of British Columbia.

For both the Chinese and Japanese the pattern of immigration to the Okanagan reflects wider patterns of immigration to British Columbia; however, for each the timing is slightly later than on the coast. Similar to the coast, immigration of Chinese predates that of

Japanese. David Chuenyan Lai (1973) identifies five periods of Chinese immigration to British Columbia. In chronological order these are: gold rush, railway, restricted entry, exclusion, and selective entry. Each of these periods has distinct economic, social, and political factors that influenced not only settlement patterns but the treatment of the Chinese by the white population as well. The Chinese began arriving in the Okanagan as the 1858 gold rush was coming to an end in other parts of the province. A later wave followed as their involvement in railroad construction declined; however, many continued to work on road crews as well as on construction of the Kettle Valley Railway in the south part of the Okanagan in 1914–15 (Lai 1973; Harris 1983).

The first major influx of Chinese to British Columbia occurred during the gold rush period of the late 1850s. Many came seeking opportunities to make money to support families back home in China. For some, these opportunities came in the form of placer mining, for others they found the service and supply industry to be more profitable. Many Chinese started businesses that supplied both Chinese and white miners. Growing vegetables quickly became a speciality of the Chinese. Other businesses that became synonymous with the Chinese included laundries and restaurants, as well as domestic service (Roy 1989; Chan 1983; Ward 2002). Most of the men among this first influx were sojourners on a temporary mission to earn money to send home; however, many did establish businesses, careers, and eventually settle in British Columbia.

The next major influx of Chinese to the Interior of British Columbia occurred as a result of Canada's desire for a sea-to-sea railroad. Despite strong anti-Asian sentiment in British Columbia and a concerted effort among politicians and merchants to end immigration, it was quickly acknowledged that cheap Chinese labour was necessary to

complete the railroad. Prime Minister John A MacDonald stated that “it is simply a question of alternatives: either you must have this labour or you cannot have the railway” (Canada, *House of Commons Debates*, May 12 1882:1477; see also Chan 1983).

The 1891 Census of Canada reports that in the Yale Census District, out of 4,841 listed as foreign-born, 1,377 were Chinese-born individuals (Department of Agriculture, Census Branch 1891). By 1901, this number had grown to 3,744 Chinese-born (Census Office 1901). However, the boundaries changed slightly between each census year; while an upward trend is certain, the exact increase is unknown. Although the Chinese population increased between the 1891 and 1901 censuses, the proportion of the foreign-born population that they accounted for decreased: in 1891 Chinese in Yale District represented close to 30 percent of all foreign-born persons in the area, but in the 1901 census this number had dropped to around 20 percent of the foreign-born persons in the renamed Yale-Cariboo Census District (Department of Agriculture, Census Branch 1891; Census Office 1901).

Very early in the history of the Okanagan, Chinese market gardeners were building a strong reputation. An early newspaper correspondent to the area, Michael Hagan, noted in one of his transmissions to *British Daily Colonist* (later the *Victoria Times Colonist*) in 1888 that every year since 1861 about twenty men of Chinese descent have been working placer diggings between Head of the Lake and Cherry Creek, east of Lumby. He noted that “it is believed John is doing well as he plods away and cultivates the little garden patches along the banks” (Hagan, *British Daily Colonist*, September 26, 1888:1). Other than this newspaper reference, the first documented Chinese in the Okanagan were in the Mission Creek area in the 1870s. The report of the Gold Commissioner advises that a number of Chinese were in the area of Mission Creek and Cherry Creek and that in addition to placer mining they all had

neat and tidy gardens (Vernon 1876). It is likely that any excess over what they could personally consume was either traded or sold. While there is little documentary evidence available that definitively places Chinese in the Okanagan from the 1860s through the 1880s it is likely that at least some remained during that time. The 1871 Mallandaine Directory for British Columbia lists twenty-nine Chinese by name and occupation living throughout British Columbia outside of Victoria, although none are noted as being in the Okanagan area (Obee 2005). The British Columbia Directory for 1877–78 observed in the Kootenai region that “every Chinaman has a vegetable patch. What is produced finds ready sale in the mining camps” (Hibben 1878:64). The *Royal Commission on Chinese Immigration* of 1885 reports twenty-five Chinese living in the Okanagan, including one merchant and twenty-four miners (Chapleau and Gray 1885).

Early Kelowna settler Ettie Adam noted in her history of Kelowna’s Chinese that “[they] can lay claim to being among our earliest settlers.” She goes on to note that they “were here before the turn of the [last] century, therefore before there was any Kelowna” (1967:45). Another early Okanagan historian, Frank Buckland, notes that by the opening of the first post office in the Okanagan Mission area, in 1872, “the Chinese had penetrated the country.” Buckland further specifies that the Chinese had established a permanent presence in the area by the 1860s (1926b:83). Further north in Armstrong, a large Chinese agricultural community developed in earnest in the early part of the twentieth century following the experimental planting of celery in 1903. Some accounts indicate that the first Chinese farmers arrived in Armstrong around 1906, and by 1914 it is estimated that there were over four hundred in the tiny community (Heal 1952).

By the 1890s there was a small but growing community of Chinese in multiple locations in the valley. In the Spallumcheen area, archival records show at least some market gardening on leased land as early as 1898. Located somewhere between Cherry Creek and the Okanagan Mission, the only store in operation was owed by a Chinese man (Hagan, *British Daily Colonist*, September 26, 1888). This is likely the same merchant reported in the 1885 *Royal Commission on Chinese Immigration* (Chapleau and Gray 1885). In the late 1890s, the first restaurant in Kelowna was opened on Bernard Avenue in Kelowna by Sam Joey, a Chinese man, and around that same time there were Chinese cooks in the popular Lakeview Hotel (Adam 1967). In addition to stereotypical occupations such as cooking, operating laundries, railroad and road construction, and agricultural labour, the *Royal Commission on Chinese Immigration* in 1885 lists a variety of occupations such as merchants, miners, store employees, restaurateurs, doctors, barbers, wood-cutters, and sawmill workers. Chinese women were listed either as married ladies or prostitutes (Chapleau and Gray 1885).

A defining feature in the lives of the Chinese was the control imposed by federal and provincial legislation. From the 1880s through the 1940s Canada had numerous policies that “excluded and harassed Chinese immigrants” (Mar 2010:3). From 1886 through 1923 there was a head tax applied to all new Chinese immigrants entering Canada. The head tax was also charged to those returning to Canada from visits home to China who had failed to acquire a certificate of leave from the federal government which allowed the bearer to re-enter without paying a second head tax. Initially introduced at a rate of \$50 per person effective January 1, 1886, by 1901 the head tax was increased to the sum of \$500, an amount inconceivable for most Chinese to pay (Roy 1989). The Chinese were the only ethnic group

in Canada ever controlled by a head tax (Chan 1983). However, there were attempts to include the Japanese in the head tax in the 1890s but this never came to pass (Roy 1989). The Chinese Head Tax registry contains detailed information for 97,123 persons who paid the head tax between 1886 and 1923. In 2006, the federal government issued an apology to the descendants of those who paid the head tax (Hermansen and Yu 2014). Between 1872 and 1948 the provincial government of British Columbia passed 157 acts that have been deemed discriminatory against the Chinese. Beginning in 1895, many but not all of these same acts applied to the Japanese as well (British Columbia n.d.).

2.4 Japanese in the Okanagan and British Columbia

Barman reports that the earliest documented arrival of a Japanese person occurred in 1854, when three Japanese sailors were shipwrecked on a Hudson's Bay Company trading ship (Barman 2010). The first known Japanese immigrant was a nineteen year old boy named Manzo Nagano who came to Canada in 1877 (Ouchi 1982). No systematic records were kept until 1905. Accordingly, it is only through descriptions of industrial practices, personal correspondence, or newspaper accounts that we have any knowledge of the early period of immigration which likely began in the 1880s (Ward 2002).

In the early 1890s, the Japanese population remained very small. The 1891 Census of Canada does not include Japan as a place of origin in its summary tables. This indicates that the population was too small to be reported as a group. By 1901 the Japanese were reported along with the Chinese (Department of Agriculture, Census Branch 1891; Census Office 1901). Following the turn of the century the population rose relatively quickly. In the 1901 Census of Canada there were 4,514 Japanese in British Columbia based on place of birth. 20 years later this number had risen to 15,006. (Dominion Bureau of Statistics 1921).

What is most notable about the Japanese population in British Columbia compared to other immigrant groups of the same period is not the fact that their population grew but rather how it grew. Prior to World War I, the population increased through immigration. This began to change starting about 1908 with the arrival of numerous picture brides, so named because they were selected by their future husbands through the circulation of photographs (Adachi 1991). During the interwar years, the Japanese population of British Columbia grew rapidly as a result of a rate of natural increase that was as much as 10 times higher than the general population (Ward 2002). For example, of the 15,006 persons identified as being of Japanese origin in the 1921 Census of Canada, only 9,863 were Japanese-born, indicating that slightly more than one third of the Japanese population was Canadian-born (Dominion Bureau of Statistics 1921). This marked the birth of the Nissei generation, Canadian-born Japanese who continued the efforts of their parents to build businesses and lives in Canada and succeeded in integrating with the wider community (Ward 2002; Adachi 1991).

A treaty was signed in 1894 allowing unlimited immigration of Japanese to Canada which led to a massive influx (Hoshizaki 1995). While Japanese immigration to Canada began in earnest around 1895, their diffusion into the Okanagan did not commence until later. In his memoirs, Reuben Randall notes the presence of a Japanese work gang of about eight men at the Coldstream Ranch working the orchards upon his arrival in 1900 (Randall 1969). In 1909, two Japanese farmers reportedly began market gardening operations in the Kelowna area, growing tomatoes and onions on a sharecropping basis (Canadian Japanese Association 1940). By the 1910s, Japanese vegetable farmers were moving into the Mission area of Kelowna where many of them were growing vegetables and other crops on a sharecropper basis. So many families moved to the area that by 1922 a second classroom was

added to the Mission Creek School in order to accommodate all the additional children (Chamberlain 1984).

Unlike the Chinese whose home and country origins have been studied extensively (e.g. Lai 1975; Chan 1983), not as much is known about where the Japanese emigrated from. The only major systematic study that was conducted during the time when many early immigrants were still alive was a UBC Master of Arts thesis by Rigenda Sumida (1935). This exhaustive study of “the whole Japanese population of BC” (Sumida 1935:9), the results of which were reported on 675 typescript pages, was based on discussions held in all Japanese communities in British Columbia as well as detailed surveys asking questions about occupation, origin, and religion. Sumida (1935) reported that slightly less than half of first generation (i.e. Japanese-born) respondents came from only four prefectures in Japan: Wakayama (16.02 percent), Shiga (12.6 percent), Kagoshima (8.35 percent), and Hiroshima (8.01 percent). While this shows some concentration of home origins it is not as stark as among Chinese, the vast majority of whom came from only two provinces, Guangdong and Fujian (Chan 1983). Others have observed that many of the immigrants, especially those in the early period who traveled as sojourners, were coming from areas of Japan that were suffering from overpopulation and related economic problems (Hoshizaki 1995).

The main occupations of the immigrant Japanese community changed over time. In the early years, they took whatever jobs were available. During that time they were primarily engaged in the fishing industry and to a lesser extent in sawmills, “where they had begun to replace Chinese as unskilled labourers” (Ward 2002:110). By World War I, the pattern of employment among Japanese was shifting, partly in response to war-era labour shortages, which allowed the Japanese to gain employment that previously would have not been accessible to

them. Beginning around 1910 many Japanese also began to gain employment in agriculture, in many cases establishing their own farms. There were a number of reasons for this transition, including decreasing opportunities in fishing due to pressures from the white community and a desire to explore options for self-employment. Furthermore, unlike industries such as mining or forestry where wage discrimination was common, agricultural income was “governed by fortune, hard work, and the market place” (Ward 2002:112).

Initially the Japanese immigrant population settled on the coast and throughout the Lower Mainland and Fraser Valley. Settlement in small enclaves was the norm (Ward 2002). It was not until a number of forces came together in the middle of the first decade of the twentieth century that the Japanese began to penetrate the Interior of British Columbia. These forces include the growing population in the Fraser Valley and the changing labour market. Barman (2010) points to the invention of the ‘Iron Chink’, an automated canning and fish processing machine, in 1908 as a major factor in shifting occupations roles among both the Chinese and the Japanese.

It is stated in the introduction to *The Vision Fulfilled*, a monumental collection detailing the history of the Kelowna Japanese community, that the frequent mention of the Coldstream Ranch in so many submissions to the book “points to a common community thread which surely affects the destinies of many [Japanese] pioneers” (Hoshizaki 1995:9). Hoshizaki backs this statement up by noting that of the forty families who claimed arrival in the Okanagan prior to 1908, at least a dozen of them specifically mentioned employment at the Coldstream Ranch. Thus, it was agriculture, and in particular the Coldstream Ranch, that first brought many early Japanese to the Okanagan (Hoshizaki 1995; Ouchi 1982). A correspondent from the Okanagan Mission area reported in the *First Report of the*

Department of Agriculture that it was being “proposed to introduce Japanese labour for fruit picking” (Department of Agriculture 1891:743). However, this was only a proposal and no further mention of Japanese labour in the Okanagan is made until the *Sixth Annual Report of the Department of Agriculture*, for the year 1900. In that report the provincial government began to systematically ask about the use of Japanese labour in agriculture throughout British Columbia. This indicates that in a very short amount of time, less than half a decade, the number of Japanese involved in agriculture in British Columbia had increased to the point that the government desired to keep statistics. A correspondent from the Okanagan reported “not many yet” in response to the question about Japanese labour (Department of Agriculture 1901:16). As early as 1909 the Japanese also began market gardening in the Okanagan in addition to other types of agriculture (Canadian Japanese Association 1946).

2.5 Chinese and Japanese Participation in the Okanagan Agricultural Industry

By the 1890s, the agricultural focus of the Okanagan began to shift from cattle ranching to orcharding and other food growing enterprises (Koroscil 2003). The introduction of modern irrigation played a major role in the transition from ranching to orcharding (Wilson 1994). By 1900, the development of irrigation was in full swing, with fifteen to twenty irrigation companies in existence by about 1910 (Clark 1927). Responding to the increased labour requirements of this type of agriculture, many Chinese and later Japanese workers began to move in from outlying areas as mining claims were tapped out. While market gardening on a small scale existed from the beginning, many found work initially as agricultural labourers. By 1891, there were 116 persons of Chinese descent who were engaged in some form of agricultural work in the Yale District. This represented 16 percent of all persons engaged in the agricultural industry at the time, yet the Chinese population

only accounted for approximately 9 percent of the population in the area indicating that the Chinese were disproportionately engaged in agriculture (Department of Agriculture, Census Branch 1891).

The first three *Annual Reports of the Department of Agriculture for British Columbia*, issued between 1891 and 1894, document very few instances of Chinese involvement in agriculture in the Okanagan. One correspondent in the *Second Annual Report* noted “Chinese not employed, except when there is no possibility of getting along without them” (Department of Agriculture 1893:738). This changed rapidly and by the *Fourth Annual Report* for the year 1894, Chinese were a regular component of the agriculture labour force and wages were often close to that of Whites (Department of Agriculture 1895). Adam (1967) recollected seeing the lines of Chinese men walking to the fields from Kelowna’s Chinatown during her childhood at the turn of the last century. Labour bosses oversaw much of the hiring of Chinese agricultural labourers. Advertisements in local papers were a regular occurrence, particularly during the early months of the season. Labour bosses would often contract directly with local farmers and ranchers and then recruit the necessary numbers of men to fill their contracts (Mann 1982). The Greata Ranch was known to hire twenty to thirty Chinese men for thinning and picking during the peak of the orchard season (Ruffle 1975).



Figure 2.6: Advertisement for Chinese labour contractor that appeared in the “Professional and Business Cards” section. (*Kelowna Record*, June 11, 1914).

In British Columbia, the involvement of the Chinese in market gardening goes back to the earliest days of the mining industry in the 1850s (Roy 1989). Later, as work in other industries was becoming scarce, more Chinese began to turn to market gardening as an occupation (Roy 1989; Morton 1974). As the Japanese population grew, they too looked to market gardening as a viable alternative to previously held occupations such as fishing and canning (Ward 2002). From their small beginnings of growing a few vegetables to sell door to door, Chinese market gardeners grew to dominate the vegetable industry throughout the province. The 1922 *Annual Report of the Department of Agriculture* reports that the Chinese had close to 10,000 acres in market gardens in British Columbia (Department of Agriculture 1923). The Armstrong area became known as the celery capital of Canada (Critchley 1999). By the end of the World War I, Chinese market gardeners were growing 90 percent of the vegetables consumed by the Vancouver market and 55 percent of the potato crop provincially (Morton 1974). *Tentative Findings of the Survey of Race Relations: A Canadian-American Study of the Oriental on the Pacific Coast* notes that “in British Columbia the Chinese are the great market gardeners and supply the majority of the vegetables grown in the province” (Stanford University 1925:14). However, their success was not universally celebrated.

Concerns over the ability of white agriculturalists to compete with Chinese market gardeners were frequently raised in newspapers as well as documented in government reports, such as in the Department of Agricultural Annual Reports. This was especially evident during times of high unemployment.

Over the next several decades, the role that the Chinese and Japanese played in the agricultural industry in the Okanagan changed dramatically. While work as agricultural labourers was still common, many also operated market gardens, green houses, orchards, or mixed farming operations. In his memoirs, Michael Oswell noted that during his time as District Horticulturalist for the Ministry of Agriculture, 1950–66, the majority of the vegetable production in the Vernon area was undertaken by Japanese farmers and that in Armstrong this was still the domain of the Chinese (Oswell 1997). It is estimated that by the late 1930s, Chinese market gardeners in British Columbia controlled three quarters of the vegetable production and that around half the population was engaged in this industry (Mason and Scully 1939). For the Japanese community, vegetable farming was typically a family affair (Hoshizaki 1995).

2.6 Market Gardening in British Columbia and Abroad

For centuries around the world, market gardens have provided food to urban areas. In the United Kingdom during the early part of the twentieth century “a large proportion” of produce came from market gardens and the significance of these operations was recognized with the development of a Market Garden Research Station beginning in 1915 for the purpose of studying “problems of practical importance” (F.K. 1916:224–225). In Istanbul market gardens operated for over a millennia and market gardeners were treated with respect by the city’s residents. These gardens, called *bostans*, were still in operation until the early

2000s (Kaldjian 2004). In Cuba, *organopónicos* developed in response to the collapse of the Soviet Union and continued US trade embargos that prevented the importation of equipment necessary for industrial scale agriculture (Koont 2008). Access to local food systems has further been identified as a means to reducing some of the environmental and economic issues associated with food consumption and distribution (Allen 2010).

In some parts of the world, governments are actively encouraging a return to market gardening. In the United Kingdom the government has been supporting direct sales from producers with the expectation that the consumption of locally produced food will provide a boost to local economies as well as provide numerous environmental and social benefits (Chambers et al. 2007). The local food movement has been heralded as a successful grassroots movement (Norberg-Hodge 1999). There is also a growing movement bringing together social programs and market gardening in urban areas. For example, a program in Seattle introduces homeless youth and youth in the justice system to market gardening (Taylor, Young, and Miles 2010). Within British Columbia there has been some initiative taken towards improving access to locally grown vegetables. In 2013 a number of municipalities contributed to the development of a guide on best practices for urban agriculture. This guide, prepared by an international consulting firm, defines urban agriculture as “the growing cultivating, and distributing of food within a city or town boundary to generate revenue” (Lanarc 2013:1).

Historic market gardening has been a topic of interest in a number of different geographical contexts. A few studies have focused on Chinese and Japanese market gardeners; for example, Jack et al. (1984) reported on excavations of a Chinese market garden in the Palmer goldfield in North Queensland, Australia, while Chan (1984) examined

market gardening as one aspect of Chinese livelihood in California. Yagasaki (1982) investigated Japanese market gardeners, also in California. Examples of market garden use among other ethnic groups that have been studied include Italians in Portland (Gould 1976) and Powell River, British Columbia (Scardellato 1985); and Vietnamese in New Orleans (Airries and Clawson 1994). In her Ph.D. dissertation, Mysyk (1994) considered class and race relations among commercial market gardeners in Manitoba. McCorckle (1979, 1988, 1992, 1998, 1999) has written extensively on market gardening in the American South. From a landscape perspective, Piddock, Smith, and Pate (2009) looked at market gardening as one aspect of landscape formation in the Adelaide Hills in Australia. In a recent book on the history of gardening in Edmonton, Alberta, Merrett (2015) devoted an entire chapter the history of Chinese market gardening in that city. To date, no research examining the interconnectedness between Chinese and Japanese market gardeners in white settler societies has been identified.

CHAPTER 3 LITERATURE REVIEW

This chapter begins with an explanation of the theoretical positioning around which this research is constructed – landscape phenomenology. This branch of landscape theory emphasises people’s lived experiences, specifically how their actions and experiences shape the landscape and how in turn their experiences are shaped by the landscape. The theory section concludes with a brief statement on some key terminology: place, space, and dwelling. Following this, qualitative GIS will be explained focusing on major areas of development that have facilitated the incorporation of qualitative data and qualitative analysis into GIS. In the next section, I will discuss historical GIS emphasising the benefits and challenges of using historical GIS for landscape phenomenology research. I conclude by linking landscape phenomenology, qualitative GIS, and historical GIS. These three areas together comprise the conceptual framework for this research.

3.1 Theoretical Orientation

We have always known that human landscape is complicated, and we glory in that complexity, if only because it reflects the wonderful variety and complexity of human-kind itself. (Lewis 1982:21)

The theoretical structure of this interdisciplinary research, landscape phenomenology, draws primarily from the disciplines of landscape archaeology, geography, and anthropology. In their introduction to the authoritative *Handbook of Landscape Archaeology*, David and Thomas (2008:38) described landscape archaeology as being the study of how people “engaged with one another across space, how they chose to manipulate their surroundings or how they were subliminally affected to do things by way of their locational circumstances.” As the research discussed here is focused on times past, it is particularly important to

remember that landscapes are historically specific. Landscapes represent the way human inhabitants experienced their world in a specific time and place (Cosgrove 1985).

The literature on landscape theory is vast and varying in many ways. Landscape theory is the domain of no single discipline. Appleton (1975), a geographer by training, noted that while the landscape concept may appear to belong to geography because of its focus on the land, this is in fact only partly the case. Other subjects with a strong interest in landscape include art, literature, archaeology and anthropology, history, art history, literary theory, architecture, psychology, philosophy and more (Matless 2003; Muir 1999; Wylie 2007). Not only do all of these disciplines study landscapes from their own perspective, each has contributed in different ways to the development of many aspects of landscape theory, resulting in theoretical debates having a “distinctively interdisciplinary feel” (Wylie 2007:2).

Landscape as a concept is difficult to define because the manifestation of a landscape is so dependent on the particular context or setting, culture, and time. There are two primary definitions of landscape that underlie not only this research but indeed most landscape research in geography, anthropology, and archaeology. One of the most widely referenced definitions, in whole or in part, has been Carl Sauer’s 1925 explanation of cultural landscape.

The cultural landscape is fashioned from a natural landscape by a culture group. Culture is the agent, the natural area is the medium, the cultural landscape the result. Under the influence of a given culture, itself changing through time, the landscape undergoes development, passing through phases, and probably reaching ultimately the end of its cycle of development. With the introduction of a different – that is, an alien – culture, a rejuvenation of the cultural landscape sets in, or a new landscape is superimposed on remnants of an older one. The natural landscape is of course of fundamental importance, for it supplies the materials out of which the cultural landscape is formed. The shaping force; however, lies in the culture itself. (Sauer 1963:343)

Nearly seventy years later in his major work, *The Phenomenology of Landscape*, Tilley (1994) echoed Sauer’s words quite unmistakably.

The landscape is continually being encultured, bringing things into meaning as part of a symbolic process by which human consciousness makes the physical reality of the natural environment into an intelligible and socialized form. The landscape is redolent with past actions, it plays a major role in constituting a sense of history and the past, it is peopled by ancestral and spiritual entities, forms part and parcel of mythological systems, is used in defining social groups and their relationship to resources. Histories, discourses and ideologies are created and re-created through reference to the special affinity people have with an area of land, its topography, waters, rocks, locales, paths and boundaries. (Tilley 1994:67)

Although written from a markedly different theoretical perspective (Tilley's phenomenology to Sauer's morphology), a different discipline (Tilley's archaeology to Sauer's geography), and a different geographical context (Tilley's Britain to Sauer's America), the presence of so many common elements demonstrates the ongoing importance of particular aspects of landscape studies that have remained relatively unchanged despite all of the developments in the past century. In particular the dynamic, ever-changing nature of landscapes is central to both definitions. Landscapes change as societal needs change, as entire societies occupying a space change, or as the physical environment changes.

A further explanation of landscape that I have found helpful comes from Hirsch, an anthropologist, who explains that "there is the landscape we initially see and a second landscape that is produced through local practice and which we come to recognize and understand through fieldwork and through ethnographic description and interpretation" (1995:2). It is this second aspect of landscape that I endeavour to know through my research. However, to accomplish this it is also necessary to document and understand the components of Hirsch's first aspect landscape, that which we initially see. Similarly, Olwig, a geographer, argues that landscape needs to be "conceived as a nexus of community, justice, nature, and environmental equity, a contested territory" (1996:630–631).

Antrop (2005) notes that landscapes are always changing in response to the changing needs of the societies which inhabit them and that they undergo constant reorganization as

people adapt their surroundings to their current situation. Knapp and Ashmore, in speaking of landscape formation, advise that landscapes are constructed when groups of people interact with the world “as they see fit” (1999:10), resulting in their beliefs and understanding being represented in a physical way in the environment they interact with. Echoing this, Crumley and Marquardt called landscapes “the spatial manifestation of the relations between humans and their environment” (1990:73).

Anschuetz, Wilshusen, and Schieck (2001) identify four premises which they consider to be foundational to a landscape paradigm. In short: “Landscapes are not synonymous with natural environments”; “Landscapes are worlds of cultural product”; “Landscapes are the arena for all of a community’s activities”; and “Landscape are *dynamic constructions*, with each community and each generation imposing its own cognitive map on an anthropogenic world of interconnected morphology, arraignment, and coherent meaning” (2001:160-161; emphasis added). This approach emphasises the role of humans in creating, maintaining, infusing with meaning, and changing the landscapes they inhabit.

Initially, landscape phenomenology research, particularly that conducted by landscape archaeologists studying early Britain, was predominantly focused on monumental or ritual landscapes and for that it received much criticism (Hamilton et al. 2006). More recently, Rennell (2009:16) argues that “everyday embodied experiences of landscape and place inform understanding, knowledge, and action and by implication these experiences contribute to the creation of place, the structuring of landscape, social relationships, and social identities.” Focusing strictly on the monumental aspects of landscape may result in overlooking significant factors that contribute to the creation and modification of landscapes. According to Ingold (1993), we use the term landscape to refer both to the place people dwell

in, a place as it is known and understood to them, as well as to the actions that shape and maintain that place. This is very similar to Mitchell's (2003a, 2003b) idea that landscape is both the product of human labour and the agent of change that results in further transformation of the landscape. I argue that the Chinese and Japanese market gardeners of the Okanagan have been continually disregarded as major agents of landscape change.

The introduction of phenomenological ideas into landscape research has been largely supported and developed by the work of Christopher Tilley beginning with the 1994 publication of his influential book *The Phenomenology of Landscape: Places, Paths and Monuments*, as well as subsequent books and articles on the subject. Tilley (1994) argues that attention to detail is critical for developing phenomenological interpretations of a landscape. Regarding the appropriateness of taking a phenomenological approach to landscape, Wylie notes that "a faithful description of everyday 'lived' experience is in fact one of the most long-standing and central goals of phenomenological writing" (2007:140). However, among the many criticisms that exist for this approach, the notion that it lacks a rigorous methodology that is characteristic of science-based approaches to archaeology persists (Hamilton et al. 2006).

One of the current themes in the broader discipline of landscape archaeology is the spatiality of power relations. Branton (2009) advises that landscape approaches can be an effective way to understand the material remains of power relations. She notes that power relations are reproduced in the built environment, both as a measure of control and also as acts of resistance. For example, marginalized groups may alter their spaces to create private areas out of view of the dominant population where they may conduct their activities without fear of further subjugation. Evidence of differential access to resources is another way that

power relations can alter the landscape. Many archaeologists have responded to the call to engage in work that considers issues of power and race on different scales (Voss and Allen 2008; Mullins 2008). This is an example where a landscape approach could be effectively applied to the study of historic Chinese and Japanese immigrant populations as they were typically minority groups whose cultural landscapes were unquestionably influenced in a variety of ways by the dominant white population. Furthermore, Cosgrove (1989) acknowledges that in some ways the study of culture is always closely linked with the study of power. He explains that this is relevant in landscape studies because expressions of power of a dominant group are sustained through reproductions of culture, and this can leave lasting marks on the landscape which can demonstrate the nature and strength of power relations within and between community groups.

Changes to the historical landscapes of the Chinese and Japanese market gardeners in the Okanagan occurred as a result of myriad forces, and these changes subsequently contributed to further modification of the landscape as it was known both to the market gardening community and to the dominant (white) society. Government policy and social norms restricted, prohibited, and complicated land ownership among Chinese and Japanese market gardeners. These policies and norms led to changes in the type of land use and the distribution of farming families which further precipitated transformations to the landscape. I argue that the sum total of all these effects eventually contributed to the demise of the industry. The most efficacious way to understand this process is to approach it from the perspective of landscape phenomenology.

3.1.1 – Key Theoretical Terms

Place is an important concept in landscape theory. I use a critical human geography definition of place as something that is socially constructed (Cresswell 2004). Furthermore, “place incarnates the experiences and aspirations of a people” (Tuan 1977:387). Accordingly, I concentrate on the interaction between human activity and the construction of place as “places shape human activities by their physical construction and have their physical construction shaped by human activity” (Branton 2009:52). Because I am studying places as they existed in another time, I develop an understanding of them by studying the actions and decisions that created them in the first place and by recreating them virtually through the production of maps and visualizations. Actions that resulted in the creation and manipulation of the landscapes in the Okanagan are revealed through tracing the cause and effect of change in the historical record and through mapping the changing spatial extent and distribution of the market gardens and gardeners.

According to Agnew (2005:81), “space is the abstraction of places into a grid or coordinate system as if the observer or controller is outside of or looking down on the places that constitute it.” This is a very precise explanation of the process that occurred when the experiences of market gardeners identified in the qualitative materials are visualized using a GIS framework.

Tuan (1977:387-388) states that “space and place together define the nature of geography,” further noting that “as functional nodes in space, places yield to the techniques of spatial analysis. But as unique and complex ensemble – rooted in the past and growing into a future – and as symbol, place calls for humanistic understanding.” Experiences of place are central to understanding landscape change. Because of this, experiences of space

and place are interwoven in the presentation of the results, with the qualitative analysis (place) presented separately from the spatial analysis of the GIS (space), and then brought back together in the discussion section.

Dwelling is another central concept to landscape phenomenology. According to Tim Ingold, a dwelling perspective considers landscape as something that is “constituted as an enduring record of – and testimony to – the lives and works of past generations who have dwelt within it” (Ingold 1993:152). Building on this, Cloke and Jones describe the concept of dwelling as “emphasising the temporal nature of landscape” (2001:651). Buttimer states that dwelling “implies more than to inhabit, to cultivate, or to organize space” (1976:277). Furthermore, Buttimer reflects on dwelling as a symbol of the relationship between ecological context and social reality. In the case of the Chinese and Japanese market gardeners, they grew vegetable crops on what land they could access as a result of, and in spite of, the social reality of the day. This was often done on a per-season basis, with no promise of future opportunities. The uncertainty of land tenure had profound effects on the formation of the landscapes of the Chinese and Japanese market gardening communities.

3.2 Qualitative GIS

A qualitative GIS can be used to visualize the spatial patterns and correlations between features, much like traditional GIS, but can also include individual, perhaps marginalized, voices in the process of research. Such a set of research strategies allows many interpretations of several forms of knowledge and voices, embedded as both narratives and visualizations, official and vernacular. To pursue inquiry on these themes, more conventional GIS might have difficulty engaging with narratives and integrating participant insight, photographs, and historical research with quantified phenomena and spatial analytical methods. (Preston and Wilson 2014:511)

Qualitative GIS developed over the past two decades directly in response to a series of critical theory debates that occurred during the 1990s within geography concerning the use of GIS. While critical GIS can be viewed as the theoretical response to these debates,

qualitative GIS developed out of practical attempts to incorporate a greater range of data and analytical processes into GIS. In this sense, critical GIS and qualitative GIS work in concert to encourage more thoughtful, meaningful GIS that not only recognizes different ways of knowing but provides tools and methods to incorporate those ways of knowing into existing GIS structures, as well as developing new tools and incorporating analytical methods developed outside of GIS (Elwood and Cope 2009).

Although GIS is performed in a computer environment it is not necessarily quantitative, empiricist, or positivist. GIS can handle many other types of data, and methods have been developed to incorporate situated knowledge as well as ethnographic material (Kwan and Knigge 2006). Additionally, GIS allows for a range of analysis to be performed on the same data. For example, in addition to work on early Chinese in Victoria, British Columbia, the same historical GIS database was also used to examine other minority populations, such as home and work travel patterns of wage workers in Victoria (Dunae et al. 2013) and the disappearance of Indigenous communities from Victoria's centre (Lutz et al. 2014).

There are a number of ways that qualitative GIS has been categorized. For Elwood and Cope (2009) this includes: GIS using qualitative data sources or other qualitative forms of evidence; GIS incorporating qualitative data analysis; the inclusion of multiple epistemologies into GIS research; and research that works to acknowledge, incorporate, or examine alternative ways of knowing. These ideas are echoed by Preston and Wilson (2014) who outline two areas of qualitative GIS. The first includes research that focuses on the technical aspects of incorporating qualitative data and techniques into GIS. The second area is comprised of research that aims to marry different ways of knowing.

To achieve the broad goals of qualitative GIS, much of the research over the last fifteen years has focused on several key areas of methodological development. Modifications and customizations to software are the most technologically complex solutions. The development of approaches for manipulating, classifying, or categorizing qualitative data for use in conventional GIS systems has been one of the most prolific, particularly with regards to geovisualization, the visualization of spatial data. Finally, there are a number examples of qualitative GIS research focused on hyperlinking qualitative data with corresponding spatial data allowing for a range of analytical techniques and options for dissemination, including interactive sharing of results through webpages (Jung and Elwood 2010).

To date, modifications to software and the development of new software is the least developed area of qualitative GIS. It represents the greatest departure from conventional GIS as it moves beyond simply stretching existing GIS methods. Referred to by some as CAQ-GIS, for Computer-aided Qualitative GIS, it seeks to modify or build entirely new software-based approaches, such as incorporating advanced qualitative analysis techniques into GIS software rather than simply using separate pieces of software like most current approaches do (Elwood and Jung 2010). The fundamental difference between this approach to qualitative GIS and other approaches is that it enables the user to store qualitative information and perform analysis right in the GIS (Jung and Elwood 2010). The idea to incorporate computer-aided qualitative analysis directly within a GIS was first suggested by Kwan (2002). In her seminal article highlighting the potential for GIS in feminist geography, Kwan notes the similarities between GIS software and existing qualitative analytical software and points to the possibility of a new type of GIS that would incorporate both qualitative and quantitative analysis and be “more open to the articulation of different voices” (2002:653). She further

argues that it is time to take advantage of numerous recent (circa 2002) advances in the ability to capture and store a wider range of source material.

Jung (2009) developed a process that modifies the two main GIS data models, raster and vector data, drawing on the advantages of each to develop a hybrid model that allows for various kinds of querying and visualization. A major limitation of raster data is that it can only hold one attribute at a time; therefore, it would be impossible to associate multiple pieces of qualitative data with the same grid cell. Jung overcomes this by creating a separate data table to hold multiple records. A single record (row) in the table will contain a digital copy of the qualitative data, such as a scanned image, audio file, or narrative text passage, as well as any qualitative coding that the researcher has applied, and a grid reference linking the data to the relevant cell in a raster, which is then linked through a database process.

The resulting linked tables are then searchable and can be used to create visualizations. Jung (2009) concludes that the advantage of this approach is that it does not require a complete restructuring of either GIS or qualitative software, rather it modifies existing data structures in GIS to better accommodate qualitative data, both in the storage of that data and for searching and visualization. An important limitation of this approach is that it requires the use of an arbitrary grid that may decontextualize some forms of qualitative data, particularly those that have an explicit spatial reference because it associates that item with the whole grid cell that it falls into, not just the precise location.

Jung and Elwood (2010) describe many different types of analyses that can be conducted within a CAQ-GIS. They specifically note how qualitative analysis may be enhanced by the ability to view the results spatially at the same time. Furthermore, because the qualitative objects are stored within the GIS when using a CAQ-GIS approach, various

results can be visualized simultaneously, thus increasing opportunities to make connections between otherwise different and unconnected data types. Building upon the work of Jung (2009), they also discuss the process of incorporating analysis that is typically conducted within computer-aided qualitative analysis software (CAQDAS) and spatial analysis that is usually conducted within GIS software in order to draw on the strengths of both approaches. Jung and Elwood (2010) argue that contrary to the work of others, they believe the integration of CAQDAS and GIS lies mostly within the role and abilities of the researcher, and is not strictly contingent on the development of new software. They point to the activities of data storage, coding, and analysis as key areas where the researcher can design methods for bringing together qualitative and spatial (GIS) analysis.

Where others, including myself, have performed narrative analysis using a qualitative analysis software such as NVivo (QSR International 2015) and then incorporated results of the analysis into a GIS (such as Milton et al. 2015), Kwan and Ding (2008) developed a custom software that duplicates many of the basic functionalities of NVivo directly within a GIS system. By incorporating narrative analysis into the GIS software they were able to smoothly integrate the analytical results into space-time mapping of Muslim women's experiences, as well as seamlessly create geovisualizations of their results. They refer to their approach as "geo-narrative" (Kwan and Ding 2008), arguing that the incorporation of both the qualitative analysis and the geovisualization allowed them to develop an understanding of both the chronological and spatial order of participants daily activities. This is similar to the work of Matthews et al. (2005) on their concept of "geo-ethnography."

A further important area of methodological development in qualitative GIS includes research that incorporates qualitative data by extending the capabilities of conventional GIS,

as well as studies that perform parallel analysis in qualitative analysis software while using conventional GIS for visualization. Recently, Cutts et al. (2016) use qualitative GIS to organize, code, and analyse newspaper articles that include information relevant to their research topic of soil lead contamination and urban garden use. This echoes approaches highlighted in the early work of Geoff Cunfer (2005; 2008) who also relied heavily on newspapers as a major source of information on environmental conditions for his work on the American Dust Bowl.

Lafreniere and Gilliland's (2015) work developing methods for personal space-time analysis in historical contexts represents one of only a handful of examples of qualitative historical GIS. They use time-space mapping that was possible as a result of a highly detailed (temporally and spatially) qualitative data set – a series of 12 daily diaries spanning 36 years (1863–99) for a clerk at the city post office. Mapping only two years of events resulted in over one thousand geolocated events with two hundred different people in 269 unique locations. After the complex geolocating process was complete, Lafreniere and Gilliland relied on basic GIS tools, like buffering to determine walking distances and querying to focus on persons with specific occupations. This particular research is part of a much larger historical GIS project reconstructing London, Ontario, from 1871–2013 using a variety of sources to develop “stages,” or two-dimensional and three-dimensional reconstructions of London based on the built environment and also based on social experiences.

Hanna and Hodder (2015a; 2015b) stretch the limits of conventional GIS in their analysis of both the location and content of commemorative markers in Fredericksburg, Virginia. Through their use of qualitative GIS, the authors determine that both slavery and emancipation are being continually marginalized on the city's commemorative landscape

through the placement of commemorative markers in out of the way places rather than on major pedestrian thoroughfares. Their research is structured around two questions. In the first instance they assess marginalization of the commemorative markers based on their location and relative scarcity. They consider the routing of historical tours, the location of other heritage sites such as museums and interpretive centres, and the proximity to popular retail areas that attract heritage tourists. Their second research question examines the presence or absence of slavery and emancipation narratives on the landscape. The analysis of each research questions requires both spatial and qualitative analysis. To do this, the authors construct a geodatabase that contains images and text documenting verbatim transcriptions of the markers' commemorations. They perform qualitative-based content coding directly in the geodatabase, using an attribute table to contain the relevant codes as well as the full text of the markers. The authors then use basic query functions in ArcGIS to perform their spatial analysis of marker locations based on specific themes identified in the coding.

While this methodology at first seems a relatively simple solution to performing qualitative analysis within a GIS, the authors are quick to note that this method only works because the character count for marker commemorations is limited compared to longer texts like interview transcripts that would likely exceed the current capabilities of ArcGIS geodatabase structures. They advise that the geodatabase structure does not allow for direct storage of audio or video files and would have required hyperlinking if these types of sources were required for this study. The authors further contend that the query functions in ArcGIS limits their ability to perform complex searches and necessitates the use of other qualitative analysis software outside of ArcGIS for more complex discourse and content analysis. However, the authors' comments convey a lack of understanding about some basic

capabilities within ArcGIS to perform partial string queries, although partial string queries can be a very cumbersome and user-intensive solution.

Hyperlinking qualitative data within a GIS was among the earliest techniques that attempted to provide the user with opportunities to simultaneously view the qualitative data while interacting with the GIS, such as through a map or other visualization. Unfortunately, as the qualitative data is stored outside of the GIS, this approach is not as useful for qualitative analysis as approaches that store the qualitative data directly within the GIS (Jung and Elwood 2010). Connecting various types of data outside of a GIS was an approach taken by Preston and Wilson (2014) in their research on urban gardening in Muncie, Indiana. They contend that the best way to approach qualitative GIS is to avoid reducing or converting data for inclusion in a single technology as this may lead to the “reduction of rich contextual materials into a Euclidean space of latitude and longitude coordinates” (2014:520). Similar to Preston and Wilson (2014) I incorporated only certain qualitative sources into my actual GIS and stored the remainder outside of the GIS.

3.3 Historical GIS

GIS is a computerized mapping and spatial-analysis technology that marries two important types of historical information: spatial information (maps) and attribute information about places (data sets). GIS allows researchers to map attributes about places...in ways that reveal meaning buried among inscrutable tables of endless digits. With GIS the pages of old census volumes, packed with numbers in small print, come to life. Geographical patterns emerge that can only be understood and communicated graphically. (Cunfer 2005:248)

Historical GIS is a method for organizing and analysing information about past events. When applied appropriately, historical GIS can overcome many of the shortcomings of traditional aspatial historical methods, which frequently do not explicitly incorporate geographical context into their analysis. By adding a qualitative focus to historical GIS, as I

have done here, the power of the technology to reveal spatial patterns among disparate data sources is heightened because a broader range of sources were able to be incorporated.

The emphasis of historical GIS research typically rests on why events occurred where they occurred and how the geography, including physical, social, cultural, and locational aspects of geography, influenced both the trajectory of events and the outcomes. Therefore, through the use of historical GIS, as compared to more traditional historical methods, the importance of the geography of the phenomenon under examination becomes central to the analysis. The additional lens of time, the “historical” in “historical GIS,” adds further temporal context to the interpretation as well as geographical context. This allows us to consider the effects of geography much more prominently and intentionally in our research questions.

The three primary advantages of historical GIS are that spatial information can be used to structure a database allowing for the integration of otherwise incompatible data; that data can be analysed in more complex ways allowing patterns to emerge that would be undetectable through non-spatial forms of analysis; and that visualizations and animations can be generated from the GIS database resulting in more options for the dissemination of research findings (Gregory, Kemp, and Mostern 2001).

As far back as the early 1990s, the potential for extending GIS analysis to other disciplines was being encouraged (Openshaw 1991). Historical GIS is changing the way the study of history is practiced (Knowles 2008). Although some people working within the fields of history and historical geography regard GIS as simply a mapping tool, it is a specialized type of database that can be used in a multitude of ways to improve historical inquiry (Gregory and Healey 2007). The incorporation of GIS methods into historical

research has encouraged many historians to consider more fully the role of geography and the importance of location in relation to events or phenomenon under study (Gregory and Ell 2007).

Historical GIS is still a relative newcomer in the world of both historical research and geographical research. Historical GIS has been establishing itself as an independent field of study since the early 1990s. So and Wong (2012) identify 1990 as the start of the development of historical GIS, labeling the Great Britain Historical GIS as the first undertaking that could truly be called historical GIS. However, they caution that as there are no analytical tools unique to historical GIS, this date is more for the sake of conversation. It is likely that researchers in different disciplines researching historical time periods began working with GIS at different times. In the fall of 2000, *Social Science History* published the first special issue of a journal that was focused on historical GIS. This special issue followed two years of scholarship at the annual meetings of the Social Science History Association (Knowles 2000). Gregory and Geddes (2014) point to a conference in 2008 at the University of Essex involving 125 delegates as among the first academic conferences dedicated to historical GIS. They note that at this conference there was a noticeable shift away from predominately quantitative analysis and a much greater focus on applications addressing specific research questions, a trend which has continued in the decade following. They argue that the development of new knowledge about times past “must be the ultimate aim of the field, as it takes HGIS beyond a narrow technical specialism and makes it relevant to a much wider audience” (Gregory and Geddes 2014:x).

Within the discipline of geography prior to the middle of the 1990s, most researchers working with historical data had not even heard of GIS (Gregory and Ell 2007). Within a

decade this changed dramatically. By 2012 the adoption of historical GIS was no longer considered new or revolutionary, but the ways it is being utilized continue to grow and change (Offen 2012). The growth and development of historical GIS represents a natural progression and diversification of research topics in GIS. As GIS became gradually established throughout the 1980s and 1990s it was increasingly utilized by researchers working in other fields (Schuurman 2004).

The broader discipline of GIS extends over a half a century in its development and its roots in mapping and spatial analysis go back much further than the advent of computers. While on the surface it may appear that historical GIS is simply GIS examining historical time periods and events, there are important differences in the types of data used in historical GIS compared to the modern data used in other applications of GIS. Briefly, modern data are collected primarily through scientifically informed approaches that ensure the regularity of data. The complexities associated with working with historical data, as well as the differences in the types of research questions being asked and the overall topics of interest explored with historical GIS, all contributed to the establishment of historical GIS as its own field, one that is directly descendant but still distinct from other forms of GIS.

What can be called historical GIS has natural temporal limits as this field requires the availability of documentary records. Documentary records are some kind of written record and these may be hand-written, typed, reproduced, or published (Pitt 1972). Within a European context, Mackenzie et al. (2009) argue that it was around AD 1200 that the transition to written records began. They note that after this date “there was an almost exponential growth in the recording of public and private documents” (2009:128). In North

America, much of the research prior to the last few hundred years remains primarily the purview of archaeologists.

Marti-Henneberg (2011:2) notes that historical GIS differs from traditional GIS in that “the challenge is to add analytical temporal dimension to a tool that is too often used to show only a series of static images.” However, his assertion that historical GIS can move beyond static images is perhaps overly optimistic. Although time has long been a major focus of research, GIScience (Geographical Information Science) has yet to definitively solve the problem of visualizing change through time beyond simply increasing the temporal scale and resolution. As such, most historical GIS research is still essentially series of static snapshots in time. Even maps or data visualizations with high temporal resolution, such as on a monthly basis, are still snapshots in time. This is not to say that static visualizations are not informative and visually stimulating. Christakos, Oleo, and Yu (2007) mapped the spread of the Black Death in Europe on a monthly basis between AD 1347 and AD 1351. When looked at in succession, these maps show a very clear picture of both the temporal and spatial diffusion of the Black Death.

Gregory and Ell (2005) note that there is a trade-off between time and space and researchers frequently have to decide if they want to include detailed spatial data for a limited time frame or if they want to look at an extended time frame at a coarser spatial resolution. Traditional narrative methods for historical research are often based on a case study approach where one or two examples are examined in great detail. While this can be informative and illustrative of past times in a local context, there is a danger of case studies being interpreted as universal examples. Geoff Cunfer (2005; 2008) has shown how the widely held belief that the American Dust Bowl occurred because of recent intense

agriculture that damaged the delicate top soil does not stand up when all 208 affected counties are examined. The original findings were based on case studies that focused on only two counties in the affected region. Cunfer's research re-examined the issue and by using GIS he was able to analyze all affected counties and go back many decades, a huge geographic area and temporal period that would have been inconceivable without computer based techniques. Through this analysis he was able to determine that the history of dust storms extended back much further than previously thought and that in many areas the factors were much more complex. Cunfer (2008) is careful to acknowledge that his work is at a very coarse scale and that there is still a place for localized, fine-grained research.

Gregory (2008) advocates for an approach that augments historical GIS analysis with local qualitative-based case studies. He argues that in cases where detailed information is lacking from systematic data sets, such as censuses, or where the temporal scale of systematic data sets does not meet the goals of the research questions it can be helpful to supplement with a traditional narrative approach. In his research this has been especially true in rural areas where the records are often sparse compared to urban areas. This was a consideration in the design of my research as systematic records sets for the Chinese and Japanese market gardening communities are often limited for a number of reasons, including the underlying racist attitudes of the day and the fact that practices such as sharecropping were often not recorded in the official record. Hunter (2013) argues that a case study approach is still quite common in historical GIS due to the expense of both time and money associated with developing large scale GIS databases.

3.3.1 – Applications of Historical GIS

In recent decades there has been a large volume of literature reporting the findings of a variety of historical projects where GIS was a major component of the research process. In some cases, such as Raymond's (2011) study of the Denny Hill Regrade in Seattle, Washington, historical GIS was used at every stage. In other cases, such as the work of Thornton and Olson (2011) evaluating segregation in Montreal, historical GIS only comprised one of many tools used but was still important in their research results.

Many acknowledge the presence of an urban bias in historical GIS scholarship. This is attributed to the wealth of data available for urban centres compared to rural areas (DeBats 2008; Algeo, Epperson, and Brunt 2011). Urban centres that have been the focus of historical GIS research include Boston (Maio et al. 2013), Seattle (Raymond 2011), Manhattan (Rose-Redwood 2003), Montreal (Gilliland, Olson, and Gauvreau 2011; Thornton and Olson 2011), London, ON, (Novak and Gilliland 2011), London, England (Orford et al. 2002), and Philadelphia (Hillier 2003, 2010). A collaborative research project has examined the experiences of the urban historical Chinese population in early Victoria (Dunae et al. 2011; Dunae et al. 2013; Lutz et al. 2014). My research straddles the rural/urban divide as market gardening is frequently practiced in close proximity to urban cores or even directly in the urban core in some cases.

DeBats (2008, 2011) and DeBats and Lethbridge (2005) have studied the social environment in the river port towns of Alexandria, Virginia, and Newport, Kentucky. The availability of poll books showing individual level social and political data for most members of the nineteenth century voting public was a result of *vive voce*, a voting system by which the voter was required to state their vote out loud at a polling station. The use of GIS enabled

the authors to link 19,757 individuals to properties. Similar to the approach I took in my own research, multiple residents could be linked to a single property. Linking at the individual allowed the researchers to determine numbers of boarders, tenants, and land owners.

Logan et al. (2011) examined a number of cities across the United States in the Urban Transition Historical GIS. This project used the 100 percent digital transcription of the 1880 United States. Understanding racial segregation was a focus of the project. One advantage of this dataset is that smaller ethnic groups are not lost or minimized like they are in the sample populations because they are represented as individual entities rather than aggregated to larger areas. The authors note that in studies of historical integration in urban areas, it can be difficult to determine the optimum geographic scale for the analysis. They argue that this is a benefit of GIS because they are able to perform the analysis at multiple scales. The ability to perform multi-scalar analysis and to zoom in on specific locations within the study area was also identified as a major benefit of GIS by Dufaux and Olson (2014) in their reconstruction of a Montreal neighbourhood. Determining the optimal scale of analysis was also a challenge in my own research.

Wilson (2005) examined the process of forest clearance and regrowth over three hundred years in the Shenandoah Valley in Virginia. Previous studies had struggled to define the extent of forest cover in the valley but Wilson's use of historical maps from the late nineteenth century through to the mid-twentieth century allowed him to derive data layers that depicted the extent of the forest at various times. From these derived data layers he was able to calculate changes to the forest extent. Similar to the work of Cunfer (2005, 2008), Wilson argues that a historical GIS combining a variety of sources at different scales allows for the identification of local effects which may have otherwise been undetectable.

There are limited examples of historical GIS for minority populations, although this is slowly changing. Wendy Bigler (2005) used historical GIS to perform a fine scaled analysis of indigenous agriculture along the Gila River in central Arizona. The primary source of spatial data for the GIS was a set of large scale maps of the Gila River Indian Reservation created in 1914 supplemented with a variety of other primary historical documents. The maps show clusters of agricultural fields which formed the basis of her analysis. Bigler incorporates observations from seventeenth and eighteenth century missionaries who visited the area, correspondence and photographs from the Indian Agent responsible for the area, and detailed notes pertaining to the creation of the maps made by the survey crew and presented in a report to Congress.

Recently, a few examples of historical GIS applications from Canada have focused on Chinese Canadian experiences. This work has highlighted the “Irony of Discrimination,” as described by Hermansen and Yu (2014), who point to the fact that in some contexts we are able to examine historical Chinese Canadians in detail as a result of our racist attitudes of the late nineteenth and early twentieth centuries. These attitudes led to highly detailed government records of Chinese immigration to Canada. Other immigrants, particularly those from Europe, were allowed entry with little examination or documentation. Unfortunately for my research these records are affected by an urban bias.

Recent work from an interdisciplinary team examined the experiences of Chinese in early Victoria, British Columbia (Dunae et al. 2011; Dunae et al. 2013; Lutz et al. 2014). A major focus of their research has been to develop a spatial history of race in Victoria in order to understand what it meant to experience race from the mid-nineteenth through early twentieth centuries. This approach has led to the undoing of many dominant interpretations

about Chinese life in British Columbia's colonial communities, the same dominant interpretations that I seek to challenge in my own research. The "Myth of the Forbidden City" that was commonly associated with Chinatowns in places like Victoria, Vancouver, and Kelowna as segregated and isolated enclaves does not sustain when examined through GIS (Dunae et al. 2011; Lutz et al. 2014). This work acknowledges that GIS is "particularly useful when it comes to studying sensitive topics such as race, where a key problem is that people do not always say what they mean and what they say is not always what they do" (Lutz et al. 2014:2).

While some applications of historical GIS have demonstrated that presumptions of segregation do not hold true, Thornton and Olson (2011) determined that strong spatial segregation based on ethnicity and class was present in late nineteenth-century Montreal. They looked at factors which contributed to the likelihood of dying among different age classes. By using logistic regression techniques they were able to determine that the most important factor affecting the likelihood of dying among infants was ethnicity. Also in Montreal, Gilliland, Olson, and Gauvreau (2011) used historical GIS to investigate changes to segregation between 1881 and 1901. During this time the population of the city doubled and the authors determined that certain geographic areas and ethnicities experienced increased segregation while others experienced increased integration. They attribute the success of their research on the capabilities of using GIS to facilitate statistical analysis.

Part of the attraction of historical GIS is the idea that through the use of systematic analysis we can reduce, or at least account for, the effects of bias or prejudice introduced either in the research process or present in the original resource. Hillier (2003, 2010) used historical GIS to address questions related to 'redlining', or the process by which mortgage

companies identified areas that were considered too high risk to lend mortgages. She claims that there was no empirical analysis to support the idea that redlining had led to disinvestment in cities, yet despite this many authors claimed redlining as a main cause of urban disinvestment.

The use of GIS for the reconstruction and visualization of past landscapes is one of the most prolific areas of research in historical GIS. Most historical GIS projects contain at least an element of reconstruction or visualization even if that is not the primary aim of the research. One of the reasons for this is that visualization of past landscapes helps to bring history alive. By creating maps and three-dimensional digital models historical landscapes, many things can be achieved that would not be possible through traditional narrative style history. Raymond (2011:588-589) notes that the use of visualization in GIS is often taken for granted. Furthermore, he contends that it “enable[s] visually uniform and consistent comparisons of space across time from multiple perspectives” and that this would have been next to impossible before GIS.

Raymond (2011) uses historical GIS to evaluate the regrading of Denny Hill in Seattle, Washington, which occurred in stages between 1898 and 1930. One of the major results of this project was a dataset of historical buildings which was essentially a warehouse of digital datasets where each building footprint became an individual feature based on the dates of occupancy for that building. This resulted in multiple, overlapping features for the same parcel of land. This approach was Raymond’s solution for prioritizing time over space. This approach also gave him control in displaying only buildings that were in existence for specific years by using basic querying functions without the cumbersome step of creating multiple data layers.

The use of three-dimensional visualizations based on an early topographic map of the area was “especially effective at communicating the full force of change brought on the study area’s built and natural environments over time” (Raymond 2011:587–588). The overall design Raymond used, in particular allowing for features that share a spatial extent and designing the database to allow for simple querying rather than creating multiple layers, was influential in my own work. Each reference to market gardening located in the archival records, historical literature, or through interviews was linked to an individual property polygon which allowed for easy querying based on dates or ethnicity.

In another example of reconstructing lost landscapes, Algeo, Epperson, and Brunt (2011) and Algeo (2010) reconstructed the pre-park communities in Mammoth Cave National Park, one of three national parks in the Southeast United States where the United States government forcibly removed residents for the purpose of building a park. Over five hundred families were displaced and their agricultural existence demolished through 1930s make-work projects. Algeo, Epperson, and Brunt used historical GIS to determine the location and identity of long lost homesteads and farms, and also worked with descendants in creating a public participation GIS. Census data and land sales records were major sources of information for identifying pre-park inhabitants. What is especially unique about this project is that the initial reconstruction has now led to the development of a public participation GIS.

3.4 Linking Theory and Method

Qualitative GIS is a direct result of deep introspective changes that occurred in the discipline of GIS more broadly; therefore, it draws from critical GIS for theoretical guidance. Although a large literature on the application of historical GIS has been produced, there is no real analysis of the role of theory in the practice of historical GIS. Historical GIS suffers at

times from a lack of a theoretical core, which continues to affect many aspects of GIS practice. Bringing qualitative GIS and historical GIS together helps fill the theoretical void.

The *Annales* school of history, and specifically its practice of *geohistoire*, is acknowledged by some as an important precursor to historical GIS. This approach did not use maps in the traditional cartographic sense but did focus on a number of concepts that are common in geography, namely the concepts of region and place (Knowles 2008). A more immediate precursor to historical GIS can be seen in the concept of spatial history. This idea was put forward by Paul Carter and is based on framing human experiences in space. Similar to *geohistoire* this method does not rely heavily on cartographic mapping methods. Thus, approaches focusing on individual experiences in space and place have been central to past work that has contributed to historical GIS, a further indication that landscape phenomenology, with its emphasis on individual lived experiences, is an appropriate theoretical partner for historical GIS research.

This general lack of consideration for its theoretical core does not excuse practitioners of GIS from being cognizant of both the limitations and power of this tool. Much work has been done within GIScience to better understand the role of GIS in the (re)production of power relations. Throughout the 1990s, a series of critical theory debates focused on whether GIS was a return to the positivistic roots of quantitative geography or if it was a scientific approach that could bring unity to the discipline (Schuurman 2004; Goodchild 2015).

Proponents of a critical GIS approach fear that despite improvements over the past few decades, the rate at which technology is transforming and the presence advanced geospatial technologies in our daily lives will once again lead to a schism in GIScience (Thatcher et al. 2016; Leszczynski and Elwood 2015). Regardless of fears for the future,

these critical theory debates have had a great and lasting influence on GIS and on the application of GIS techniques in other fields (Elwood 2010). Many forms of GIS benefited from these debates because they resulted in the development of improved methods for incorporating qualitative information as well as other forms of spatial knowledge which previously were not considered useful in GIS such as photographs, art work, or narrative accounts. This period of development of new methodologies for dealing with qualitative data also led to greater awareness and utilization of qualitative analytical techniques more broadly in GIS (Elwood and Cope 2009).

Branton (2009) argues that the study of spatial relationships is at the core of landscape approaches. GIS is also about the study of spatial relationships. It is this shared focus on spatial relationships that allows landscape theory and qualitative historical GIS to pair so well. Landscape phenomenology further adds to this connection by acknowledging the relationship between time, place, and landscape (Tilley 1994). Furthermore, through various analytical processes, GIS provides a means for measuring aspects of human experience, the results of which can be incorporated into different disciplinary approaches (Chapman 2006). For example, Lutz et al. (2014) emphasise the benefits of historical GIS for understanding how issues of race functioned within people's daily lives as compared to the commonly accepted narratives developed by historians that were typically drawn from limited and biased resources like newspapers, government legislation, and court records. They argue that "relatively little is known about the lived experience of race, either among the articulate minority or the largely silent majority" (Lutz et al. 2014:2-3).

Early Chinese and Japanese settlers to the Okanagan retained many of their cultural traditions but they were also greatly affected by the natural environments they experienced

and by exposure to other ways of being through their interactions with others in the community. Particularly influential was the domination of the majority white population who, in addition to controlling the job market and the supply chain, also controlled much of the land. This combination of white dominance, cultural traditions, and the natural landscape results in the experiences of these cultural groups being complex and interconnected. An approach to interpretation informed by landscape phenomenology, with qualitative historical GIS as an organizing structure, is the most effective approach for unravelling the factors that contributed to the viability of the market gardening industry. Landscape phenomenology considers the experiential and consequently relies on a wide variety of data sources to reveal a range of perspectives; qualitative historical GIS is robust and flexible, allowing for the incorporation of dissimilar source material and the identification of links based on spatial similarities.

Some of the benefits identified by Chapman (2006) for using GIS for landscape studies echo the benefits for using GIS for historical studies identified by others (e.g. Gregory and Ell 2007; Knowles 2008). First, given that a primary category of data in any landscape analysis is cartographical data, including both modern and historic maps, aerial photography, geology, and soil data, it only seems natural to use embedded spatial data as an organizing principle. Second, in landscape studies researchers are dealing with a range of data types. By incorporating disparate data into spatial databases that are organized based on their spatial attributes rather than an arbitrary system can bring order to the data and more easily highlight geographic patterns. Furthermore, GIS deals well with gaps in the knowledge record because of its capabilities for incorporating disparate data types (Chapman 2006).

One of the many benefits of a landscape approach is that the same population or community can be studied at multiple scales simply by expanding the geographic area, the scale, and the types of data inputs. It is important to look at the potential for nested landscapes, or different scales of landscape, within a singular place. This approach allows for the recognition of diverse social identities, particularly minority voices, which may have influenced the construction of that landscape. Different social groups and their resulting different experiences which might be examined in an interpretation of nested landscape include gender groups, age groups, kin groups, class divisions, and, most relevant to this research, ethnic groups (Knapp and Ashmore 1999).

Cosgrove (1989) cautions that the researcher must carefully consider the effects of scale when planning landscape research. In particular, he advises that subordinate groups are always less visible than the dominant culture at the landscape scale, but when the scale of analysis is reduced they may appear to dominate at the local level. However, while a particular subordinate group may appear to be locally dominant it remains subordinate to the dominant cultural group's landscape and must be interpreted in that way. For example, at the scale of a city, a Chinatown may be only one small neighbourhood. If the scale is changed to focus on just Chinatown then Chinese culture will dominate. Yet it would be incorrect to read the pervasiveness of Chinese culture in that bounded space as being dominant because confined spaces such as Chinatowns typically represent oppression, not dominance. A GIS user can jump between scales of analysis due to the functionality of GIS technology.

Green (1990) and Savage (1990) both identified GIS as a means for overcoming many spatial analytical issues. Each advised that while most archaeological analysis considers the three axes of time, space, and form (Spaulding 1960), space is often given far

less consideration than the other two because of the complexities of accounting for geographical context experienced by practitioners working with non-computerized methods. By using sophisticated computer technology, complicated calculations can be done at the click of a mouse that traditionally may have taken considerable time and effort to generate (Green 1990). Since the time these observations were made, the field of GIS has grown considerably in numerous ways and these statements are perhaps even more appropriate today than ever due to the advancements in visualization technology that have occurred.

3.5 Chapter Summary

Landscapes are “a significant component of the overall heritage which endows communities and nations with their identity” (Muir 1999:77). In recent years, there has been action taken to recognize the contributions that all groups played in the development of British Columbia. Too often this recognition remains focused on very limited aspects of history, such as Chinese involvement in railroad construction or Japanese supremacy in the fishing industry. These limited acknowledgments continue to frame early ethnic communities as something separate from the white community. I believe that the conceptual framework I have developed that is focused on experiences rather than perceptions can demonstrate that relations between different factions of society were much more complex than simplified models of ‘us’ and ‘them’ allow for. Furthermore, that while some boundaries existed between the white community and the many different ethnic communities that occupied the same geographic spaces, those communities interacted in many interesting and complicated ways. The use of qualitative historical GIS can help to visualize the potential for interaction.

Many of the current interpretational issues identified in the overseas Chinese archaeology literature, and by extension other diasporic population such as the overseas

Japanese, can be alleviated by applying a landscape approach. Several authors raised the issue of relying on outdated models for interpretation, such as the sojourner model. Directly related to this issue is our continued reliance on generalisations that depict ethnic communities as isolated and static. Again, by employing a landscape phenomenology approach that focuses on people's everyday lived experience, one which includes examples from all ethnic communities and allows for the incorporation of different types of information, it is possible to reveal greater complexity and to move away from traditional interpretation models, responding to the call of researchers worldwide to add to the body of knowledge on Asian Diasporas. The strongest link between my primary methodology (qualitative historical GIS) and my theoretical framework (landscape phenomenology) is the potential to include individual and marginalized voices.

CHAPTER 4 METHODOLOGY

This chapter is divided into two main sections. In the first section, I provide a detailed explanation of the data collection techniques. There were five approaches to data collection: archival research, cultural expert interviews and community mapping, careful examinations of written reminiscences and local histories, site visits, and embodied research. I explain each of these emphasizing their applicability to the conceptual framework for contextualizing the experiences of the market gardeners.

In the second section, I describe the conceptualization of the GIS, sourcing and creating digital spatial data, processing collected data, and linking the spatial and attribute information tables to one another. As most of the information acquired during the data collection process was qualitative, preparing it for use in a GIS was technically challenging. I use examples and illustrations to describe the steps in the preparation process. Finally, I conclude this chapter by highlighting the successes of each approach to data collection.

A qualitative historical GIS approach provided the structure for organizing and analysing qualitative information acquired through the data collection process by linking that information to a digitally recreated historical cadastre (i.e. property lines). The major benefits of qualitative GIS stem from its innate flexibility for including a wide range of qualitative sources, thus allowing for multiple perspectives, ways of knowing, and voices to be incorporated into research. Summarizing from Chapter 3, the three primary advantages of historical GIS are that spatial information can be used to structure the database; that data can be analysed in more complex ways allowing patterns to emerge; and that visualizations can be generated from the GIS database resulting in more options for the dissemination of research findings (Gregory, Kemp, and Mostern 2001). The approach to data collection I

employed resulted in a wide diversity of research materials which necessitated a flexible yet robust method for organizing and analysing my data.

Once the attribute data (qualitative) were associated with the spatial data (historical cadastral), the second and third advantages of historical GIS became relevant. Visualizations were created and patterns began to emerge that were analysed and considered in wider contexts. The maps and visualizations provided geographical context to the experiences of the market gardeners, including where they lived and worked.

4.1 Data Collection

Like the map, history becomes better and more accurate as we continue to accumulate more detail and refine our knowledge. (Bodenhamer 2008:223)

The data collection process included archival research at a number of archives in the Okanagan as well as digital online archives, cultural expert interviews with fourteen participants, a community mapping event, examination of first person reminiscences and local histories, embodied practice in the form of growing a vegetable garden, and visits to sites where market gardening occurred in the past. This process started with careful reading of secondary source material through which I developed an understanding of the broader history of the Okanagan Valley and the local agriculture industry; this material also indicated which communities to explore further. Archival research, local histories, interviews, and community mapping identified specific locations of historic market gardens and geographically contextualized the narrative surrounding the experiences of market gardeners and their contributions to landscape formation and change. Site visits and embodied practice developed my own understanding of the experiences of the market gardeners.

Data collection was an iterative process. Direction was initially sought from the secondary source literature, then information was obtained through archival research,

expanded upon in the interview process, and then clarified through a return to the archives and the secondary source literature. This approach is typical of mixed methods research generally (Cresswell 2014; Fife 2005), but also of qualitative GIS specifically (Preston and Wilson 2014). The benefit of an iterative approach was that upon return to the archives, or to secondary source material, I could more closely focus on specific themes that developed during the interviews.

Fife (2005) suggests that at least six to twelve good secondary sources be obtained for the purpose of developing a general understanding of the topic area and to begin developing preliminary arguments. McDowell (2002) cautions that secondary sources are based on interpretations and are limited by the evidence, techniques, and ideas present at the time they were written. Furthermore, secondary sources are generally subject to be revised so it is best to focus on primary sources where possible. Numerous primary and secondary sources were consulted. Secondary sources contemporary to the time period of interest were thought-provoking and aided in contextualizing attitudes and perceptions of the day. For example, a number of early texts on British Columbia history were available through the UBC Library which provided interesting commentary on early settler experiences.

One of the challenges of historical GIS is the attainment of data that are both informative and capable of being incorporated into a GIS in a way that maintains the integrity of the data while responding to the intent of the research. Accessibility and availability of data are critical factors in the success of a project. Although data may exist they are sometimes unobtainable for financial or other reasons. Another consideration is what form the data are in and if there are costs associated with making that data useable in a GIS format. For many people working in historical GIS, it is not the methodology or the spatial

concepts that are the challenge but rather the process of converting analog historical data into digital data (Mou 2012). Furthermore, Wong, So, and Zhang (2012:19) note that “gathering historical spatial data are expensive, tedious, and technically challenging.” What data are available for use can have a limiting effect on the type of research questions that can be asked.

Data collection was a challenge in this project as the volume of data was surprisingly great but the quality and consistency often poor. One concern was that historical GIS typically has an urban bias. This is largely due to data availability generally but especially as a result of the availability of systematically collected datasets that can be used as frameworks for GIS databases (Algeo, Epperson, and Brunt 2011; Debats 2008). While market gardening was conducted in both rural and urban areas in the north and central Okanagan Valley, due to a variety of factors more data were available for the urban centres than for rural or unincorporated areas.

The availability of data affects research design, such as limiting which specific years are included in the analysis. This is true both for projects which consider a particular place at multiple time periods (i.e. diachronic) as well as projects comparing two places for the same time period (i.e. synchronic). For example, in their analysis of the relationship between retail development and urban growth in London, Ontario, Novak and Gilliland (2011) note that the four years selected for analysis (1844, 1863, 1881, and 1916) were chosen partly because of the availability of comparable data sets and partly because they were representative of the period. One result of this approach is that these years are not equally separated which may affect the types of analysis that can be applied to the data. In my research, although a few

references suggest the Chinese market gardening industry existed as early as the 1860s, there was insufficient data, both qualitative and spatial, to represent this visually.

There are three key elements that data must possess in order to be used in a GIS. The first is spatial information. This can refer to a precise location (e.g. coordinates, a street address, or a legal land description) or to a location that is quite general (e.g. at the big bend in the river). Temporal data, important in any GIS, are especially critical for historical GIS, although the preciseness of this can vary depending on the temporal scale of analysis. A study over a number of decades may consider the month and year, a study over centuries may only be concerned with the year or decade, a study over millennia may only consider the decade or even century. The third element is subject matter, referred to in GIS as attribute data (Ell 2010). Attribute data is the component of data that provides the main substance and is particularly interesting for qualitative analysis approaches in GIS.

Using a wide variety of data is common in all forms of historical research. Historical GIS builds on this legacy as it not only incorporates a substantial array of data, but does so in a technologically challenging way. Due to the technical complexities of building a historical GIS, data quality is a particular concern and can lead to challenging situations when the quality of data is questionable (Wong, So, and Zhang 2012).

An important consideration in assessing data quality and fitness for the research question is the purpose for which the original data were originally collected. This is especially true of historical maps. There are inestimable amounts of data that could be captured when a map is produced, but due to the natural limits of reproducibility not everything present in a geographic location will be represented on the map. What features are included will depend on the original purpose for which the map was created and the bias of

the mapmaker (Levin, Kark, and Galilee 2010). For example, maps produced for military purposes may emphasise potential transportation networks or landscape features that may impede travel. When it is not possible to determine the original purpose for which a map was produced, the researcher must proceed with caution because it is not known what features are absent from the map. However, having multiple sources of information for the same geographic area and the same time period can help alleviate the risk of misinterpreting or incorrectly visualizing historic landscapes. In most cases, it is best to supplement with ancillary data sources in order improve the overall quality of spatial data (Wong, So, and Zhang 2012). I attained multiple sources of information for each community and from each type of data collection in order to improve the overall quality and reliability of historical information.

The most common sources of attribute data used in historical GIS are what Debats (2011) calls “social inventories.” These include censuses, tax assessments, voting records, vital statistics records, and church records in some cases. These types of data, especially census data, work well with the tabular structure of databases used in GIS. The use of GIS for analysing census data has been popular since the mid-1980s (McMaster and Noble 2005). Censuses and other similar population records are the most important sources for data on historic populations (Ekamper 2010). I analysed population data reported in decadal censuses for 1881 through 1951 to understand the changing demography and population structure of the area. For years where occupation was recorded in the census, instances of market gardening or vegetable farming were also incorporated into the GIS database. For example, in the 1921 census over one hundred individuals engaged in market gardening in the Swan Lake area were recorded (Dominion Bureau of Statistics 1921).

Although the study area in my research was not very large, there were often important differences in the sources of information available for each different municipal areas. In some cases, it was possible to use both systematically collected sources, such as tax documents, along with personal reminiscences and interviews, whereas in other areas no systematically collected data sets were available but interviews and published reminiscences were sufficient to fill the void.

The availability of data can also be limited by the technology that was available at the time the event or phenomenon took place. For example, aerial photography has been used extensively since World War I but is not available for periods prior to this (Levin, Kark, and Galilee 2010). The likelihood that issues related to the technology that was used for capturing data will be encountered increases as research is extended further back in time. The Okanagan valley area served as a test site for new aerial photography equipment in the 1930s. As a result, high quality aerial photographs are available for most of the study area.

4.1.1 – Archival Research

At the outset of the archival data collection, the expectation was that, at least for certain time periods, these market gardening communities would be underrepresented in the historical documentary record even though numerous secondary sources make note of their existence. Underrepresentation is an acceptable assumption when researching ethnic minority populations in historic time periods (Opatow and Belmonte 2016). While this proved to be true for some types of records, there was extensive documentation that included references not only to members of the Chinese or Japanese communities but also specific references to land tenure arrangements, occupations, crop types, and more.

A number of libraries and archives throughout the Okanagan Valley as well as other parts of the province were accessed to build a thick collection of source material detailing experiences of the market gardeners and the subsequent demise of the market gardening industry. While I was able to visit many of these in person, I also made use of extensive digitization efforts that have been undertaken in recent years to access a variety of sources remotely online. The UBC Open Collections, the British Columbia Archives in Victoria, and the Vancouver Public Library's British Columbia Directories Collection are examples of online sources that were important to this study.

In my research proposal I estimated the approximate number of days that I anticipated spending in each archive; there were no instances where my estimations proved accurate. In most cases, the archival collections contained more relevant material than I had anticipated and the staff and volunteers possessed important local knowledge, resulting in more return visits than originally planned. I spent time in the archives locating both spatially explicit information, such as documents with street addresses or legal lands descriptions, and any other related information that would provide context and experiential information. While there were many sources that contributed to the results of this study, for the summaries below I focus on one or two sources of material per archive location that were particularly important to my findings.

Individual archives were contacted via email and initial visits were arranged. At each visit I discussed my research interests with the archivist and explained that I was seeking a wide range of material. Each archive was different. The smaller archives, Enderby and Armstrong, have very limited staffing resources and accordingly I was given direct and unfettered access to most of the records in their collection. I was free to explore the boxes

and filing cabinets unsupervised. It is important to note that I had previous experience as both an archival assistant and a museum assistant and I had made this known to the archivists; I suspect that their willingness to allow me that level of access was based on their knowledge of my prior experience.

Kelowna and Vernon archives are larger than either Armstrong or Enderby and access was more controlled. This was actually an advantage because greater control resulted in more interactions with the archival staff who know the collections and the history of the community more thoroughly than could be conveyed in a binder of fonds descriptions, written summaries of what is available in the archives. In addition to the Kelowna Public Archives, I also reviewed historical bylaws and associated supporting notes and materials at the City of Kelowna Office of the City Clerk.

For the City of Kelowna the most important systematically collected sources were the tax collector toll rolls, large bound tax records that recorded the payment of property taxes. Records for all years starting in 1905, the year the city was incorporated, were discovered in a storage facility as a result of my inquiry. Each ledger was quite large, over five feet across when opened, and a single entry extends across two pages. Due to the physical size of these documents and the organization of information within, only 1905–40 were reviewed (City of Kelowna fonds). After 1940 a number of other sources become available, such as interview data. Each toll roll was reviewed and entries with names of Chinese or Japanese origin were recorded as well as any other notation referring to a Chinese or Japanese land holder. Typically only property owners were recorded but occasionally renters or leasers were noted if paying the land taxes was part of their rental or lease agreement.

Prior to 1919, likely due to the small size of the nascent city, the toll rolls were organized alphabetically by land owner. Beginning in 1920, the toll rolls were organized geographically by Map or Plan Number and then by Block and Lot Number, or just Lot Number where there is no Block Number. Accordingly, starting in 1920 it was possible to easily locate information about specific parts of town so beginning with this year all information for the area known as Chinatown was recorded in addition to any Chinese or Japanese names throughout the town.

Besides the physical difficulties with handling these documents and the possible errors that may arise from reviewing handwritten materials, these documents were problematic for at least two other reasons. As property tax rolls they almost always exclude all other forms of land tenure besides ownership. There were a few instances where a lease holder was noted in the property tax roll but this was a very rare occurrence. The other major issue with property tax rolls is that they do not indicate land use. In later years, a coddling moth tax was charged on properties growing fruit trees. As a result, it was possible to note where orcharding occurred but this fee was not charged to all farmers, only orchardists, and was only charged for certain years.

The approach I took was to collect all names, property information, relevant notes (e.g. information noted in pencil in addition to the actual data entry, which typically appeared in ink), and coddling moth tax information as I encountered it. Later, after I had linked tax records to actual properties in the spatial data, I inferred which had likely been used for market gardening based on ancillary sources and geographic location. Tax records linked to properties that were unlikely to have been associated with market gardening activity were still included in the spatial data linking process in case they were later identified as market

gardening properties. While they were linked, they were not directly incorporated into later stages of analysis. It was easier to initially include the questionable properties and then discard them during the analysis rather than to find out later that these properties may have been important and have to seek them out again.

A further source of potential error was that I used name recognition as a method for identifying persons of Chinese or Japanese ethnicity. Phonetic spellings were commonly used for both Japanese and Chinese names and these were quite distinctive from the other ethnic categories of names that appeared in these documents, mostly English, Scottish, or Italian. In some years “Jap” or “Chinese” was recorded next to names of Japanese or Chinese origin. Often with Japanese names the clerk would also note which was their first and last name. A list of common Japanese surnames was also used as a reference guide.

At the Armstrong archives, over the course of the past several years efforts have been dedicated to compiling a Chinese History Binder containing copies of documents and newspaper clippings pertaining to the local Chinese population. This binder served as a starting point for my research in that community and it provided an understanding of the Chinese history specific to Armstrong. The binder contained many hand drawn maps and lists of locations where market gardens had been located. Other records in the archives that were of interest included city tax rolls, tax rolls for the surrounding rural Municipality of Spallumcheen, and irrigation district records for numerous irrigation districts in the area (Untitled Municipality of Spallumcheen collection; Untitled Water Districts collection). The tax rolls extended back to the 1890s (City of Armstrong fonds). The museum also had a nearly complete collection of the *Armstrong Advertiser*. This newspaper included a number of articles that detailed local and regional concerns relevant to the market gardening industry,

such as labour issues, land issues, prices, and transportation. Many of these articles reveal the racist attitudes of the day at the local level, which assisted in developing my understanding of local experiences.

I made only one trip to Enderby as this was a small archives and had limited information on the local Chinese or Japanese population. Most of the information in its collection pertained to one Chinese market gardener who was well known in the area. Volunteers had compiled a complete property inventory for the community with detailed histories of every property. The archivist was able to provide me with copies of histories of properties where market gardening had occurred.

In Kelowna I found a receipt called a Ditchwalker's Slip (Chinese Community Collection, Receipts "Vernon Irrigation District" Folder) which led me to focus my efforts in the Vernon Archives, primarily on the Vernon Irrigation District (VID) records. This receipt recorded how many hours the irrigation flume had been directed at a property; the leaseholder was billed accordingly. The corresponding receipt books, the ditchwalker slip books, were not located but the collector's toll rolls for the VID were informative, including both property owners names and detailed property information. In many instances leaseholders were listed in the record books, though not always by name. Sometimes it merely noted "Cultivated by Chinese." Also of interest were some city records, including copies of leases between the City of Vernon and individual Chinese market gardeners for some years. The City of Kelowna was also in the practice of leasing land to Chinese market gardeners.

4.1.2 Local Histories, Testimonies, and Reminiscences

Another important source of information were local written histories. Some of these reminiscences were formally published, some were self-published, and others were unpublished stories located in archives. Most of the reminiscences have been produced by descendants of early families to the valley from the white, Chinese, and Japanese communities.

I worked with these sources as if they were transcripts of oral testimony, as many of them were. I mined them for information on locations of market gardens and other information that would either contextualize the experiences of the market gardeners or provide background information on the community or on agriculture more broadly. In this sense, these materials served as both primary and secondary sources. The amateur nature of these publications results in raw and genuine storytelling. These sources can be unreliable as they are typically written from a singular perspective, and often prepared long after the events described occurred, and may only tell partial truths (McDowell 2002). However, in describing the nature of the Okanagan History Reports, Margaret Ormsby, the long-serving editor of the Okanagan Historical Society and a UBC historian stated that:

Whatever the disadvantages may be of writing history in this form, and no doubt it has its disadvantages, by adopting this method we have succeeded in presenting in this book the history, in part, of the Okanagan Valley as told by the people themselves, by the people living there. (Ormsby 1935c:8)

In discussing their work on narrative analysis in qualitative GIS, Kwan and Ding (2008:448) note that the value of narratives goes beyond simply recounting people's individual experiences, rather they serve to "illuminate the social, cultural, and institutional context within which those experiences" occurred. Oral histories and similar narrative documents offer potential insights into landscapes of the past, however, it is only recently

that qualitative GIS has begun to develop methods for working with these types of documents (Seegers and Giosdano 2015).

While many of these testimonies are presented in book form, the richest and most comprehensive source of information on all aspects of the history of the valley were articles published in the Okanagan Historical Society's annual publication, *Okanagan History* (1985 to present), previously known as the *Annual Report of the Okanagan Historical Society* (1925-1984). Now in its 76th edition, this journal has been produced since 1925.

There are two types of articles from *Okanagan History* that inform this research. Most compelling, but also most problematic, were personal reminiscences which presented collections of memories and anecdotes detailing the early years of the Okanagan, typically focused on an individual's own experiences. I describe these as problematic because it is unknown under what conditions the information was gathered, what role a family member or other interested person may have played in assisting the authors who were often elderly, and finally many of the authors are deceased so there was no opportunity to clarify their statements. However, despite these problems, first person reminiscences provide thorough descriptions and animated retelling of the early years in the Okanagan and were valuable as long as they were supported by other sources. The second type of article from *Okanagan History* were retrospective articles written by either professional or amateur historians. Sometimes the topic was the author's own family history but often these articles were focused on either a specific community or an industry in the Okanagan. This type of article was used mainly as a secondary source providing contextual information.

The books used in this research as primary sources were collections of stories edited by either an individual or by a community group. These published resources provided an

opportunity to hear the voices of individuals from the time period of interest who had experienced the industry first hand but in many cases are no longer around to share those experiences in person. There were no unpublished “primary” sources comparable to the published documents. *Down Memory Lane/Rutland* (2008) by community members Evelyne Vielvoye and Elaine Senger was an important book for the general history of Rutland and featured many Japanese families.

Of particular importance to this research were three published compendiums on Japanese history in the Okanagan. *A Century of Community*, published in 2013, was spearheaded by the Lake Country Museum and Archives but the editorial board was comprised mainly of descendants of the pioneering Japanese community. Two other projects were organized and published by Japanese community groups: *'Til We See the Light of Hope* (Ouchi 1982) and *The Vision Fulfilled: 1894–1994* (Hoshizaki 1995).

'Til We See the Light of Hope (Ouchi 1982) focuses on the Vernon area and was written in response to a challenge put forth by a granting agency and at the suggestion of the Mayor of Vernon. This project was led by the Japanese community but received assistance on the English language text from then MP for Okanagan-Kootenay, Howard Johnson. Large portions of this document are written in Japanese; however, I only used the English language portions. *The Vision Fulfilled: 1894–1994* (Hoshizaki 1995), focused on the Kelowna region, was prepared entirely by volunteers receiving small honorariums to cover expenses and the information was collected mainly by voluntary submission. The text in these books was primarily written by descendants of pioneering families in their own words, or else written by volunteers with notes and information provided by the families.

4.1.3 – Cultural Expert Interviews and Community Mapping

I conducted cultural expert interviews with surviving market gardeners or descendants of market gardeners in the north and central Okanagan Valley as well as with knowledgeable local amateur historians, many of whom were also descended from families that practiced some form of agriculture or had regular interactions with the market gardening communities in some capacity. While I had planned to complete between six to ten interviews, in the end I conducted thirteen semi-structured, open-ended interviews. In addition to these I also had numerous informal conversations with interested locals, archivists, and historians that had a significant impact on my understanding of the history of the Okanagan and of the importance of the market gardening industry to communities throughout the valley.

The overarching goal of the interview component was to collect and record the stories of participants about their experiences and memories of the market gardening industry. The cornerstone of a phenomenological approach to landscape research is everyday lived experiences. The best mechanism for grasping the specifics of that experience is by talking to those who participated firsthand or their immediate descendants who retain their family memories. The secondary goal was to collect locational information using maps and descriptions of locations.

According to Fife (2005), semi-structured interviews are a good option because they provide some of the organization and formality of a structured interview but they do not force the participant to be merely a respondent to closed-ended questions, allowing a more conversational feel to the interview. Another benefit of semi-structured interviews is that the control of the questions remains in the hands of the researcher resulting in specific

information to be elicited (Cresswell 2014). However, the interviewee retains some control over the direction of inquiry as they may choose to answer certain questions or provide limits on the information they will contribute (Fife 2005). Limitations of this type of interviewing as a data collection method include the potential for filtering of information by interviewees, the bias introduced by the presence of the researcher, and the reality that some interviewees, while suited for the study, may not be very articulate or perceptive (Cresswell 2014).

An important aspect of the interviews was to solicit spatially explicit information. Precise temporal data were less important than precise spatial data because in many cases the timeframe can be determined from the spatial information. For example, if a participant is able to indicate *exactly* where they operated a market garden and *approximately* when, it is possible to examine the history of the known location in the historical record to locate and map this claim. It is more difficult, but not impossible, to reconstruct locations if you have explicit temporal information and only approximate spatial references. The specifics of this information can then be traced back through the historical record and compared between other sources such as archival sources.

An ancillary goal of the interviews was to investigate the potential for alternative geographic terms used by the market gardeners or their descendants. Tilley (1994) identifies the process of naming topographical features as a major component of identity formation. In British Columbia, as in most colonial states, we have an official record of names we use for these features. The names of places in the official record are generally set by the majority population. This does not mean that other cultural groups also used those names. Bell and Reed (2004) identify GIS coding of interview data as an excellent approach to isolating the use of the alternative names for topological features. However, quite surprisingly, there were

no differences identified in the interviews about place names. It is possible that alternative names once existed but these have been lost over the course of time. It is also possible that research participants simply did not mention any alternative names in the course of the interviews despite being asked.

Potential participants were identified initially through connections at local museums and archives and then subsequently through snowball sampling. Snowball sampling is a method of recruitment where an individual suggests further participants or initiates contact with additional participants on behalf of the researcher (Morgan 2008). At first it was challenging to recruit participants. Specific challenges included disconnected phone numbers and unreturned messages. Often I encountered situations where a highly regarded local historian or descendant of early settlers had recently passed away. Eventually things began to proceed and I soon had a number of interviews lined up. To maintain anonymity, interview participants have been coded based on the order the interviews were conducted in and their initials. Table 4.1 lists the interview participants by ethnic group and by location.

Table 4.1: Distribution of interview participants by ethnic group and by location

Chinese	Japanese	White
I1MJ (Armstrong)	I5AK (Lake Country)	I4JG (Armstrong)
I2TW (Kelowna)	I10ST (Lake Country)	I6BH (Kelowna)
I3BL (Born Armstrong)	I11SK (Kelowna)	I9EV (Rutland)
I7DL (Kelowna)	I8HT (Kelowna)	I13ML (Armstrong)
	I12ST (Kelowna)	I13VP (Spallumcheen)

In addition to the interviews, I conducted one community mapping event. “A community map is produced collaboratively by residents of a particular locale, featuring

local knowledge and resources” (Parker 2006:470). Major benefits of community maps include the enhanced transparency compared to maps produced by outsiders, the inclusion of community members in the process, and the sense of empowerment that may be experienced by community members (Lewis 2009; Parker 2006). I have included the results of that event within the discussion of cultural expert interviews. I was invited by members of the museum society in Armstrong to bring my materials and do a short presentation during their weekly coffee time. Unfortunately the plan was not well communicated to the rest of the society and while many of those present were keen to participate they were initially reluctant as they did not feel like they had much to contribute. In the end I did collect some spatial data information regarding locations of market gardens in the north part of the valley. I also conducted an additional interview with two participants which was not planned in advance. Both interview participants were able to provide interesting tales of their interactions with the local Chinese community as well as many geographical locations of market gardening activities.

The original plan for the interviews was to script questions to act as a guide. However, after the first interview it seemed to be more productive and more interesting to allow the conversation flow naturally. This allowed the participant to maintain control on both the order and amount of information being shared. The conversational atmosphere that developed from not having a specific list of questions on the table between us also allowed me to more naturally probe when I desired additional information or clarification about a particular response. Depending on the personality of the individual participant, some interviews were comprised primarily of storytelling whereas other were mostly direct answers with a few short anecdotes.

I can identify three reasons why a more relaxed approach to interviewing was effective. The first was due to the number of interviews. As there were at least four, in some cases five, interviews for each ethnic group (Chinese, Japanese, White), it was not necessary for every person to cover every aspect of their ethnic group's history. The second reason that a relaxed approach to the interviews was successful was that interviews were only one data collection technique used; this allowed the interviews to be focused primarily on personal experiences and less so on general history. Finally, the interviews served as a means to validate findings from other data collection methods rather than being the only or primary data collection method.

The interviews were conducted in a variety of locations, including homes (seven), a workplace (one), a hotel (one), a coffee shop (one), museums (three), and the UBC campus (one). Participants were encouraged to pick the location in order to make them comfortable and feel more in control of the situation. Many of the interview participants were experienced at sharing their stories and had given interviews in the past. Once contact was made, all were quite eager to participate. Most participants thought the consent form was unnecessary but had no concerns about signing it. These forms were approved by UBC Okanagan's Behavioural Research Ethics Board. *Appendix B* provides the ethics approval form as well as consent forms for the interviews and the community mapping event.

The structure of each interview varied. Typically I began with some questions about family background and then the interview typically progressed to a story telling stage. In some interviews maps were brought out at the beginning of the interview; in others the maps were brought out towards the end. I concluded by asking any clarifying questions and inviting them to share any final thoughts or important points they wanted people to know

about the market gardening community. Between my first and last interview I grew in my ability to allow the conversation to flow more naturally.

With the permission of participants, the interviews were recorded digitally. These digital recordings were later reviewed and transcribed using a software package called Sony Sound Organizer which allowed for easy control of the digital recordings, such as the ability to slow the speed of playback and keyboard short cut keys for pausing playback. I used Microsoft Word for transcribing; subsequently, all timestamps were entered manually. Following verbatim transcription, each Word document, one for each interview, was loaded into qualitative analysis software, NVivo 10, which is designed for “qualitative researchers [who] are interested in evaluating, interpreting, and explaining social phenomenon” (QSR International 2015:5). While this software is primarily designed for qualitative analysis, the robust coding capabilities allow for it to be easily adapted for mixed methods research as well.

The use of NVivo allowed for identification of themes and efficient extraction of information from the interviews through the use of codes. The coding process took place entirely within the software. Each interview was loaded as an individual document into a single project folder. The use of a single project folder that contained all the interviews allowed for the same codes to be used for each interview without having to recreate them every time or having to constantly refer to a separate document for definitions. A further advantage of using a software package such as NVivo for doing the interview coding was that there are advanced features for running analytics on all documents within a single project folder. These pre-packaged analytical functions allowed connections between codes or between interview participants to be revealed that may not have been obvious otherwise.

However, the developers are careful to remind users in the *Getting Started* guide that accompanies the software that “NVivo can help manage, explore and find patterns in your data but it cannot replace your analytical expertise” (QSR International 2015:6).

There are a number of reports that can be prepared within NVivo. One that I found particularly useful extracted the coded sections from each interview and combined them into a report organized by code, rather than by participant. For example, all the entries for “Agricultural Labour Issues” were grouped together, and then all the entries for “Maintaining Cultural Connections” were grouped together. Each participant is still identified which allows the researcher to return to the full interview if needed. For this reason, it may have been beneficial to perform the transcribing directly in NVivo as timestamps would have been embedded in the transcriptions and these would have then transferred to the reports making it easier to return to the place in the interview. I had not considered this advantage when I began the transcribing. However, this was only a minor inconvenience.

The coding process resulted in nineteen individual codes. While some themes and topics were identified in advance of the coding process, others developed organically as the process progressed. During the transcription process, I had kept notes on common elements that I thought may materialize as interesting themes and these initial thoughts helped form the first codes. However, some of these were later refined. For the first few interviews the coding process was iterative as I developed codes as needed. After a few interviews had been coded, I tried to avoid adding any additional codes as I had developed a sense of all possible themes and topics. Codes were also refined as the coding proceeded; for example, some codes I divided into two categories as more nuances became apparent. Because I conducted

and transcribed all of my own interviews, I had the advantage of being deeply familiar with the material.

As the identification of locations of market gardens was a central purpose of the interviews, this was a pre-determined code. Important codes that developed during the initial coding process included those referencing locations, such as locations for distribution of product or procurement of materials and supplies, locations of residences, and locations of other activities or events that were important to the market gardening communities.

For both the Chinese and the Japanese communities personal relationships – specifically kin or village connections from back home – were important factors in securing employment, finding opportunities to purchase or otherwise acquire land, and other aspects of daily life. As such, codes capturing these relationships were also important. A cluster analysis was performed in NVivo that grouped the codes based on overlapping information. This cluster analysis then informed the organization of the qualitative results section of Chapter 5 - Results. A complete list of codes and the results of the cluster analysis performed in NVivo is presented in *Appendix C Interview Codes and Cluster Analysis*.

4.1.4 – Site Visits

An important aspect of landscape phenomenology research involves the researcher directly experiencing the landscape, or “tactile engagement” (Wylie 2007:177). The intention identified in my research proposal was that by visiting sites, walking around, and collecting photographs I would further understand the geographical context of market gardening locations, which in turn would contribute to the my ability to understand the experiences of those who dwelled there in the past (Wylie 2007, 2012; Tilley 1994). As I live in my study

area, I was able to visit a number of locations that were important for the market gardening industry.

On my daily commute to campus I take the Number 4 UBCO/Pandosy Express bus. This route passes through many areas that were once hubs of market gardening activity: along the KLO and Benvoulin corridors, past Orchard Park Mall, and down Enterprise Way. At the intersection of KLO and Benvoulin Road a tobacco barn still stands, albeit barely, on a farm that was once farmed by Chinese sharecroppers. Just west of that intersection a market garden continues to operate seasonally.

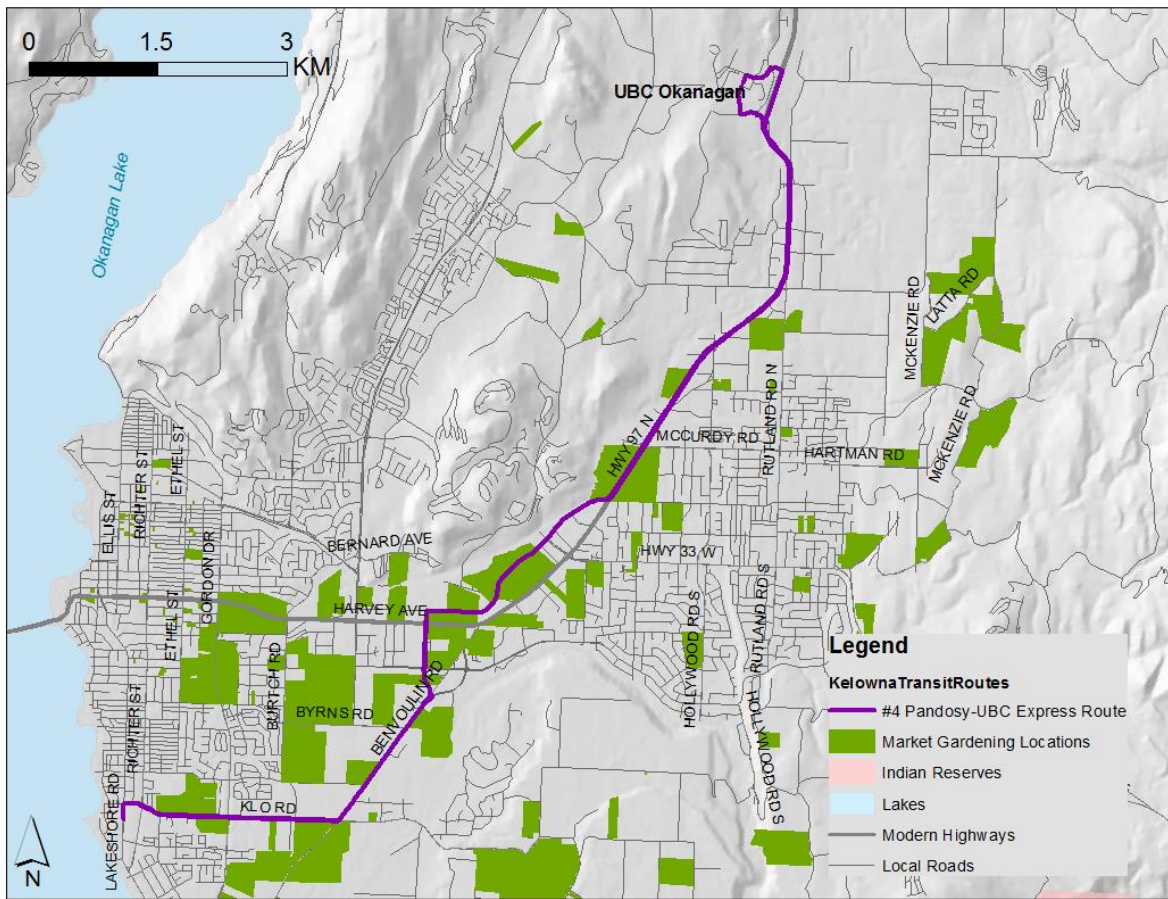


Figure 4.1: Number 4 UBCO/Pandosy Express Bus as it travels through many former market garden locations. (Cartography by author. Map created in ESRI ArcGIS 10.2. NAD 1983 UTM Zone 11N. Data acquired from BC Data Distribution Warehouse and Natural Resources Canada.)

Rennell (2012, 2009) describes the fieldwork common to landscape phenomenology as subject-centred survey, and explains how it is both the defining feature of the approach and its greatest source of criticism. My visits to local museums and archives were punctuated with long conversations with locals, both staff and volunteers, possessing deep knowledge of the area. Following these visits I would walk or drive around the community while the information was still fresh in order to develop my understanding of the geographical context of stories shared by the staff and volunteers, as well as the archival information I had collected during my visit. As most of the physical evidence of market gardening and related activities is long gone, visiting the locations where gardens and farm stands once stood helped me to understand the totality of the changes that have occurred.

People often use current building references to describe where something once was. For example, I12ST described one of her family's market gardening operations as being where "Mark's Work Wearhouse in Kelowna now is." These references are often impermanent, in some cases already gone, but the provider of the information has either forgotten that the listener may be unfamiliar with the area or forgotten that the business has closed. In Kelowna, a common landmark that is referenced in many written reminiscences of the Japanese market gardening community is Western Star Trucking, also known as White Star Trucking, that was located on Harvey Avenue and later on Enterprise Way from 1967 to 2002. I later identified many of these locations through internet searching, speaking to others who were knowledgeable, or through exploring Google Street View. Using Google Street View it was possible to explore the area the participant was referring to in order to more precisely identify the location they were referring to. In some cases the business had recently closed but Street View imagery for the past few years was available. Traveling to locations

identified in interviews, or exploring them remotely through Google Street View, helped me understand how that location fit in the wider geographical context.

4.1.5 – Embodied Practice

The “tactile engagement” (Wylie 2007:177) of a landscape phenomenology approach is not limited to walking and visiting known sites. Tilley (2004) argues that to obtain a more holistic perspective of place, it is imperative to practice embodied research. “An embodied perspective begins with the assumption that our bodies are mediums through which we experience the world” (Park Lala and Kinsella 2011:78). As an exercise in embodied research I planted a small vegetable garden. I felt that growing some of the crops that would have been cultivated by the market gardeners would provide me with important experiential knowledge. As interacting with and experiencing the landscape first hand is an important aspect of a landscape phenomenology approach, growing vegetables in the same manner that the market gardeners would have helped me understand some of the physical trials they may have faced.

For three seasons I planted a vegetable garden in my yard in the Mission area of Kelowna. It is located within a few kilometers of where many market gardens operated, not far from where one of the last remaining market gardens operates today. Reflecting the practices common to the Chinese market gardeners I grew about two-thirds of my crops from seeds. The remaining third were grown from starter plants, which was the practice used by many Japanese market gardeners in the area. My garden contained many crops common to market gardening in the area. For example, tomatoes and onions were frequently grown by Japanese orchardist and sharecroppers. Carrots, cucumbers, peppers, and beans were common among both the Chinese and Japanese market gardeners.



Figure 4.2: My vegetable garden in June 2014 as many plants are starting to produce. (Photograph by author.)

While the scale of my small garden, about 10 by 15 feet in size, was not comparable to the fields of the market gardeners, this was still a valuable exercise. I learned about the work that goes into preparing even a small patch of land and the regular maintenance that patch requires in order to produce a viable crop. The Chinese market gardeners especially were renowned for their tidy fields, a feat which requires diligence and hard work. Through this process I gained insight into the patience required while waiting for crops to produce. I was growing for the fun and experience of it and found the wait agonizing. It is difficult to imagine the trepidation many market gardeners may have felt waiting for their crop to produce knowing their livelihood and their family's wellbeing depended on it.

4.2 Data Processing, Designing, and Building the GIS

Designing and implementing the GIS occurred parallel to the archival data collection. Once an overall design plan for the GIS was developed, there were three main stages to building the GIS prior to performing any analysis. Firstly, digital spatial data were created through a process of digitizing analog maps and through editing modern digital cadastral

data. Following this, all information gathered during the data collection process was entered into informational tables using Microsoft Excel (Microsoft 2013). The final processing step occurred when the informational tables were linked to digital spatial data.

The most difficult aspect of any historical GIS undertaking is locating reliable spatial data contemporaneous to the period of study. In an ideal situation physical maps from the time period can be located and are useable. Preferably maps of similar scale, quality, level of detail, and condition are available for the entire study area. None of these factors existed for this research; however, good quality spatial data were still constructed as a result of using a number of different corroborating sources. It is quite common in historical GIS research for spatial data to not be of the quality desirable for most other types of research (Wong, So, and Zhang 2012).

As there were no existing historical digital spatial datasets for the study area, one focus of the archival research was to locate historical maps that could be digitized. The spatial data used for creating the structure of the GIS was cadastral data, also commonly referred to as property lines or land parcels. Once digitized versions of historic maps were created through scanning or photography they were georeferenced, or georectified, in order to be imported into in the GIS. This is the process where the digital image is assigned geographic coordinates and aligned with known spatial entities.

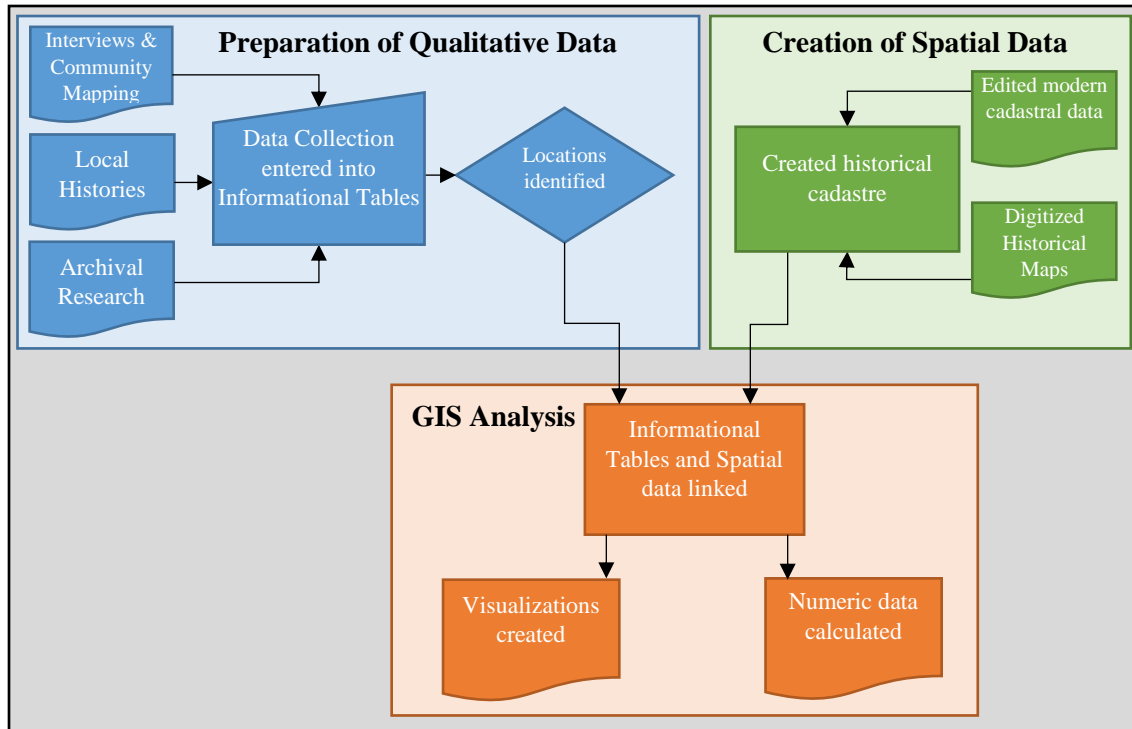


Figure 4.3: Flowchart showing stages of preparing and creating digital data for GIS analysis.

4.2.1 – Designing the GIS

One of the greatest challenges encountered while designing the GIS was that there are fundamental differences between qualitative approaches to research and best practices for database design. From a computer programming perspective it is considered ideal, even necessary, to know what you want to ask of your data before you design your database and then build it accordingly. Qualitative research frequently draws heavily from grounded theory, which lets the details of your research questions develop more organically as the project proceeds (Glaser and Strauss 1999; Charmaz 2006). Traditionally computer science dictates that all potential queries be identified in advance of the database design, which contradicts the fundamental ideals of a grounded theory approach.

In order to proceed with the design phase I identified some general questions I expected to ask of the data. For example, “Where were market gardens located?” or “Who

operated them?” At this stage of the process I had already spent time in the archives, conducted some interviews, and read a number of secondary sources. I had begun to develop an understanding about the types of information that were available. After devising a list of possible questions and reviewing initial findings from archival research and interviews, I developed a list of over 30 variables that were used to guide the database development and could form the foundation of many different questions. Developing a list of variables at this stage of the research allowed the data entry to proceed as consistently as possible and all information that was potentially useful to queries at a later stage would be captured in the initial data entry, rather than having to go back and review sources for variables I had not considered.

4.2.2 – Creating the Digital Spatial Data

In the next phase, I created the digital spatial data. The informational tables, which summarized the results of the data collection, would eventually be linked to this dataset. The final linked data would be used for producing visualizations based on queries, such as “where were all the market gardens operated by Chinese?” I chose cadastral parcel data as the spatial unit to which qualitative data were linked for three key reasons: they are relatively stable entities; changes have been well documented and can be confirmed through further research; and the quality of data is very high. Data availability was another reason why cadastral data were chosen. I used the cadastral fabric, a complete unified layer of all current cadastral parcels in the province, as a starting point for creating historical spatial data. Previously, each regional district was responsible for mapping and maintaining their own cadastral digital data and this resulted in issues with alignment and inconsistency between them. In recent years,

efforts have been made to achieve improved uniformity across the province which was important as my research crosses two regional districts.

Building the spatial data and then creating comprehensive informational data tables that were consistent and linkable was technically challenging and also very complex in other ways. It was difficult to access paper maps from the relevant time periods that could then be scanned and georeferenced. While maps were numerous in the archives, they were scattered throughout the valley and far from away from any digitizing equipment. Maps located in the regular collection at Koerner Library at UBC Vancouver were used as the primary source of information for most parts of the study area because a scanner was available at the library that could be used to digitize the maps. The year of publication for each historical map varied by geographic location.

UBC has many hundreds of maps in its collections that would have been useful for this research; however, most of them have been transferred to the Rare Books and Special Collections Library in Vancouver and access is strictly controlled. A few maps were located in the UBC regular collection that were scanned on a large roll scanner and then incorporated into the digital spatial data.

Table 4.2: Showing the year and source of maps used in the creation of the historical spatial data.

Location	Year	Source	Digitization Method
Kelowna	1935	UBC Library and Kelowna Public Archives	Scan
Kelowna	1964	Kelowna Public Archives	Photograph
Rutland	1949	Kelowna Public Archives	Photograph
Armstrong	1958	UBC Library	Scan
Vernon	1907	UBC Library	Scan
Vernon	1951	UBC Library	Scan
Spallumcheen	1949	Armstrong Spallumcheen Museum and Archives	Photograph

Typically, paper maps can be digitized by one of three methods: scanning on a large roll scanner; digitizing on a digitizing tablet; or through photography. After the digitizing is complete the digital image must be georeferenced. While the maps in the UBC collections could be scanned on the roll scanner, some parts of the study area required additional maps from local archives. Due to a lack of local resources it was necessary to use photography. Photography is the most cumbersome approach due to the size of paper maps, which must be photographed in segments and then stitched back together digitally using software. Photography is also the least favourable method because it introduces the most error into the resulting image. Edge effects, such as warping or distortion, can appear at the edge of each individual photograph. While these may be smoothed during the composition process they will still be present whereas a scanned image, if the entire map is scanned at once, will have very little of this type of distortion.

For photographing the maps, a Nikon D-80 DSLR camera on a tripod was used. A remote control was used to reduce the amount of camera shake present in the images. Maps were photographed in the Kelowna Public Archives and the Armstrong-Spallumcheen Museum and Art Gallery. In both cases fluorescent lights provided sufficient lighting so no additional light sources were required. A major challenge at Armstrong was that they have encapsulated many of their maps in order to preserve them. The encapsulation material is highly reflective so it was difficult to get the lighting so that no glare was visible in the captured image. 30–50 percent overlap between adjacent images was achieved during the photographing which allowed for easier composition of images.

ICE (Image Composite Editor) (Microsoft Research 2015) was used for compositing the images. This software was very straightforward to use. This software analyses the images

and identifies tie points through algorithms that locate points of similarity between overlapping images. Relying on algorithms that interpret the image rather than manually selecting points has both advantages and disadvantages; however, the improved efficiency in the process, as well as the reduced human error, meant that any disadvantage, such as loss of control over the process, was outweighed by the benefits. If the resulting composite image was inconsistent with the original map, such as having warping or gaps, then the process was repeated.

Some maps did not composite easily in ICE due to the low level of detail in some areas. ICE is designed for photography so the typical images being used would have many colours and textures for the software to interpret. Cadastral maps typically have a light background and dark blue or black lines. In cases where even 30–50 percent overlap was not enough for the software to handle individual images were georeferenced in ArcMap as individual overlapping images.

Two different approaches to digitizing the historical cadastral were used. For some parts of the study area modern cadastral data were used as a starting point and then edited based on scanned and georeferenced historical maps. In other parts of the study area it was more efficient to trace the historical maps on screen once they were scanned, also known as head's up digitizing, rather than work from existing modern data. The decision to take one approach over the other depended on how much development had occurred in the intervening years. Specific concerns included how many parcel boundaries had changed, been removed, or been added in an area in the years between the map production and the creation of the modern digital spatial data.

The first map I georeferenced was a 1935 map of Kelowna, copies of which were located both in the Kelowna Public Archives and the UBC Collections. This map was sufficiently detailed with property boundaries including the Lot, Block, and Plan Numbers for individual properties. The map was quite large and the copy at UBC has a linen backing so it was very difficult to scan. While the linen backing has likely contributed to maintaining the excellent condition of the map it also resulted in greater distortion of the scanned image due to the added weight. All georeferencing of maps, processing of data, and GIS analysis was performed in ESRI's ArcGIS 10.2 (ESRI 2013).

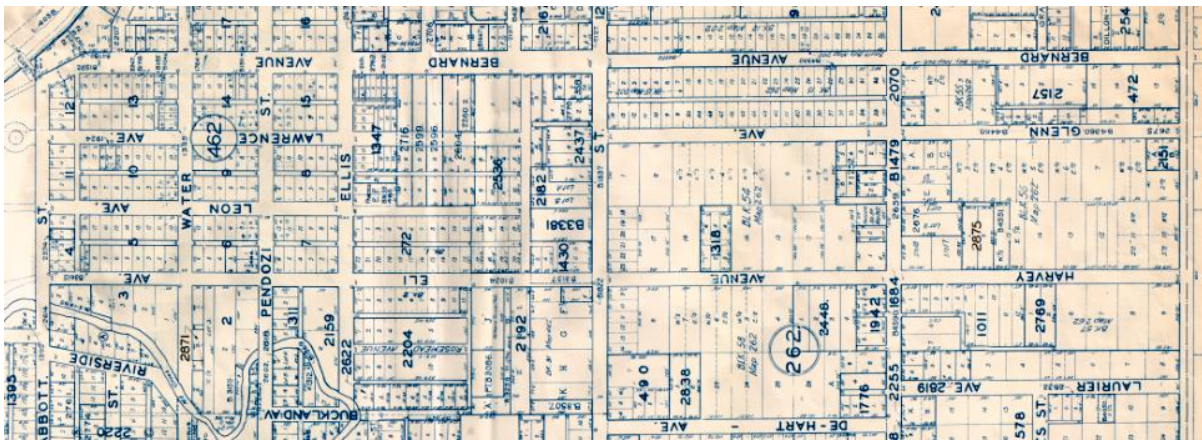


Figure 4.4: Portion of a scanned image of a 1935 map of Kelowna. (Original paper map courtesy of UBC.)

The scanned image contained three bands of data, red, green, and blue. Originally, I worked with all three bands but as the red band contained sufficient data to be used on its own I switched to working strictly with the red band. By working with a single band rather than multi-band imagery there was considerable time savings in the process as the software was not trying to render all three layers simultaneously.

By working with single band imagery I was able to perform a function in ArcGIS which allowed me to isolate just the lines, such as property boundaries, and eliminate the background. I was able to reclassify all the pixels with relevant information to be visible and

the background data to be invisible. To determine which pixels I wanted to remain visible I sampled a number of locations throughout the image and determined that all background values were above a pixel value of 200 and all lines and text were below a pixel value of 50. I performed a reclassify function so that all the values below 100 classified as '1', and left visible, and all values above 100 were classified as 'NoData' rendering those pixels invisible.

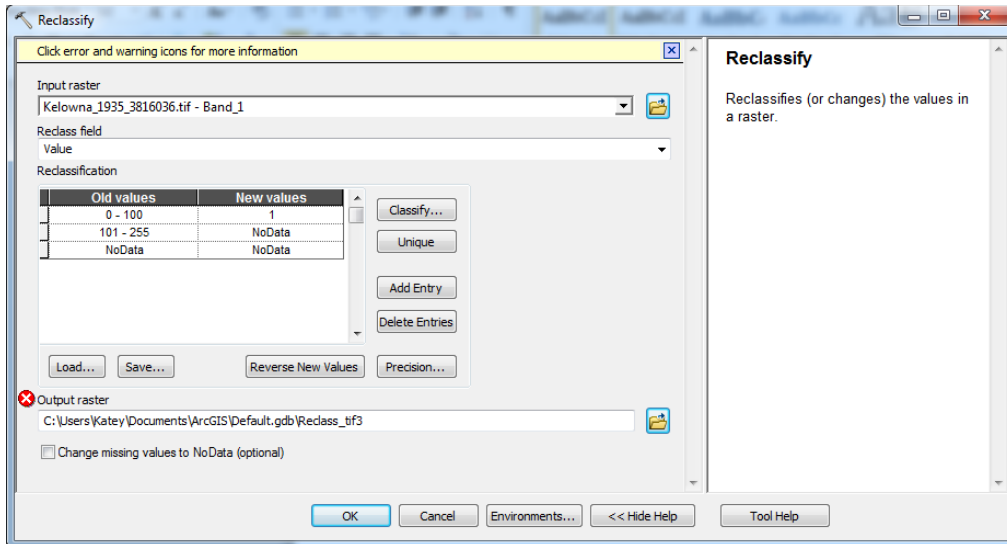


Figure 4.5: Screen capture of the reclassify tool in ESRI ArcMap 10.2. Note the values in the reclassification table.

The image that resulted from the reclassify process was very clear. There were some pockets of missing information but by checking the original scanned image I confirmed these were present in the original document and not a result of image processing. The original document was a blueprint map; accordingly, there were some slight anomalies such as missing or overlapping lines that occurred during the production of the map. I then georeferenced the single band image. Figures 4.6 and 4.7 show the difference in orientation before and after the georeferencing process. The image on the left, Figure 4.6, is the unreferenced image. The image on the right, Figure 4.7, is the single red band after

processing. The streets and parcels in the georeferenced image are straight whereas the unreferenced image runs at an off-angle.

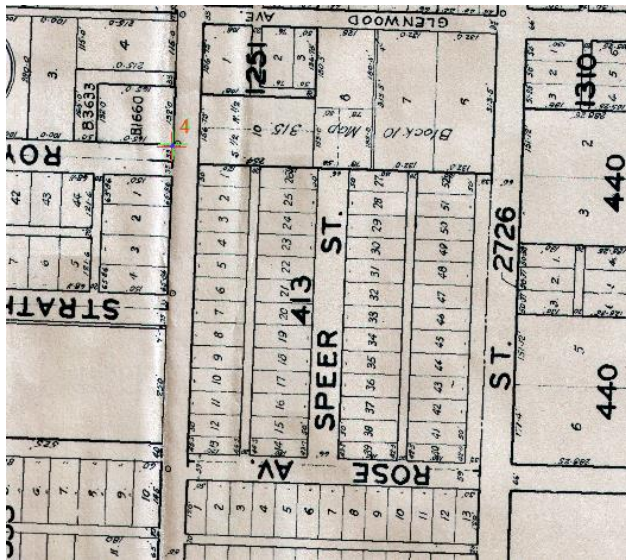


Figure 4.6: Zoom in of 1935 map of Kelowna before georeferencing. Note the angle of the streets. Also, this is a three band colour tiff image.

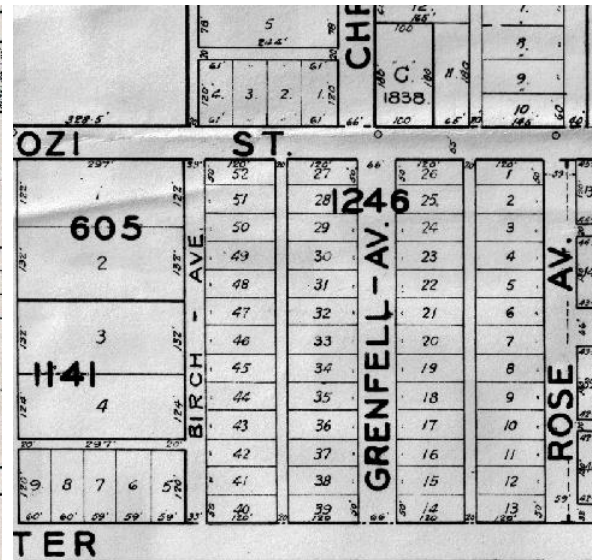


Figure 4.7: Zoom in of 1935 map of Kelowna after georeferencing. Note that streets are now straight. This image is a single band tiff. Note how no visual information is lost by switching to a single band.

Using ArcGIS I selected points starting around the outside of the image then worked towards the middle. These are called control points, or tie points. The process began with selecting a recognizable location on the image and then selecting the corresponding location on the reference data. Road centrelines accessed from the City of Kelowna Open Data Catalog were used as reference data for this example. As some areas of Kelowna have undergone considerable redevelopment this process required additional research to confirm which roads were still in the same location. Widening of roads was not as much of an issue as relocation or rerouting because road centrelines are not typically affected by widening if the widening was performed evenly.

As I selected control points, ArcGIS calculated a Root Mean Square Error (RMSE), a measure of the error present in the calculations. In order to achieve a low RMSE, indicating

less error, I reselected the control points, deleting points with high RMSEs, as I proceeded. There are different transformation algorithms that can be used, each performing different types of mathematical transformations on the imagery. While a transformation may provide the “best” results in terms of a low RMSE, each transformation results in a different amount of distortion. So while the image at the control point may line up well, other areas may be out of alignment or awkwardly distorted. After trying each of the options I decided on a second order polynomial transformation that resulted in a higher RMSE than other options but the alignment throughout the image was much more consistent.

Some areas of the map were more distorted than others prior to georeferencing. Review of the original map indicates this may partly be due to a scanning or reproduction issue that affected those areas. To reduce the effects of this error, in the final attempt at the transformation I began by selecting control points in the most difficult areas. From there I worked my way around the map, focusing on the perimeter as much as possible. It is important to recall that this is a scan of a map that is backed by linen so there were a few spots where buckling or bending existed in the original map introduced more error at these locations.

Link

Total RMS Error: Forward: 1.96186

Link	X Source	Y Source	X Map	Y Map	Residual_x	Residual_y	Residual
1	46.061688	27.798726	320479.337000	5528270.579000	4.80825	0.520605	4.83635
2	81.364960	21.658440	320922.559000	5530396.533000	0.148219	0.631296	0.648462
3	67.905389	5.432392	321875.489000	5529539.757000	0.118711	-0.541592	0.55445
4	2.788643	19.559829	320887.527000	5525637.344000	0.267376	-0.0677422	0.275824
5	32.814680	25.473243	320587.144000	5527463.280000	-1.60402	-1.23826	2.02637
6	42.883186	19.003683	321003.113000	5528061.327000	1.14016	0.236551	1.16444
7	45.838101	15.305753	321233.743000	5528232.233000	1.68065	0.703475	1.82194
8	69.427999	5.437828	321879.061000	5529630.512000	0.727134	-1.9342	2.06636
9	71.058609	5.444920	321882.229000	5529732.020000	0.79151	0.883158	1.18594
10	50.552168	2.024996	322042.911000	5528479.725000	-0.593437	-0.370864	0.699791
11	65.240802	5.422560	321870.031000	5529381.462000	-0.186188	2.4169	2.42406
12	64.341827	6.082639	321827.279000	5529327.191000	-1.19568	0.58781	1.33236
13	63.281556	7.900068	321716.443000	5529266.338000	-0.0951862	-1.34844	1.35179
14	58.735688	23.402425	320766.894000	5529028.669000	-1.28938	-0.680818	1.45809
15	59.450653	21.563356	320879.667000	5529067.660000	-1.69321	-1.34058	2.15966
16	56.317445	27.644406	320504.511000	5528890.231000	-0.708429	-0.336387	0.784237
17	40.987477	25.163615	320624.794000	5527960.679000	0.518794	2.20075	2.26107
18	36.058380	26.132114	320552.491000	5527661.596000	-2.83527	-0.321665	2.85346

Auto Adjust Transformation: 2nd Order Polynomial

Degrees Minutes Seconds Forward Residual Unit : Unknown

Figure 4.8: Screen capture of the RMSE table during the georeferencing process. Note the drop down menu at the bottom of the image labeled "Transformation"; 2nd Order Polynomial is selected.

In cases where a subdivision or other change in property boundary was relevant to the research, separate polygons were created reflecting these boundary changes even though they partially shared the same spatial extent. For example, where a property was subdivided during the period of interest, such as being divided into two smaller but equal parcels, then three separate polygons were created – one for the original larger lot and two for the resulting half lots. This allowed each reference to be linked to the correct property. In cases where it was unclear which half-property the instance referred to it was linked to the large parcel representing the original complete lot.

The final step in preparing the digital spatial data prior to linking it with the attribute data was to assign each polygon a unique identification number. This was performed through a semi-automated process using Python Scripting in the Field Calculator functionality of ArcGIS. This process was a critical step in preparing the digital spatial data for linking to the tables of attribute data because it created the unique key that was then used in linking fields.

When shapefiles (spatial data files) are created in ArcGIS a field called “ObjectID” is automatically generated. It is often assumed that this field is unique (correct) and static (incorrect). As objects, in this case polygons, are created or deleted the ObjectID may change. That is why the creation of a dedicated unique and static identification field was necessary. This was achieved through a semi-automated process where I was in total control of the value ranges used, the sequencing (increasing by one each time), and the number of digits involved (five). I designed a sequence where the first number in the five digit unique identification number referred to the geographic area. For example, all polygons for Kelowna began with ‘3’. Although Kelowna was quickly developing throughout the time period a five digit number was sufficient to allow a unique identification number to be assigned to each parcel as the number of parcels was not likely to exceed the maximum unique ID of 39999. This field to contain these numbers was named ‘LotLink’.

4.2.3 – Building the Informational Tables

After the digital spatial data was created, the next stage was to build the informational tables that contained all of the material accumulated during the data collection process. I encountered a number of technical and logistical challenges throughout the research process, I feel that the greatest challenge was to find the right balance between capturing the accuracy and legitimacy of robust geographical data like the cadastre, a spatial representation of legal land records, while also maintaining the richness of qualitative information, and then to further incorporate all this into manageable data tables that could be linked to the spatial data to populate my historical GIS and perform meaningful analysis.

Individual tables for each document or source type were created using Microsoft Excel. For example, one table was created for tax rolls in Kelowna; a second table was

created for interview references to Kelowna; and a third table for references to market gardening in the Kelowna City Council minutes, and so on. In cases where only a few records existed of one document type these were combined into a single table for the relevant geographic area.

As well as being organized by document or source type, the tables were organized based on the geographic location of the occurrence being recorded, rather than the location of the archive the record was located in. This is an important distinction as most of the records in the archives visited are primarily related to the immediate surrounding area but not all. For example, the Chinese Community Collection at the Kelowna Public Archives contained records recovered from Kelowna's Chinatown. Many Chinese men would return to Kelowna's Chinatown in the winter season but farmed elsewhere in the valley during the summer months. Records located in the collection pertain to farming activities that extended from Penticton in the south to Armstrong in the north.

This approach for organizing the tables by both location and document or source type made linking the information to the spatial data simpler because any follow-up research that needed to be done to confirm locations was focused on the relevant geographic area. In addition, many smaller tables were easier to manage than a single larger table. As the tables were created in Excel and then converted into .csv files (comma separate values, a simplified and multipurpose computer file) prior to being brought into ArcMap for the linking process, any issues with this stage of the process were easy to identify with smaller tables. Most importantly, the uncertainty associated with different document types or sources was easier to keep track as all the records in each table pertained to the same document type. For example, tax rolls have very precise geographic data and therefore the level of uncertainty is

quite low. A reference from another document type, such as a reference that only identifies a block of land or an intersection of roads will be less certain.

The basic process for structuring the informational tables was that each reference to a location or an event was entered as a single instance in the table (i.e. an individual row). For example, each reference to a parcel in the tax rolls was treated as a separate instance and entered on a separate row in the table. Therefore, if a property was owned by the same person for nine years it would result in nine separate rows in the table, one for each year of ownership. After linking this would also result in nine individual polygons, one for each instance. If that same property was mentioned in another document type this would result in further instances (rows) and more polygons. As well, using the list of variables developed in the design stage, each table was formatted so that each variable equaled a column heading. Consequently, each column contained one type of information and each row was attributed to a single location or event which I refer to as an instance.

4.2.4 – Linking the Informational Tables to the Digital Spatial Data

Following the creation of the informational tables, each instance contained in a row in the table was then linked to a single parcel of land. Before this could happen, the unique ID, the LotLink number, for each parcel had to be entered into the informational table to act as the relational key to link the two types of tables together. I used two different approaches for assigning LotLink numbers to parcels. They were either entered through an automated process using Python coding or else they were entered manually depending on the original source of information. After each instance (row) was assigned a LotLink number, the informational tables were linked to the digital spatial data and an individual polygon was

created for each instance through a simple copy and paste procedure performed programmatically.

For tax rolls or other documents that had complete Lot, Block, and Plan/Map Numbers it was possible to automate the software to read these data in the informational tables and then populate the LotLink field. This step did not create the link between the attribute and spatial data, rather it populated the LotLink field in the informational table in preparation of the linking process. Detailed coding information is presented in *Appendix D – Code Block*.

For systematic records with complete spatial information the programmed approach was successful. For example, in the City of Kelowna tax records there were more than 1900 instances, or rows, of data. In my first attempt I managed to successfully identify and link more than 1800 of these. Most of the unmatched instances were easily solved by the creation of subdivided parcels which were subsequently assigned new unique LotLink numbers.

The identification of the correct parcel and assigning of a LotLink number was less straightforward for other types of data, especially for references identified in interviews or printed oral histories that were based on general descriptions (e.g. “next to Mr. Smith’s Barn” or “at the bend in the river”) rather than precise locations (e.g. Lot 5, Block 8, Map 462). Many of these instances required more research to determine the location of the parcel. Once a parcel was identified the unique LotLink identification number for the digital spatial data was then manually entered into the informational table in advance of the linking process.

During the linking process, for each successful link an individual polygon was created representing an individual occurrence. The linking and copying process was

performed in Python language using the software IDLE (Integrated Development and Learning Environment) (van Rossum 1998).

Creating an individual polygon for each instance was appropriate to the size of the data set and the scale of the geographic area of analysis. Other common approaches may link multiple records to one geographic entity (i.e. a single polygon may represent multiple instances), also known as a one to many relationship, a process that would occur through a temporary connection between two or more tables called a join. I decided to take a permanent approach creating a single polygon to equal a single instance in order to facilitate easier querying and to better visualize changes through time, such as changes to the ethnicity of the land user or changes in the type of land tenure. This approach fulfilled my desire to have a flexible and simple spatial data set for querying and analysis.

The creation of individual polygons for each instance was appropriate for the size of the data set because I am only dealing with a few thousand records. The benefits of dynamic and temporary linking, versus static and permanent as I have used here, becomes more relevant when working with large data sets (such as hundreds of thousands or even millions of records), when working with numerous tables, or when the data in the tables are subject to change frequently. While my approach requires more work in the creation of the individual polygons, the result leads to simplified querying because the query is being run on a single data set, rather than a joined dataset which may introduce errors. While this meant more polygons to handle and store in the geodatabase, it also made for easier querying and visualization which was a major goal of this aspect of the research. More importantly, the option of performing unanticipated queries of the data in later stages of the analysis was possible because the relationships between the informational tables and the spatial data were

permanent; therefore, it was not necessary to repeat the linking process. The individual polygon now contained all the information that had been in the original informational table.

1	Year	page	Assessed Owner	LotLink	Property Notes	Lot	Block	Registered Plan	Frontage	Acres	Land Value	Improvements	Total	Sewer Connection Fee	Sewer Rental Rate	Coddling Moth	Notes
75	1934	18	Wong Bat	33400		2	3	462	100		1400	850					
76	1933	18	Wong Bat	33400		2	3	462	100		1400	850					
77	1932	18	Wong Bat	33400		2	3	462	100		1400	700					
78	1931	18	Wong Bat	33400		2	3	462	100		1400	700					
79	1930	18	Wong Bat	33400		2	3	462	100		1400	700					

Figure 4.9: Screen capture of informational table in Microsoft Excel prior to linking to spatial data. Note that the LotLink number field has been populated, in this case programmatically.

Croil	LotLink2	PropNotes	L_Lot	L_Block	L_Plan	Frontage	Acres	LandValue	Improvements	TotalValue	SewerCon
191	33834	B3482	<Null>	62	262	100	0.66	450	1325	<Null>	<Null>
306	33400	<Null>	2	3	462	100	<Null>	1400	675	<Null>	<Null>
329	33400	<Null>	2	3	462	100	<Null>	1400	<Null>	<Null>	<Null>
311	33400	<Null>	2	3	462	100	<Null>	1400	700	<Null>	<Null>
322	33400	<Null>	2	3	462	100	<Null>	1400	645	<Null>	<Null>
311	33400	<Null>	2	3	462	100	<Null>	1400	645	<Null>	<Null>
329	33401	<Null>	3	3	462	100	<Null>	1400	<Null>	<Null>	<Null>
311	33401	<Null>	3	3	462	100	<Null>	1400	350	<Null>	<Null>
323	33401	<Null>	3	3	462	100	<Null>	1400	350	<Null>	<Null>

Figure 4.10: Screen capture of Attribute table in ESRI ArcMap 10.2 after the information table seen in Figure 4.8 has been linked to the spatial data.

4.2.5 – Analysing the GIS Data

Two different analyses were performed using the GIS database. The first analysis determined the type of land tenure practice, summarized by decade. Summary data were also separated into subsets of Japanese and Chinese ownership or tenancy in order to compare the two groups. The five types of tenure included in the analysis were: Employee, Lease, Own, Rent, and Sharecrop. The second analysis was also organized by ethnic community and decade but it focused on four types of farming practice: market gardening; large scale

vegetable farming including sharecropping; intercropping in orchards; and small scale vegetable farming as an ancillary operation on farms or private residences.

The final database included 3,290 records; however, not all of these were directly attributable to market gardening. Records not attributable to market gardening were included in the database for two reasons. First, during archival research and data collection it was more efficient to record all instances of Chinese or Japanese land ownership or occupation and then later, through subsequent research, identify which ones were relevant. A second reason was that this leaves the database as flexible as possible to look more broadly at the Chinese or Japanese communities throughout the region.

To streamline the analysis of records that were attributable to market gardening, two subsets of records were created. One subset included only records with Japanese ownership or tenancy, the other subset included only records with Chinese ownership or tenancy. Only records where the land use was associated with market gardening, as indicated in either the original source or in ancillary sources, were included in the subsets. Four land use types were specified: Market Gardening (MG), Large Scale Vegetable Production (VEG), Intercropping (Orchard with Vegetables) (OWV), and Ancillary (ANC), which refers to examples of individuals selling excess produce from their own personal gardens or very small scale cash crop production that was not their main farm income, such as a family growing radishes for sale to the local grocer (I2TW 2014).

4.3 Chapter Summary

Each of the data collection methods outlined in this chapter contributed to the success of this research. Text-based sources acquired through archival research, published reminiscences, and local histories provided both general and specific information on many

aspects of life in the Okanagan. These aspects include details of the agricultural industry, the challenges of settlement, and the reported interactions between the different ethnic groups. These same sources also contained explicit details on land use, land tenure, crop types, crop prices, sales, conditions in the industry, and geographic and temporal locations of market gardens, farms, packing houses and other supporting industries.

Interviews with descendants of Chinese, Japanese, and white settler families provided key experiential information, colourful storytelling that aided in developing my understanding of the overall context of experiences, and both general and specific location information for market gardening activities. Another important aspect of the interviews was the opportunity to probe, clarify, or expand on topics that simply is not possible with printed material. It is not always possible to include interviewing as a data collection method in historical research, particularly research focused on the distant past. As I was examining the relatively recent past, interviewing provided an opportunity to not only speak with persons who actually practiced market gardening, or whose parents practiced market gardening, but to elaborate on the experiences of their forebearers as reported in published material and archival sources.

Visiting locations where market gardens existed in the past or where important sites to the market gardening community, such as homes, businesses, or neighbourhoods once stood, enriched my understanding of the geographical context of the industry, allowing me to see both the relative isolation of some locations and the interconnectedness that existed between others. Furthermore, visiting these locations allowed me the opportunity to reflect on the changes that have occurred to the landscape over time. Many areas that were once home to fertile market gardens now lie under parking lots, malls, and residential

developments. Seeing how permanent the changes are provides an opportunity to consider how society's values have changed over time and how this is reflected in our built environment. Sitting in a parking lot that was once a large market garden serving customers from Kelowna to the Kootenays which provided a family with a livelihood is a thought-provoking experience.

The final data collection method was an exercise in embodied research. Over three summers I grew six varieties of tomatoes, three varieties of cucumbers, five varieties of peppers, as well as beans, peas, strawberries, lettuce, Swiss chard, onions, zucchini, carrots, beets, and radishes. Each year I have expanded this garden. While this activity provided no direct evidence that could be further incorporated into the GIS or qualitative analysis stages, it did allow me to gain valuable insight into the work of market gardening.

CHAPTER 5 RESULTS

This chapter is divided into two main sections, GIS Results and Qualitative Results. While the original plan was to include all findings from the data collection in the GIS database, in the end this was not possible due to the uncertain and imprecise nature of many historical documents. Despite these challenges, a GIS database was constructed containing 3,290 individual records spanning approximately one hundred years of market gardening in the valley. From this GIS database, maps were produced that reveal spatial patterns of the market garden industry. These maps respond to research questions outlined in the introduction, such as where were market gardens located and what types of tenure were practiced, as well as contribute to the overall picture of the market gardening community. When considered in the wider history of the agricultural community in the Okanagan Valley, these visualizations demonstrate how the everyday lived experiences of the market gardeners were not so different from their white neighbours. Furthermore, the maps show how spatially integrated the Chinese and Japanese market gardening communities were in each community. Some observations and trends visible in the GIS results will be summarized in this chapter followed by a complete discussion of the causes and implications of these patterns in *Chapter 6 – Discussion*. That discussion will focus on responding to each individual research question.

Separate from the GIS results are the qualitative results detailing the experiences of the market gardeners. These are summarized in the second main section, Qualitative Results. The qualitative results gathered through archival research, interviews, and from published reminiscences are interwoven based on a number of themes identified throughout the research and analysis process.

5.1 GIS Results

There are two types of results from the GIS analysis: firstly, the creation of maps and secondly, the generation of numeric data summarising the distribution and concentration of the industry. The main purpose of the maps was to visualize where market gardening occurred. That allowed me to identify spatial patterns in the distribution of market gardens, in land tenure type, and in land use type and to consider whether these patterns were limited to one ethnic community or the other. The numeric data that were generated include results such as the total number of farms that were owned or total number that were rented. For both the maps and the numbers I summarized the results by decade, one group for each decade from the 1910s through the 1960s. All occurrences from the 1970s onwards were aggregated into a single group. Like the maps, the numbers allow me to identify trends in the industry.

The sources of attribute (qualitative) data for the GIS database varied by geographic location. For all areas, locations identified in interviews that were linkable to spatial data were included. For Kelowna, the main archival sources were city tax rolls (1905–40), city council minutes, and various miscellaneous documents derived mostly from the Chinese Community Collection at the Kelowna Public Archives. For areas that historically were rural and outside Kelowna city limits, including Rutland, an important non-archival source was the book *The Vision Fulfilled* (Hoshizaki 1995). This book provided over two hundred locations of market gardening that were mapped. In Vernon, the main archival sources were the Vernon Irrigation District toll rolls and the 1921 Census of Canada. Useful data from 1921 census was limited to the Vernon area because the recording of detailed location information was at the discretion of the enumerator and Vernon was the only sub-district with sufficient locational information to link it to the digital spatial data. Some Vernon locations were also

recorded in *The Vision Fulfilled* (Hoshizaki 1995). For Lake Country the main sources of information were published collections of family stories, *Century of Community* (LCMA 2013) and *The Vision Fulfilled* (Hoshizaki 1995), as well as some miscellaneous archival material. For Armstrong, the main archival sources were tax and toll rolls for the City of Armstrong and for the Municipality of Spallumcheen, as well as toll rolls for various water districts in the area.

5.1.1 – Maps and Quantitative Results

This section includes two summary tables of numbers describing the number (n) and percentage of farms by land use type and by land tenure type. For each analysis set, separate maps detailing each of the four geographic areas (Kelowna, Lake Country, Vernon, and Armstrong-Spallumcheen) were created resulting in 164 thumbnail maps, one for each decade grouping, organized into two types of maps for four different geographic areas. Results for Chinese and Japanese communities were displayed separately to allow for comparison. The results for the maps are summarized by geographic area based on the modern communities of Kelowna, Lake Country, Vernon, and Armstrong-Spallumcheen. Table 5.1 summarizes land tenure type by subset (either Chinese or Japanese). The results from the quantitative analysis support the existing understanding of the movement of Chinese and Japanese populations within the province. There were no Japanese records in the database prior to 1910; historical documents and interview data support the idea that Japanese did not begin settling in the Okanagan until approximately 1908. Furthermore, there was a doubling of the number of Japanese records between each decade grouping which is consistent with the rate of population growth observed in the interior of the province (Ward 2002).

Table 5.1: Summarizing the frequency of land tenure type²

		Chinese				Japanese					
		Subset total	Lease	Own	Rent	Subset total	Employee	Lease	Own	Rent	Share
All Years	(n) (%)	686 -	13 1.9%	463 67.5%	210 30.6%	1153 -	23 2.0%	41 3.6%	1002 86.9%	26 2.3%	61 5.3%
1900s	(n) (%)	20 -	1 5.0%	17 85.0%	2 10.0%	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
1910s	(n) (%)	94 -	1 1.1%	89 94.7%	4 4.3%	134 -	4 3.0%	1 0.7%	124 92.5%	1 0.7%	4 3.0%
1920s	(n) (%)	207 -	2 1.0%	132 63.8%	73 35.3%	255 -	9 3.5%	15 5.9%	199 78.0%	5 2.0%	27 10.6%
1930s	(n) (%)	273 -	6 2.2%	176 64.5%	91 33.3%	513 -	13 2.5%	11 2.1%	446 86.9%	15 2.9%	28 5.5%
1940s	(n) (%)	171 -	5 2.9%	83 48.5%	83 48.5%	274 -	8 2.9%	19 6.9%	211 77.0%	8 2.9%	28 10.2%
1950s	(n) (%)	60 -	1 1.7%	31 51.7%	28 46.7%	126 -	4 3.2%	3 2.4%	99 78.6%	7 5.6%	13 10.3%
1960s	(n) (%)	25 -	0 0.0%	21 84.0%	4 16.0%	88 -	2 2.3%	1 1.1%	80 90.9%	1 1.1%	4 4.5%
1970s onwards	(n) (%)	13 -	0 0.0%	13 100.0%	1 7.7%	74 -	1 1.4%	0 0.0%	73 98.6%	0 0.0%	0 0.0%

The first important trend is the consistently higher rates of landownership among the Japanese farmers compared to Chinese farmers. It is important to note that the Chinese data came from documents such as tax rolls that primarily document landownership so the values for the Chinese are inflated compared to what they more likely were in reality. A wider array of data sources were available for the Japanese that were not focused strictly on landownership so the values for the Japanese are likely more realistic. Despite this, the Japanese had higher rates of ownership for all decades. Another important detail is the wider range of land tenure for the Japanese. An “Employee” type was important for the Japanese because there were many occurrences in the qualitative sources of people working and living on farms for decades in a managerial or supervisory role. There were no recorded

² (n) refers to actual occurrences by decade (e.g. for the 1920s there were 207 Chinese properties, of which 132 were owned); percent values are based on occurrences in that decade and ethnic community (e.g. in the 1920s 63.8% or 132/207 of Chinese properties were owned). (n.d. = No Data).

occurrences of this for the Chinese. Sharecropping was practiced extensively by the Japanese but only anecdotal evidence was located during the data collection process showing Chinese practicing this form of tenure. Later, some archival evidence was discovered that did demonstrate Chinese participation in sharecropping but this was not incorporated into the GIS due to lack of explicit spatial information.

While Japanese landownership rose steadily in response to population growth and settlement, starting in the 1920s there was a decline in Chinese landownership, both as a percentage of land tenure type but also in regards to raw numbers. Figure 5.1 compares Chinese and Japanese landownership in Kelowna as recorded in the city tax rolls. In 1923 there was a steep decline in landownership as many Chinese sold off properties as the Chinese Immigration Act of 1923 was coming in to force, whereas Japanese ownership continues to rise steadily.

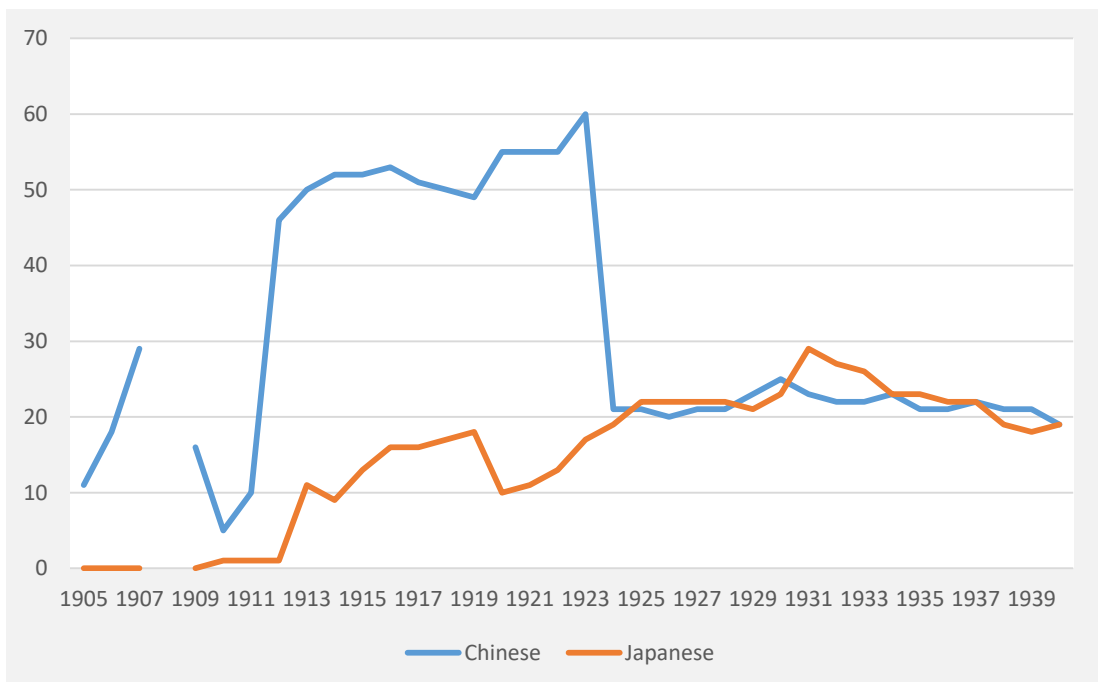


Figure 5.1: Comparing Chinese and Japanese land ownership in Kelowna based on city tax records for the years 1905 through 1939. Numbers on the left are the number of individual properties.

As seen in Table 5.1, in the 1910s the percentage of Chinese farmers owning land was nearly 95 percent, but by the next decade it was in the low 60s and never rose above 65 percent until after the Chinese exclusion period ended in 1948. By the 1970s any Chinese farmer still participating in market gardening was a land owner.

Table 5.2 summarises land use type. The most important difference to note is that the Chinese principally practiced market gardening with just a few instances of ancillary vegetable production, whereas the Japanese practiced a wide variety of commercial vegetable production in addition to market gardening. From the 1910s through the 1930s, the majority of Japanese were engaged in market gardening as most orchards were not yet established enough to produce a marketable crop and the farmers needed the cash crop income from seasonal vegetable crops. By the 1940s, more orchards were producing sufficient crops so the proportion of Japanese farmers involved in market gardening over other types of agriculture began to decline.

Table 5.2: Summarizing the frequency of land use type³.

		Chinese					Japanese				
		Subset Total	MG	Veg	OWV	ANC	Subset Total	MG	Veg	OWV	ANC
All Years	(n) (%)	686 -	681 99.3%	0 0.0%	0 0.0%	5 0.7%	1153 -	1010 87.6%	76 6.6%	61 5.3%	6 0.5%
1900s	(n) (%)	20 -	20 100.0%	0 0.0%	0 0.0%	0 0.0%	n.d. -	n.d. -	n.d. -	n.d. -	n.d. -
1910s	(n) (%)	89 -	89 100.0%	0 0.0%	0 0.0%	0 0.0%	134 -	123 91.8%	7 5.2%	1 0.7%	3 2.2%
1920s	(n) (%)	207 -	207 100.0%	0 0.0%	0 0.0%	0 0.0%	255 -	205 80.4%	33 12.9%	14 5.5%	3 1.2%
1930s	(n) (%)	273 -	269 98.5%	0 0.0%	0 0.0%	4 1.5%	513 -	461 89.9%	34 6.6%	14 2.7%	4 0.8%
1940s	(n) (%)	171 -	169 98.8%	0 0.0%	0 0.0%	2 1.2%	274 -	212 77.4%	33 12.0%	25 9.1%	4 1.5%
1950s	(n) (%)	60 -	59 98.3%	0 0.0%	0 0.0%	1 1.7%	126 -	75 59.5%	17 13.5%	31 24.6%	3 2.4%
1960s	(n) (%)	25 -	24 96.0%	0 0.0%	0 0.0%	1 4.0%	88 -	60 68.2%	6 6.8%	21 23.9%	1 1.1%
1970s onwards	(n) (%)	13 -	13 100.0%	0 0.0%	0 0.0%	0 0.0%	74 -	42 56.8%	3 4.1%	27 36.5%	2 2.7%

By the 1970s, 100 percent of Chinese were strictly practicing market gardening, whereas the proportion of Japanese practicing market gardening over other types of vegetable production had fallen steadily as many moved into orcharding or retired. For both the Chinese and the Japanese, the 1930s was the decade with the greatest number of market gardeners engaged in the industry.

5.1.2 – Kelowna

In Kelowna during the 1910s and 1920s, small scale market gardening was located on standard city lots or groupings of two or three city lots to the north and east of the central business district that runs along Bernard Avenue. Both Chinese and Japanese farmers participated in this type of small scale market gardening. There was also some light industry developing in the area where most of the market gardening was taking place, including

³ (n) refers to actual occurrences by decade grouping (e.g. for the 1930s there were 255 properties linked to Japanese, of which 461 were in market gardening); percent values are based on occurrences in that decade grouping and ethnic community (e.g. in the 1930s 89.9% or 461/513 of Japanese properties were in market gardening). (n.d. = No Data).

packing houses and canneries for the newly developing orchard industry and several sawmills. Large scale vegetable farming, typically onions grown by sharecroppers on a half-share basis or under the employment of a white landowner, tended to be located on larger properties more removed from the town centre, especially to the south and east along Benvoulin Road and in the Mission area.

Until the 1960s the city limits did not extend to include these areas but the business centre for the residents in the surrounding rural district remained Kelowna. Large scale vegetable production and intercropping were dominated by Japanese farmers. Anecdotal evidence and some published first person accounts indicated that Chinese did participate in large scale vegetable farming in the Kelowna area but at least one interview participant who grew up in a Japanese sharecropping family in the 1920s and 1930s did not recall many Chinese working in the industry; it was mainly Japanese farmers and their families.



Figure 5.2: Example of intercropping in Kelowna, circa 1909. (Photograph by G.H.E. Hudson. "Onions growing between the rows of young peach and apple trees in Mr. Pegman's Orchard," Image No. PA-032341. Courtesy of Library and Archives Canada Copyright expired.)

Starting in the 1920s and 1930s, most market gardening in Kelowna was concentrated in the area that is now known as Orchard Park and runs along Harvey Avenue, a provincial highway that runs through the middle of Kelowna. A number of Chinese and Japanese families owned or leased property in this area with some continuing to farm in this area until the early 1970s. Furthermore, market gardening tended to be located in flatter, low lying areas as indicated in the relief seen in Figure 5.3. Intercropping was practiced in orcharding areas throughout the city. One of the most enduring orcharding areas is the East Kelowna benches.

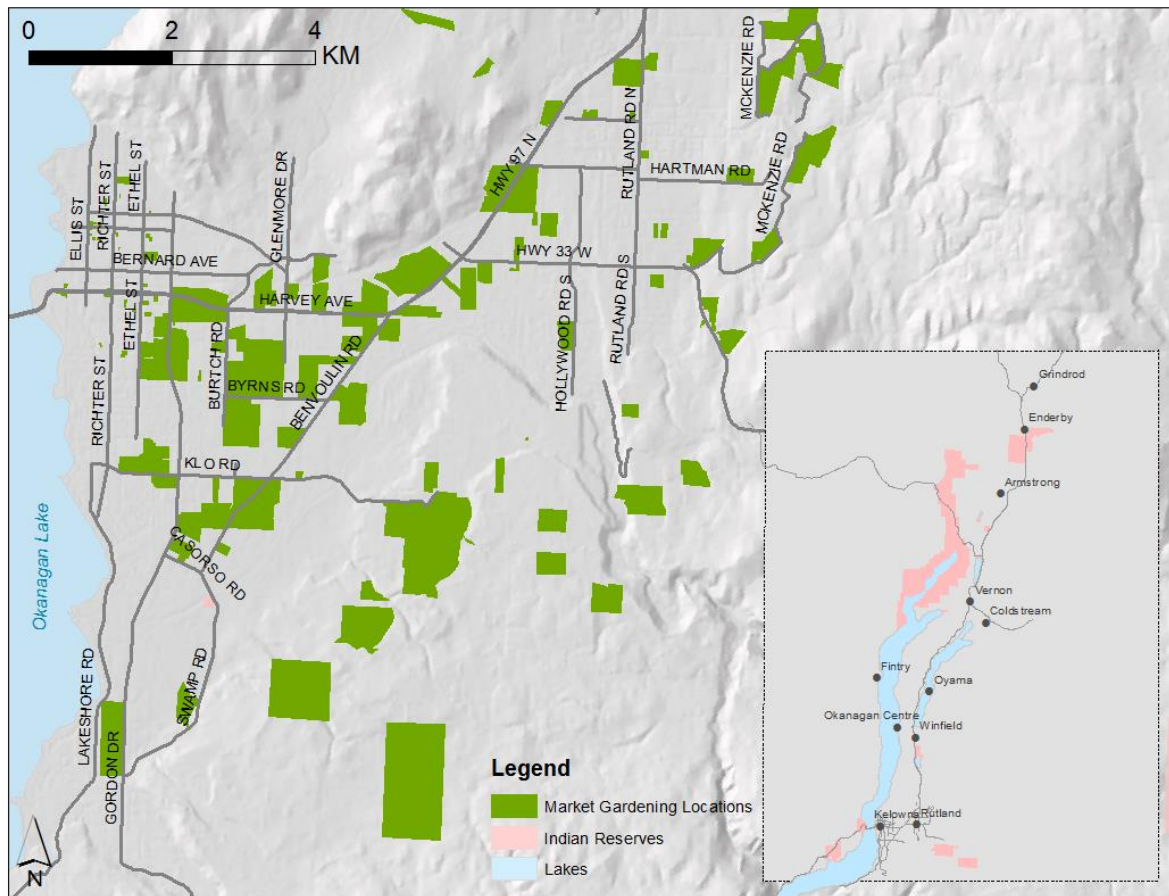


Figure 5.3: Map of Kelowna showing main roads and market gardening locations. Note Harvey Avenue, running east – west through town. (Cartography by author. Map created in ESRI ArcGIS 10.2. NAD 1983 UTM Zone 11N. Data acquired from BC Data Distribution Warehouse and Natural Resources Canada.)

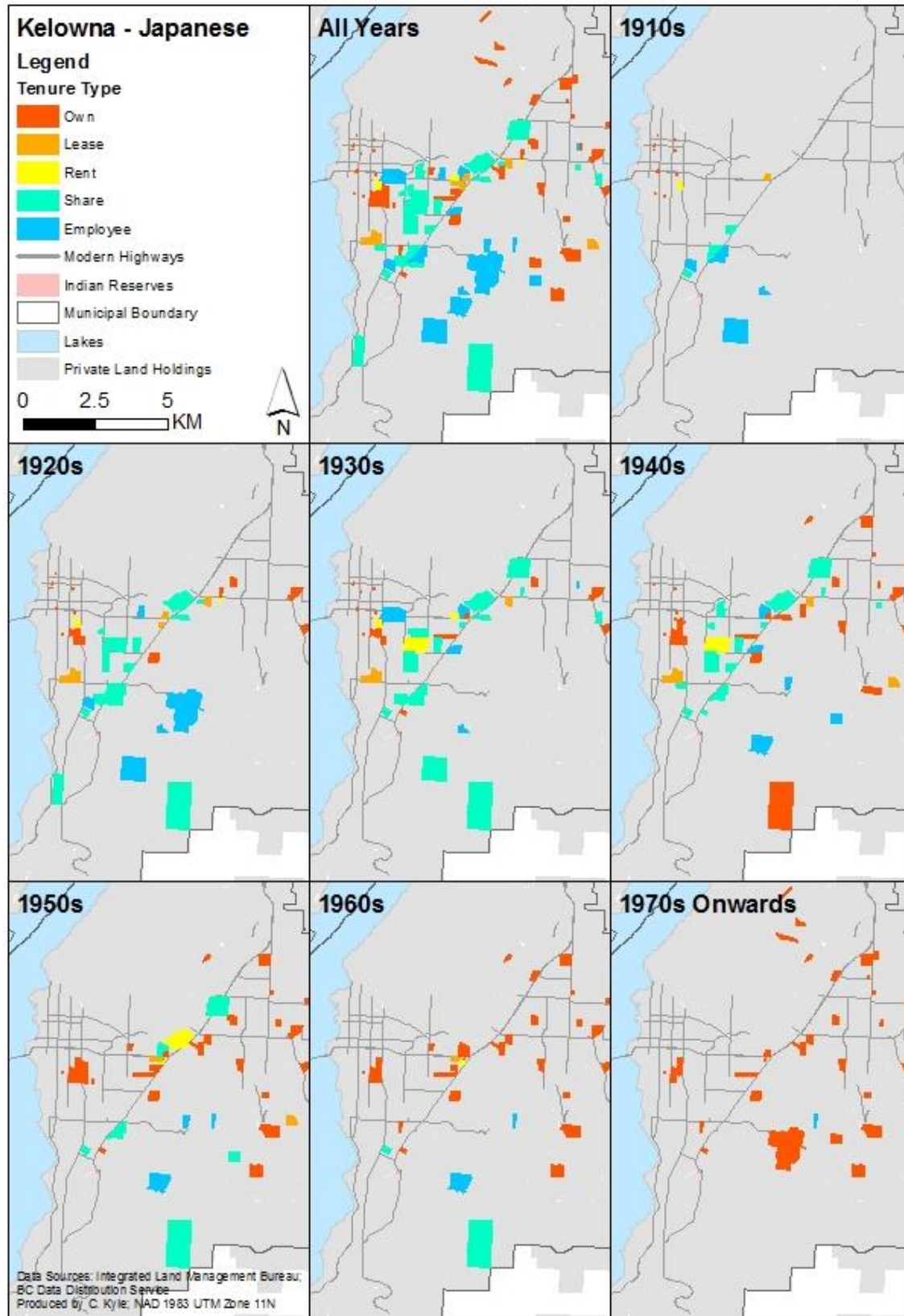


Figure 5.4: Tenure type for Japanese market gardeners in the Kelowna area.

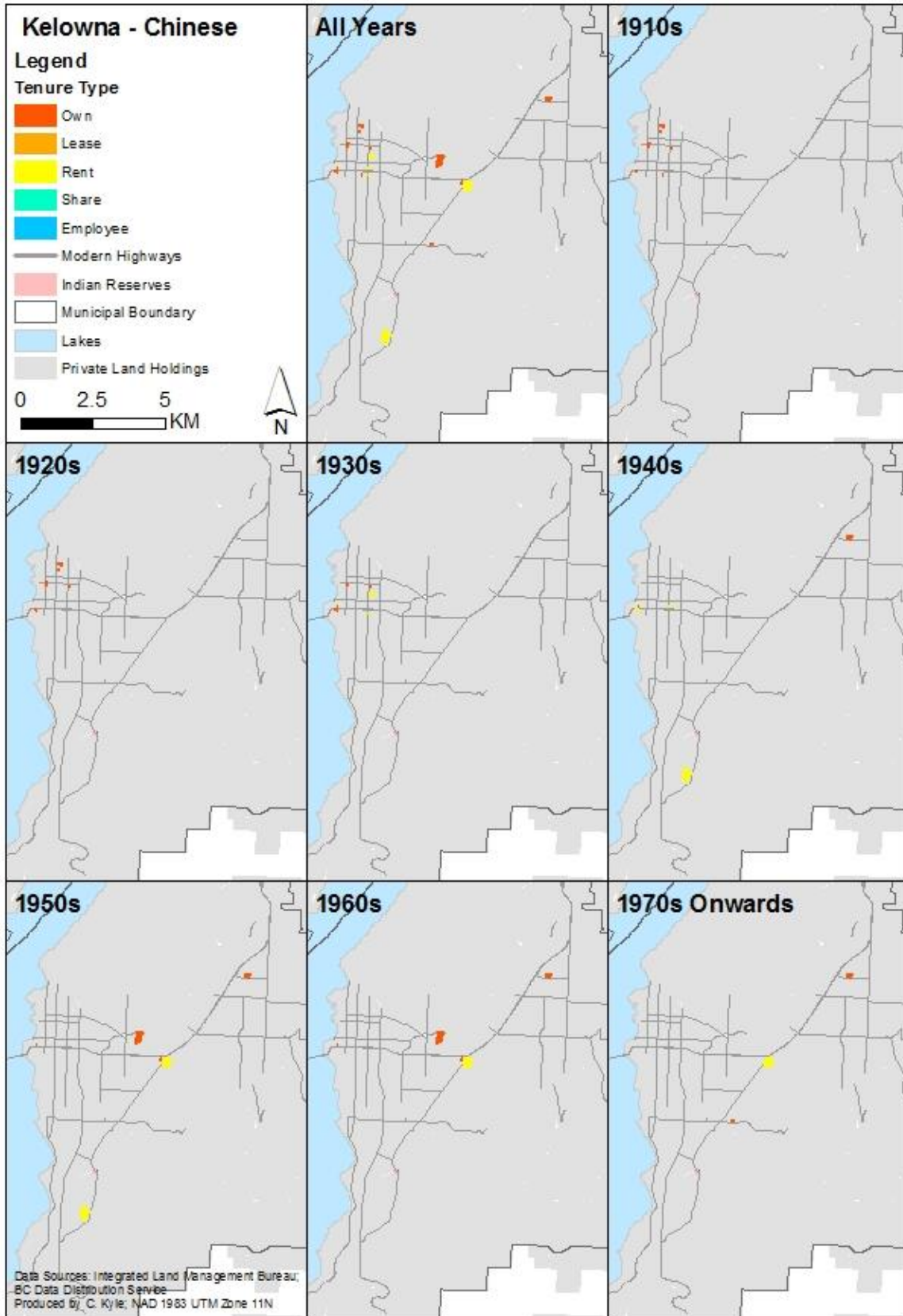


Figure 5.5: Tenure type for Chinese market gardeners in the Kelowna area.

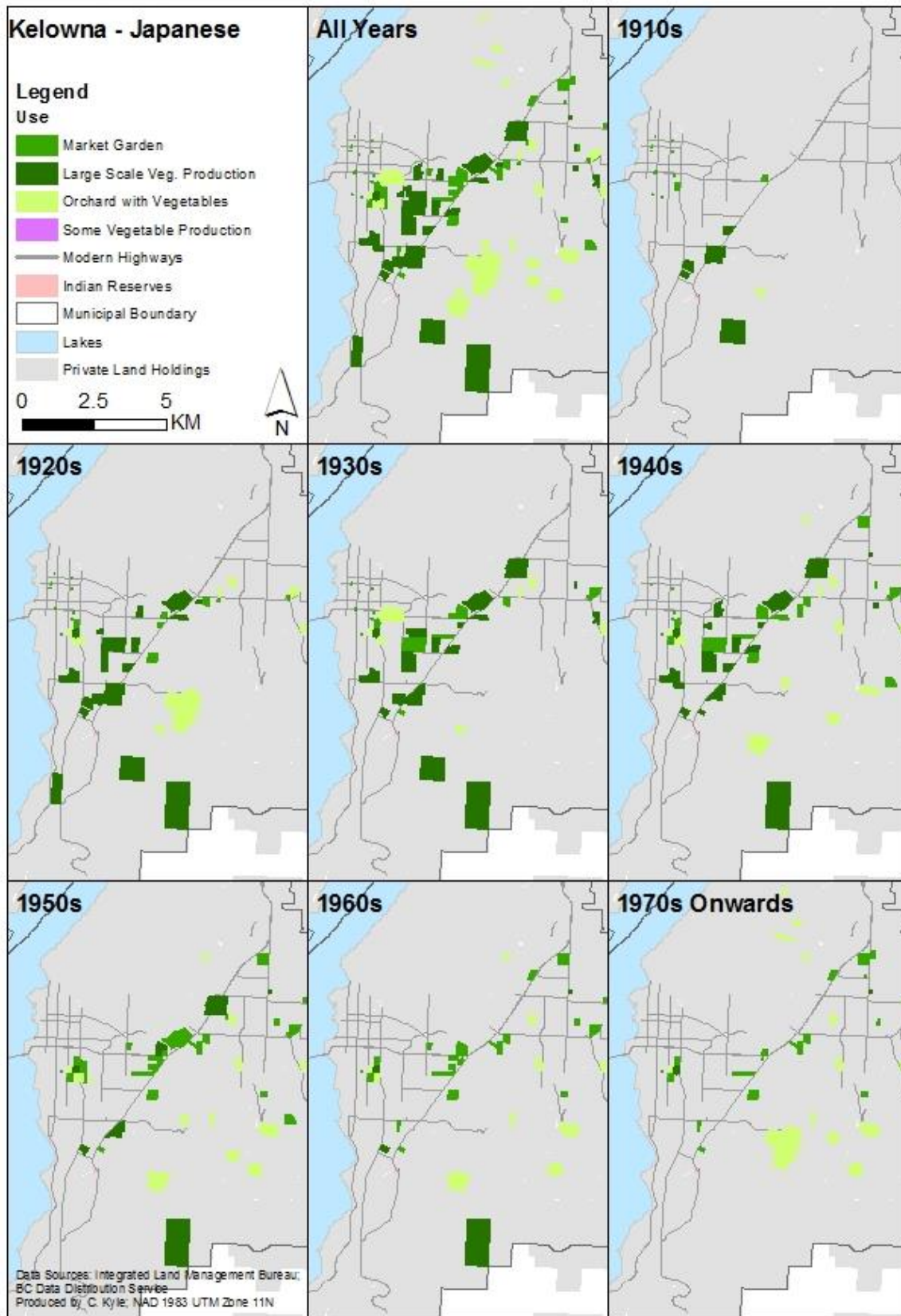


Figure 5.6: Land use type for Japanese in the Kelowna area.

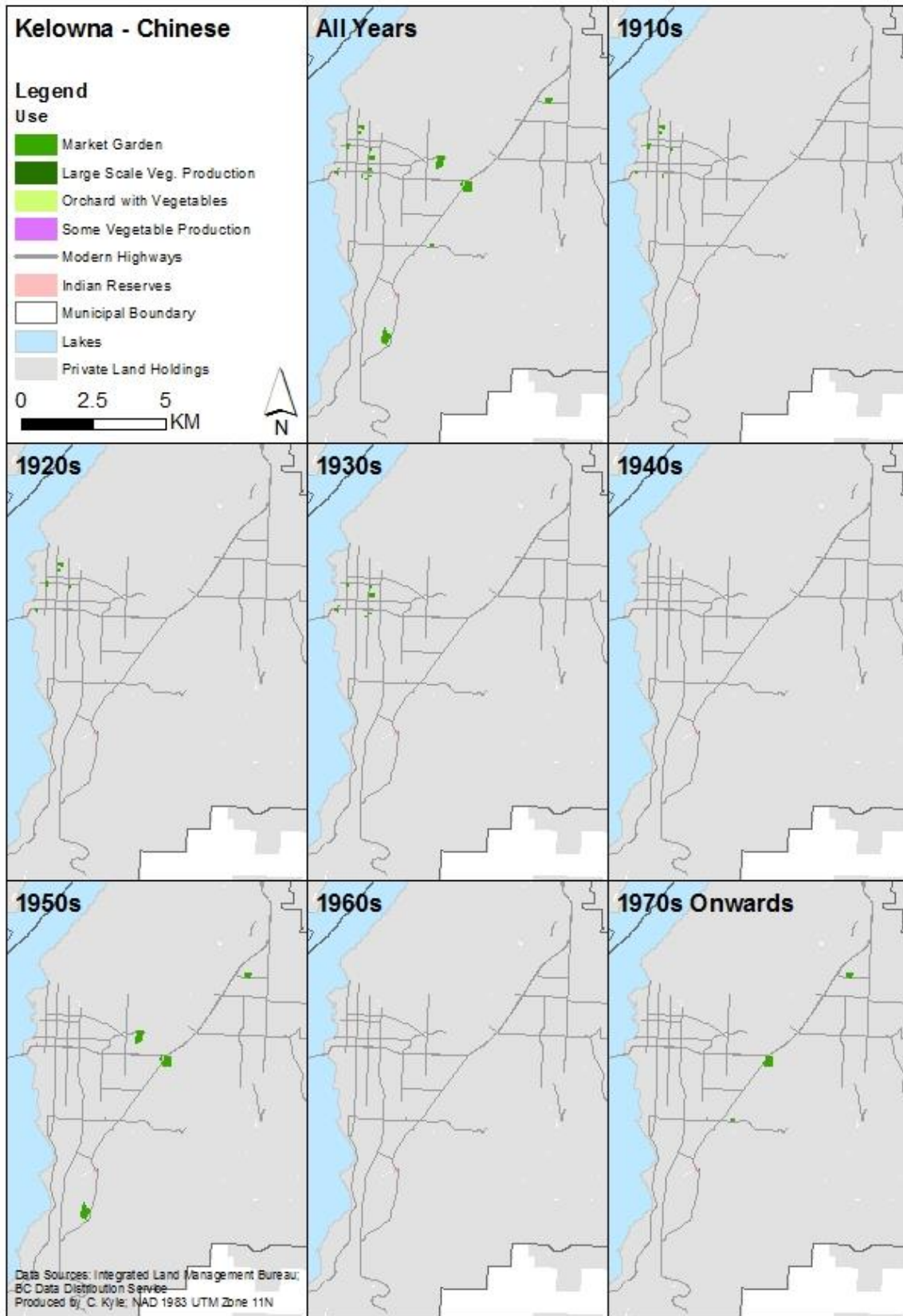


Figure 5.7: Land use type for Chinese in the Kelowna area.

5.1.3 – Lake Country

In Lake Country, many examples of Japanese land ownership could not be definitively linked to a specific location. In most cases the published reminiscences and interview participants only identified a road name and this was insufficient spatial data for linking. Furthermore, the main agricultural practice in the Lake Country area was orcharding and it was difficult to determine where market gardening had occurred in many instances as it was often a secondary activity performed on orchard land. In most cases it was not clear if vegetable production was a part of orcharding businesses. Evidence shows that Japanese orchardists were the majority of landowners in the area and owned hundreds of acres of orchards by the 1940s and 1950s. Most of the orchards were on hilly land on either side of the ridge that separates Okanagan Lake on the west and smaller lakes on the east, Duck (Ellison), Wood, and Kalamalka. One farm has been passed on for at least three generations.

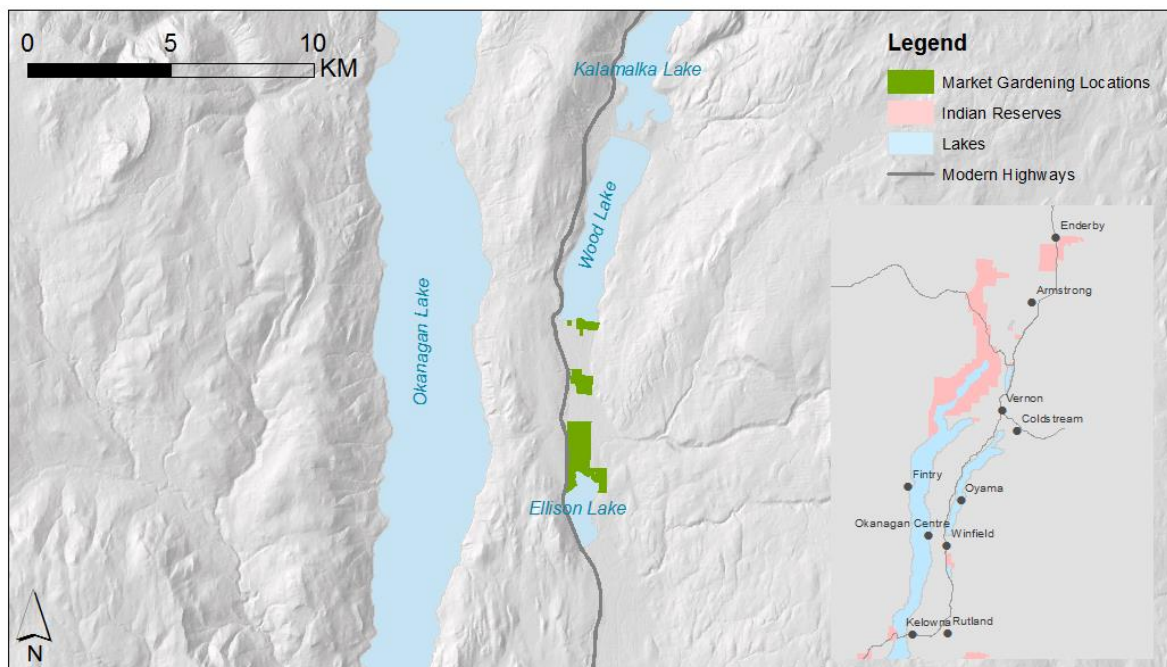


Figure 5.8: Map of Lake Country area. (Cartography by author. Map created in ESRI ArcGIS 10.2. NAD 1983 UTM Zone 11N. Data acquired from BC Data Distribution Warehouse and Natural Resources Canada.)

Market gardens in Lake Country were located in the flatlands and valley bottom between Wood Lake to the north and Duck (Ellison) Lake to the south. The topographical relief can be seen in the background of Figure 5.8. One family practiced mixed farming, focusing on dairy and chickens, but also selling produce from their gardens. Both Chinese and Japanese rented land on the Duck Lake Indian Reserve. In the 1940s at least three Chinese market gardeners were also renting on Indian Reserves in the Vernon area (Unaccessioned Interior Vegetable Marketing Board Fonds) and rental receipts from the Department of Indian Affairs indicate this practice was ongoing in number of locations (Chinese Community Collection, Assessment Notices, Tax Notices, Tax Receipts, Income Tax Return Folder).

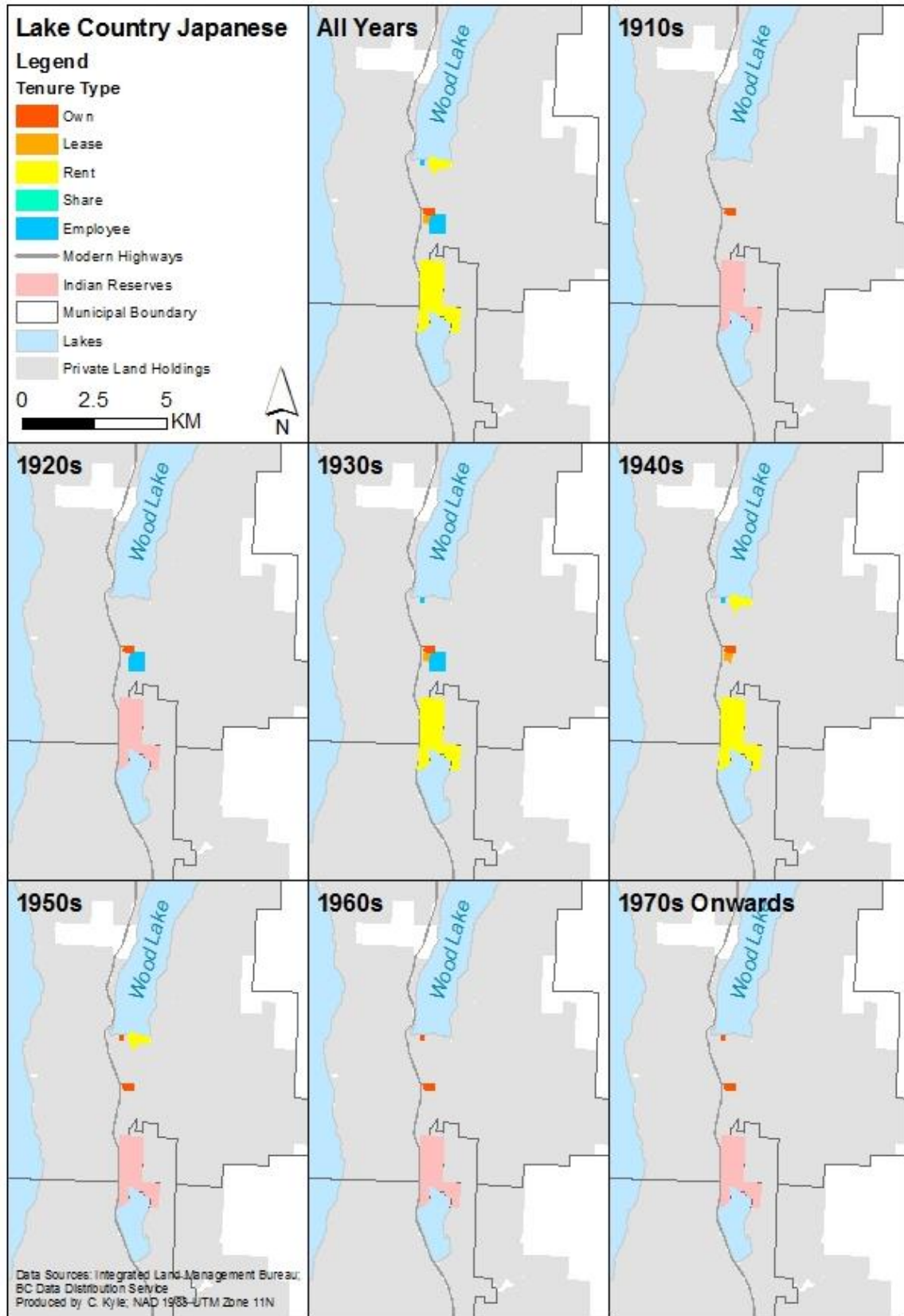


Figure 5.9: Tenure type for Japanese market gardeners in the Lake Country area.

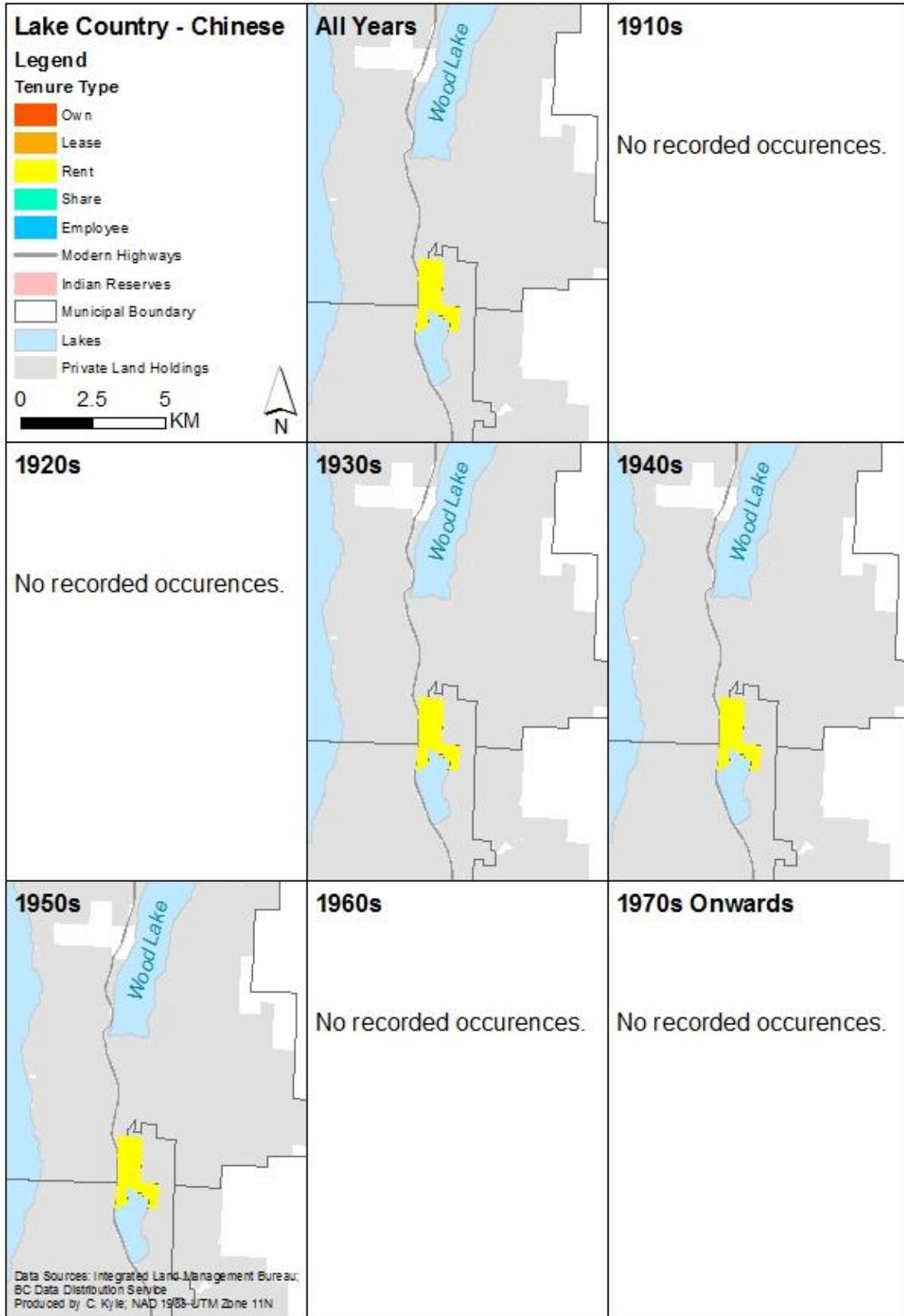


Figure 5.10: Tenure type for Chinese market gardeners in the Lake Country area.

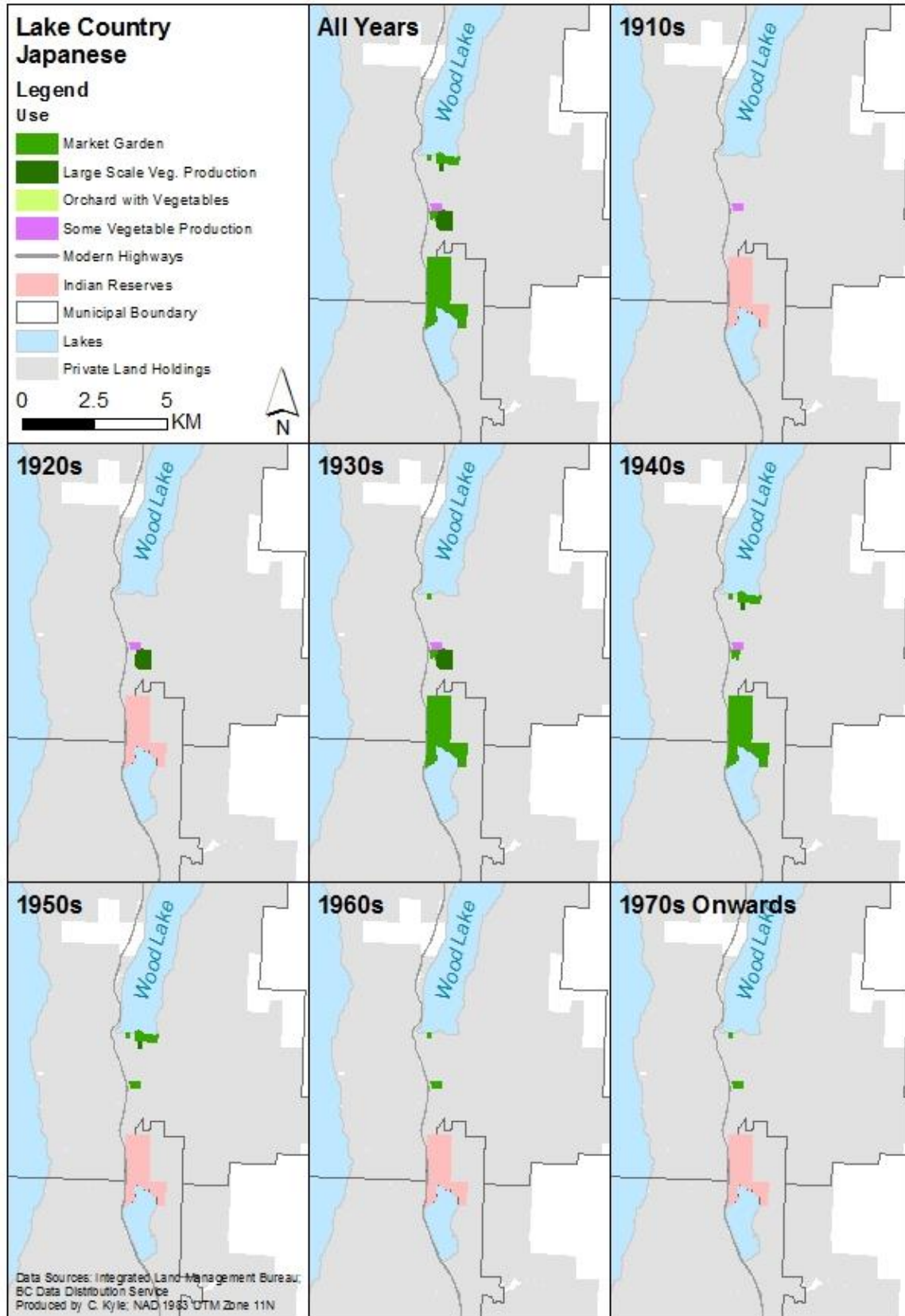


Figure 5.11: Land use type for Japanese in the Lake Country area.

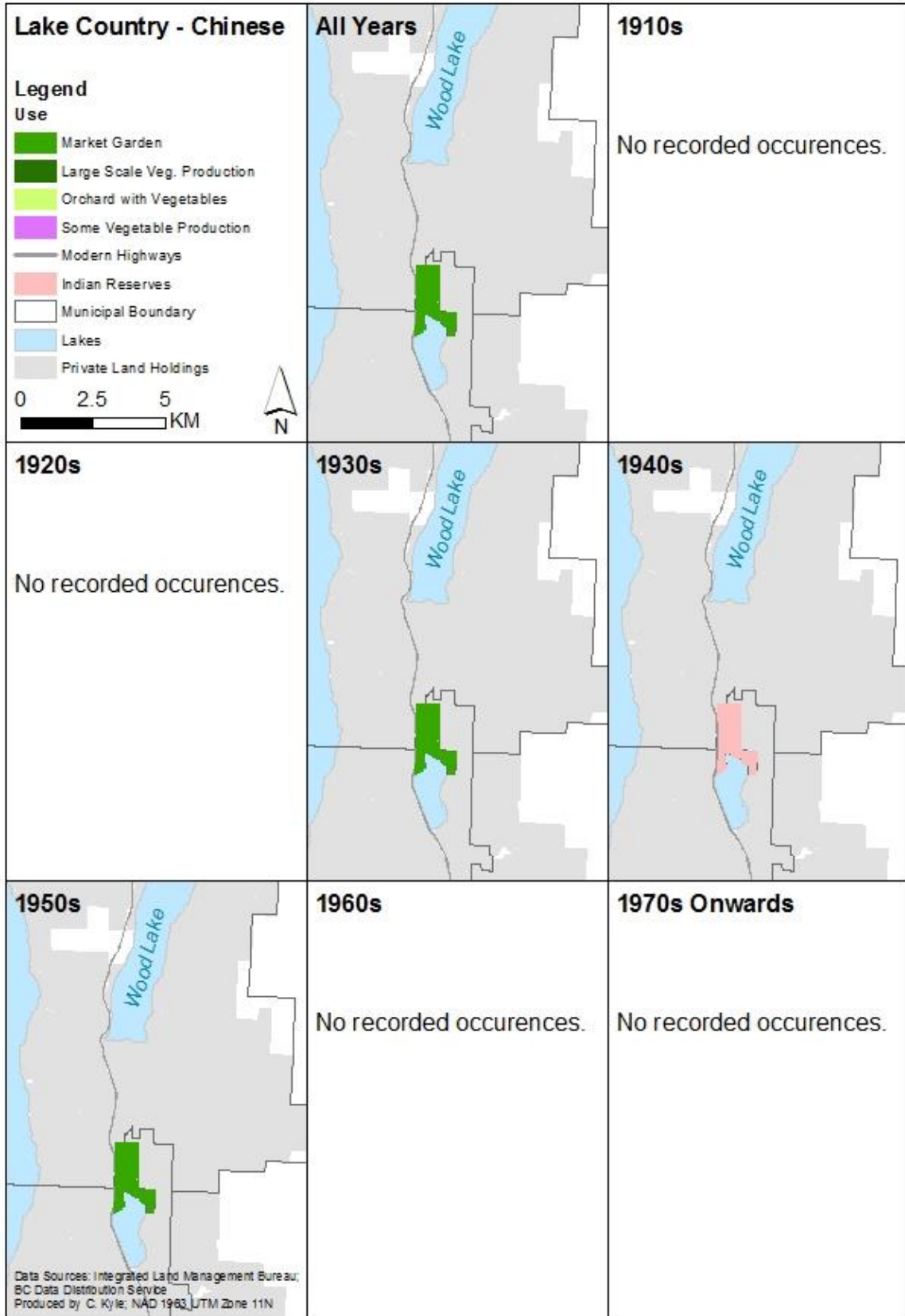


Figure 5.12: Land use type for Chinese in the Lake Country area.

5.1.4 – Vernon

The most striking observation in the Vernon area is that with the exception of two properties along the west side of Swan Lake, there was very little overlap between areas where Chinese practiced market gardening and areas where Japanese practiced market gardening. Japanese market gardens were primarily located in the Bella Vista area of Vernon, to the south and west of the city centre. Chinese market gardens were concentrated along the west side of Swan Lake and also out towards Lavington and Coldstream, a rural area to the southeast of Vernon.

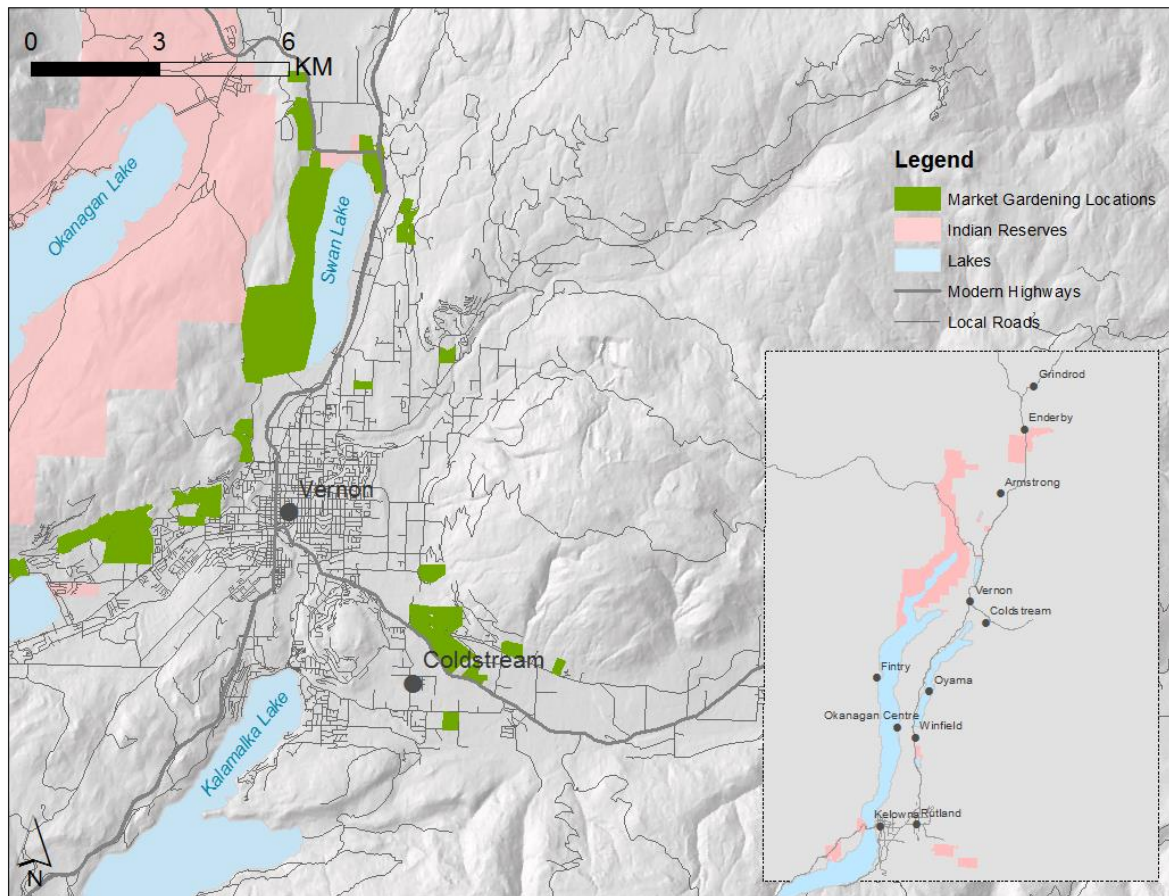


Figure 5.13: Map of Vernon area. City centre is identifiable by densification of modern roads. Lavington and Coldstream are located southeast of the city. (Cartography by author. Map created in ESRI ArcGIS 10.2. NAD 1983 UTM Zone 11N. Data acquired from BC Data Distribution Warehouse and Natural Resources Canada.)

The mapped locations of market gardens are consistent with the local understanding of farming areas in the city, local historians in Vernon will report that the Japanese were predominately in Bella Vista and the Chinese were located around Swan Lake. The GIS results strongly support this local knowledge.



Figure 5.14: Showing mixed use farming at Coldstream Ranch. Although orchards dominate the foreground of the image, vegetable crops can be seen towards the upper right hand corner. (Photographer unknown. “Coldstream Orchard,” Image no. PA-031966. Photo courtesy of Albertype/Library and Archives Canada. Copyright expired.)

Another spatial concentration of Chinese market gardens occurred in the Coldstream area, located to the south and east of Vernon. It is notable that a concentration of Chinese market gardens occurred in this area because the Coldstream Ranch, the main employer and land holder in the area, almost universally employed Japanese and is documented as the main recruiter and training ground for Japanese farmers in the area (Hoshizaki 1995; Ouchi 1982).

Japanese in the Vernon area were primarily landowners with a few instances of leasing; however, they typically leased from other Japanese. The Chinese were primarily renters in the area; however, they did own some large tracts of land to the south and east of town, in the Lavington area, and also to the north of town near where Mendenhall Road meets Highway 97.

The land to west of Swan Lake provided good growing conditions despite being hilly with an eastern aspect. At the north end of the lake and immediately along the lakeshore on both the east and west sides the land is very boggy. This diversity of slope and soil conditions allowed the market gardeners to grow a variety of crop types.

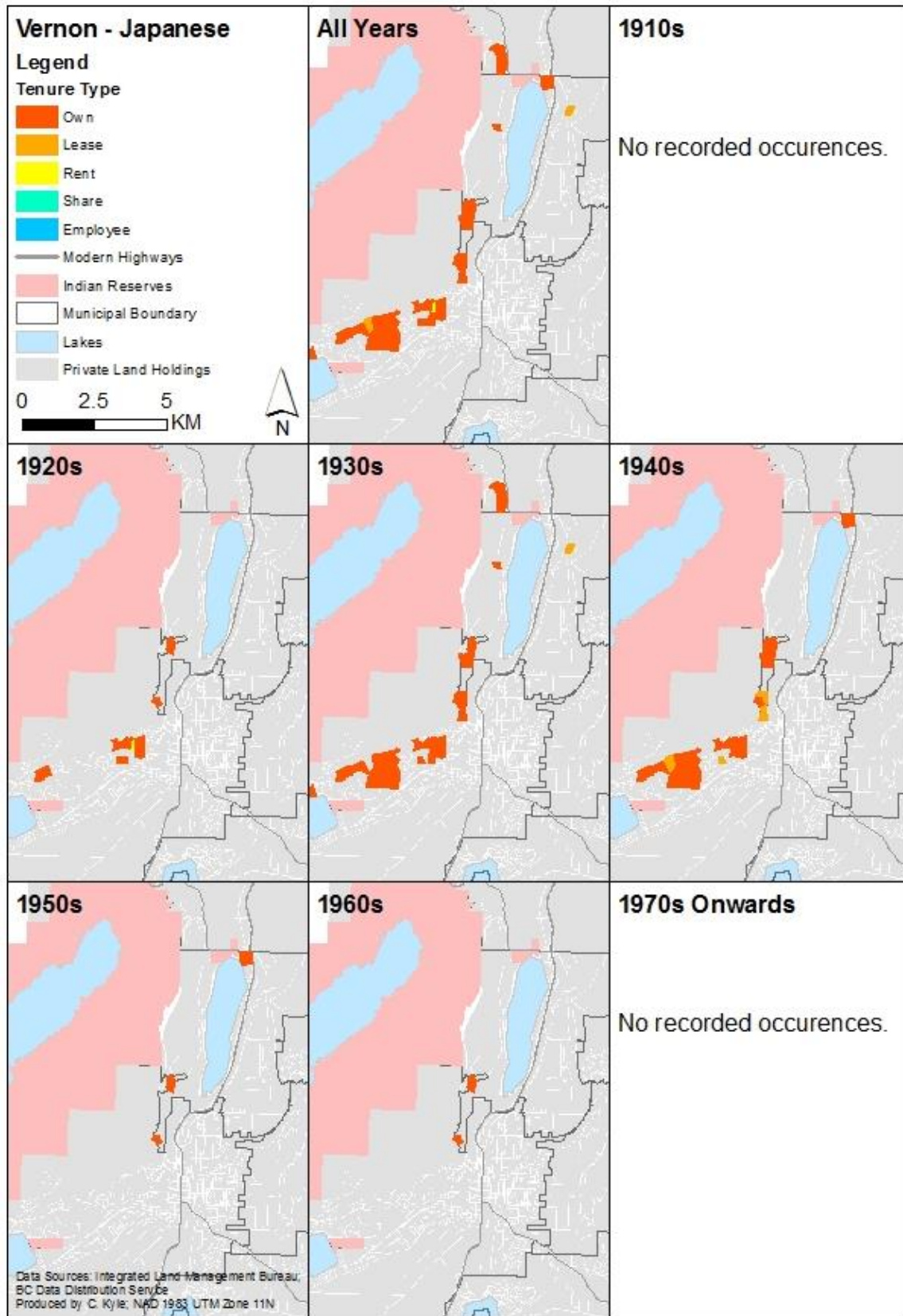


Figure 5.15: Tenure type for Japanese market gardeners in the Vernon area.

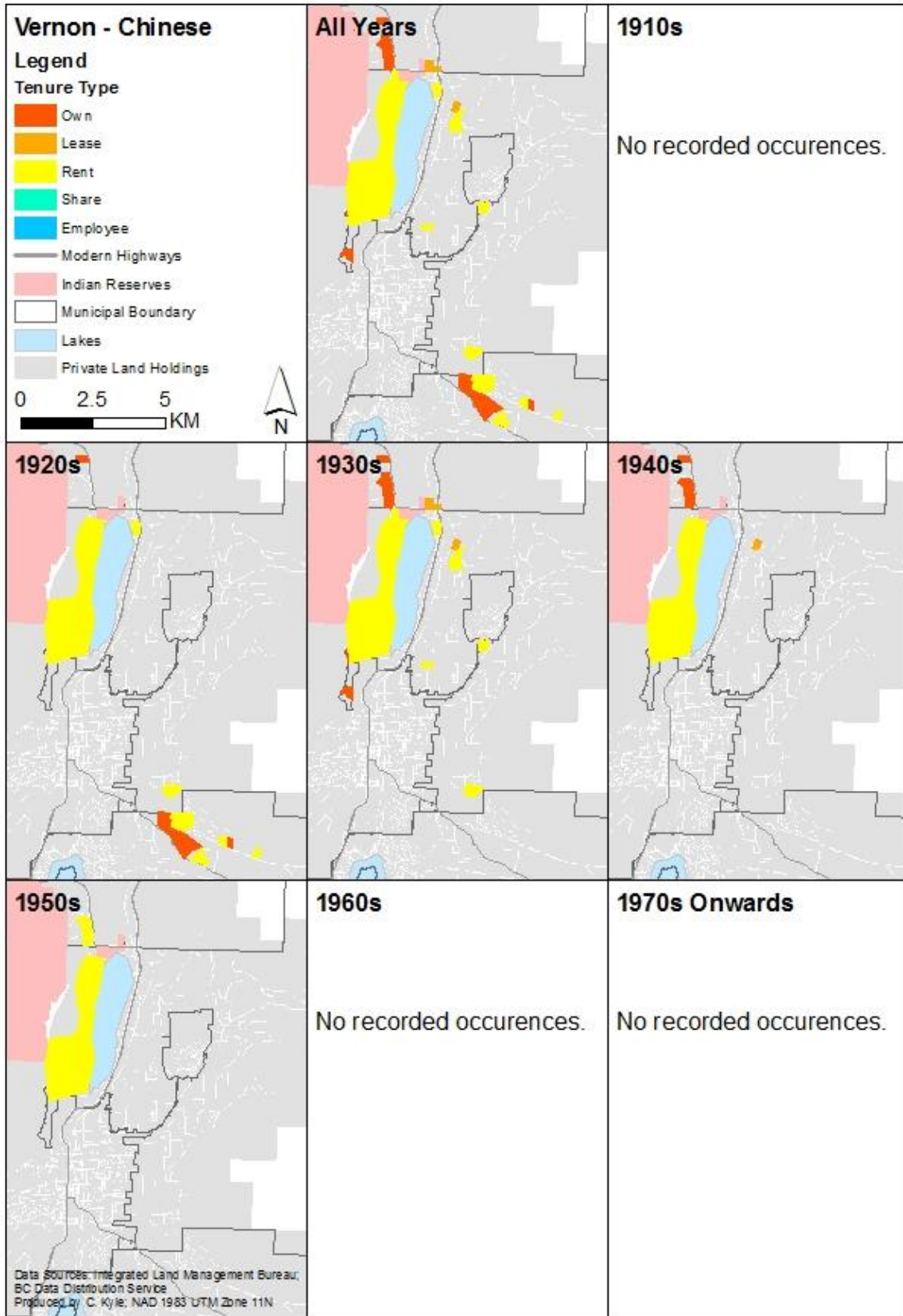


Figure 5.16: Tenure type for Chinese market gardeners in the Vernon area.

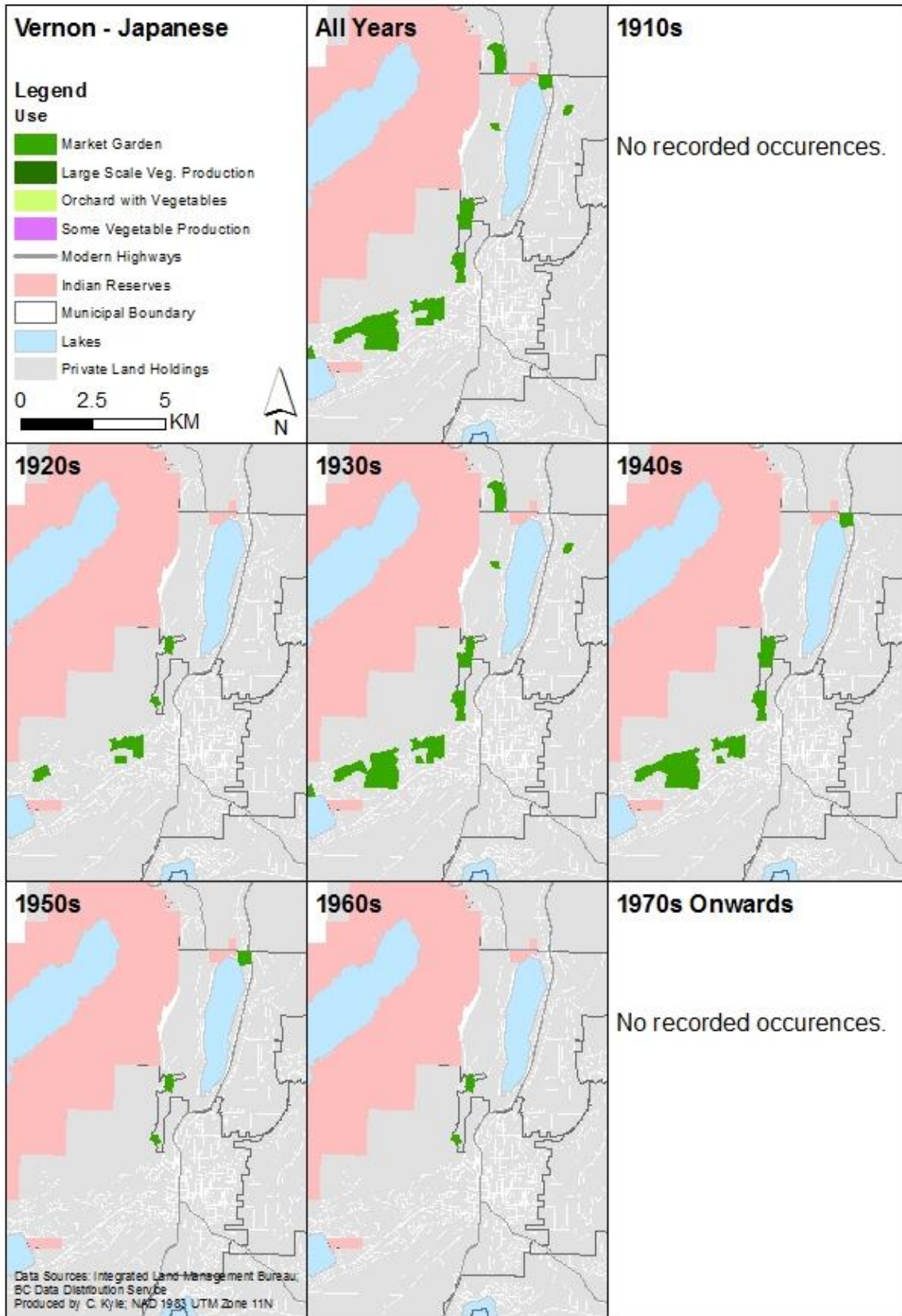


Figure 5.17: Land use type for Japanese in the Vernon area.

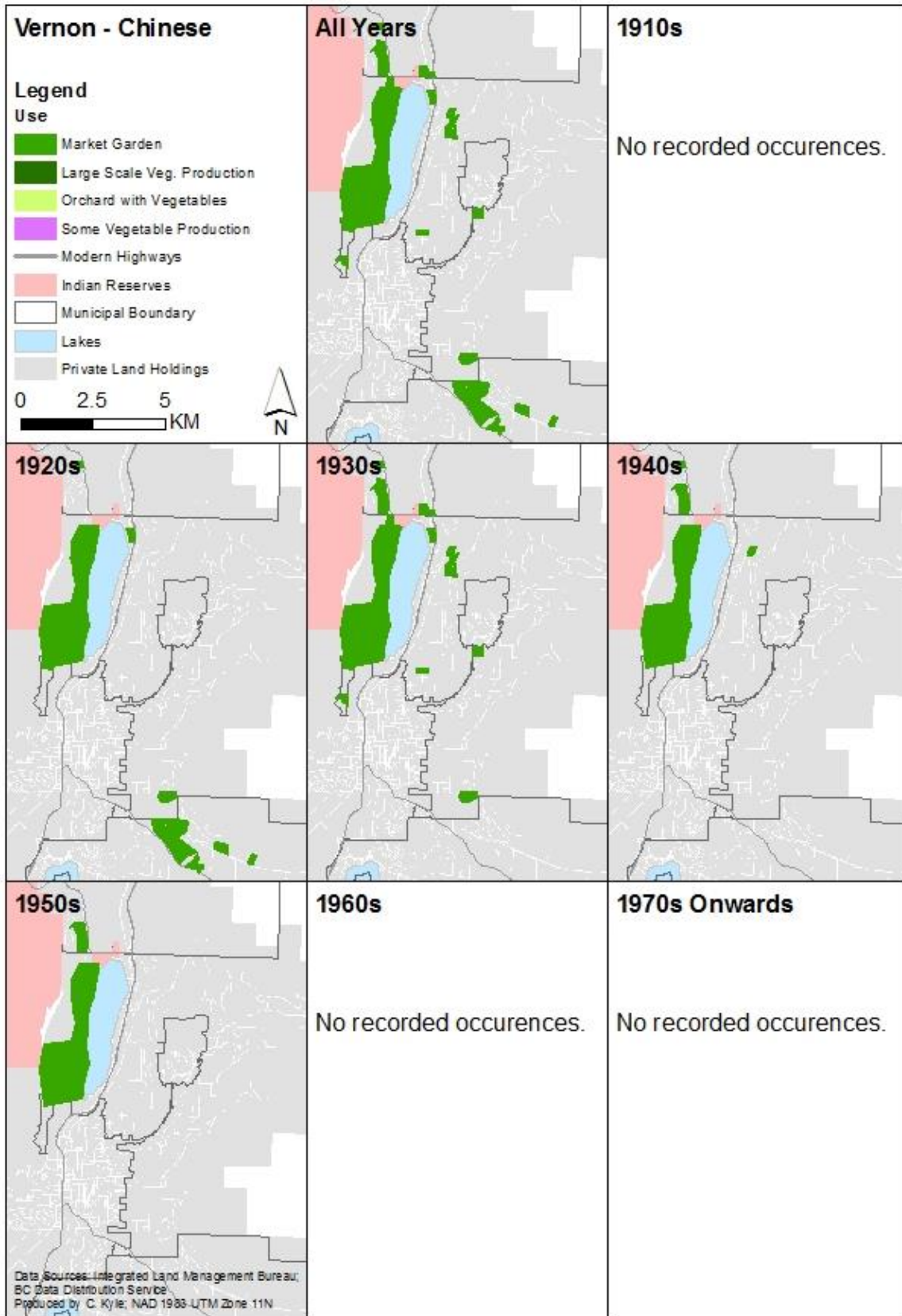


Figure 5.18: Land use type for Chinese in the Vernon area.

5.1.5 – Armstrong and Spallumcheen (including Enderby)

The first distinct observation for Armstrong-Spallumcheen, including the area north to the town of Enderby, is that there were few Japanese farmers in this area. This finding supports the understanding of local historians, secondary source published material, and interview participants who were adamant that they knew of no Japanese farmers in the area. The GIS maps show only a handful of Japanese-owned properties and these date to the 1910s and 1920s. There were Japanese in Enderby at the time but they were all engaged in the sawmill and logging industry, not market gardening.

While Chinese owned a large amount of land in the Armstrong-Spallumcheen area, they also rented and leased additional land for market gardening. The main landowners that rented or leased land to Chinese market gardeners were railroad companies or other Chinese landowners. The handful of Japanese market gardeners in the area all owned the properties they farmed.

In Enderby, only one Chinese market gardener was identified. He operated on two properties during his time, one north of Enderby towards the town of Grindrod and one closer to the town of Enderby. No Japanese market gardeners were identified in the area.

The land around Armstrong is very boggy soil and the area is mainly conducive to market gardening rather than orcharding. Market gardening was concentrated in the town centre as well as along some of the feeder roads into town, namely Otter Lake Road to the southwest and Stepney Road heading towards Enderby to the northeast. By the 1970s most of the market gardening was concentrated in one small area of town and out along the highway to northeast of town. A small amount of market gardening continues today in Armstrong.

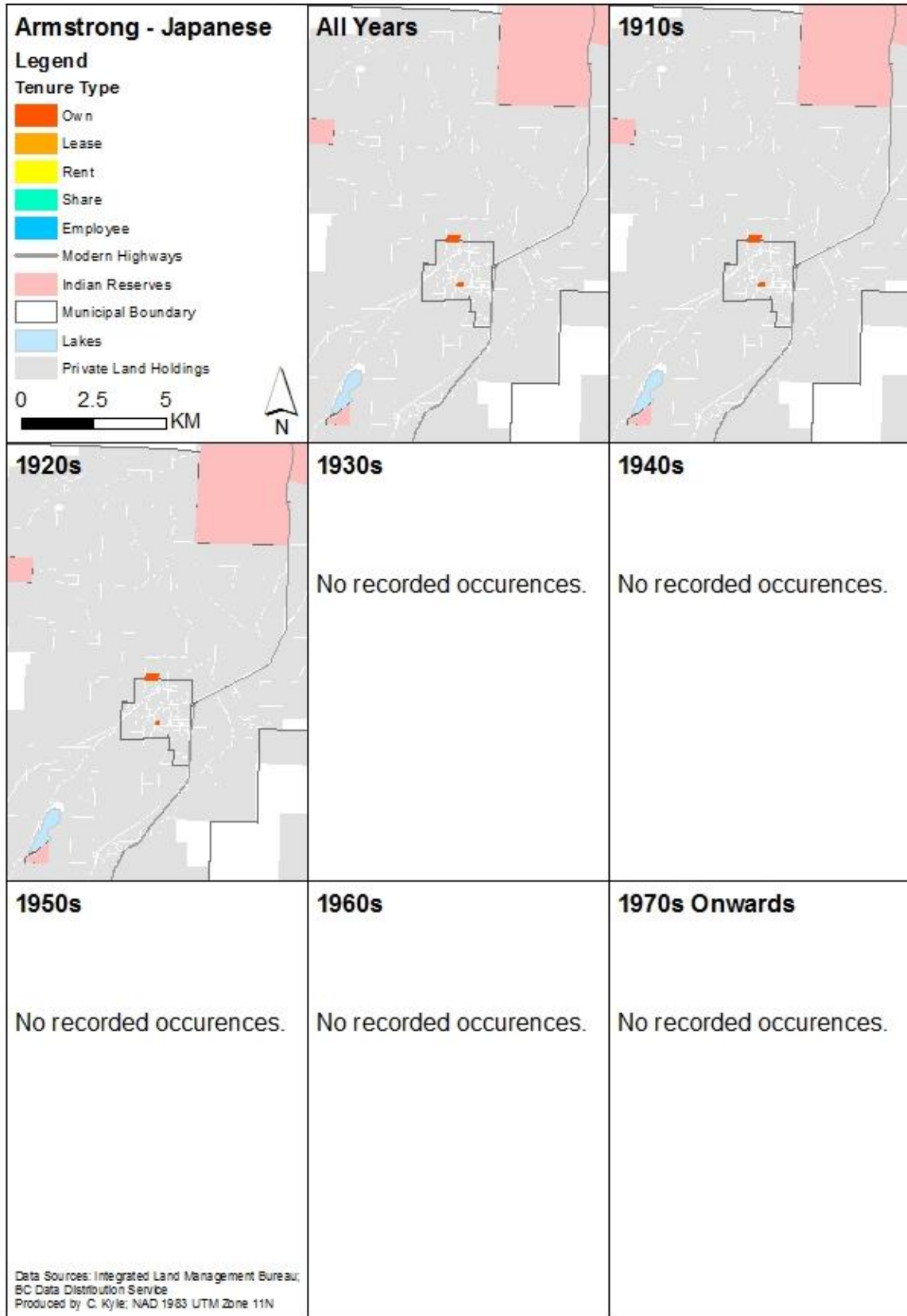


Figure 5.19: Tenure type for Japanese market gardeners in the Armstrong area.

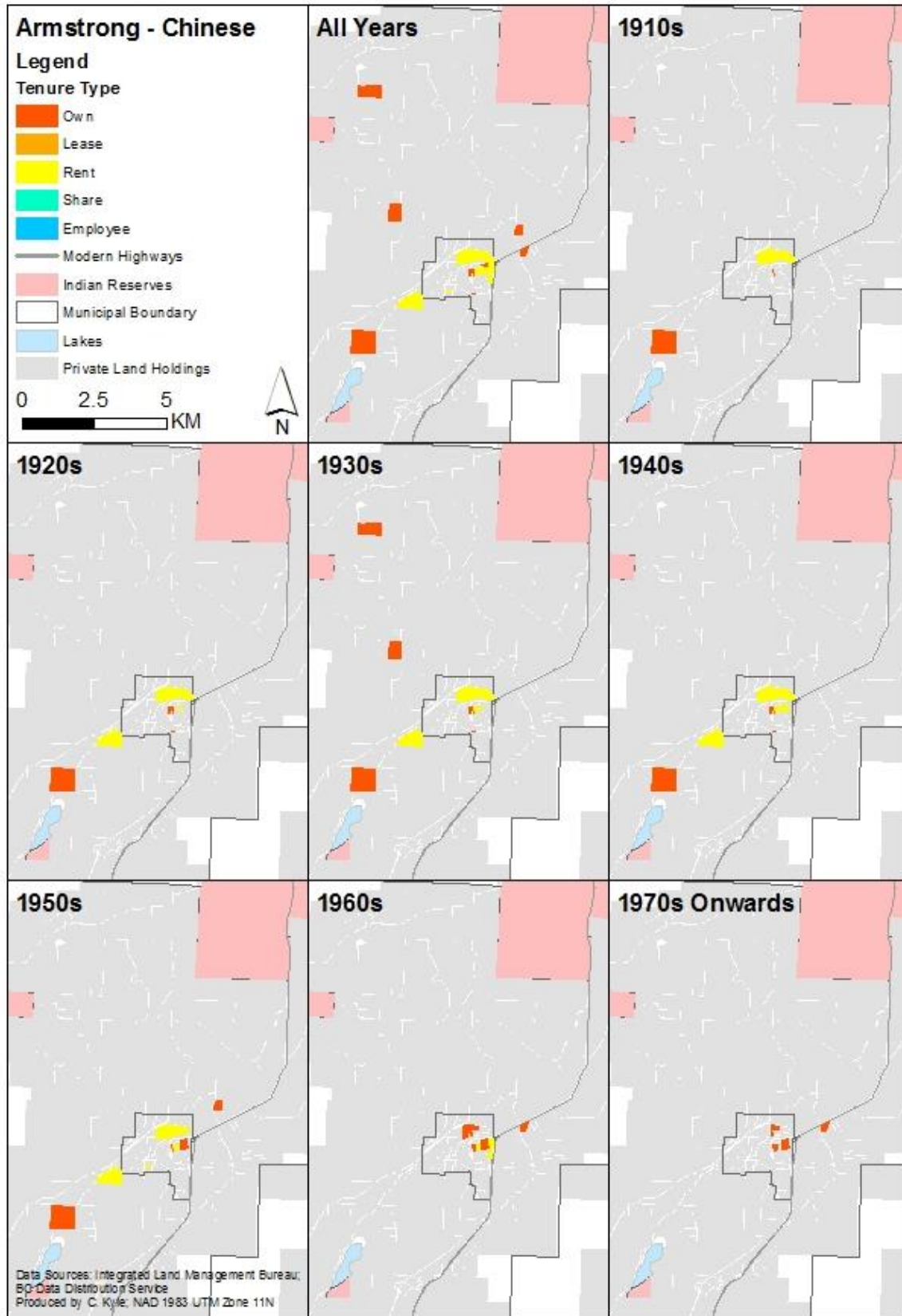


Figure 5.20: Tenure type for Chinese market gardeners in the Armstrong area.

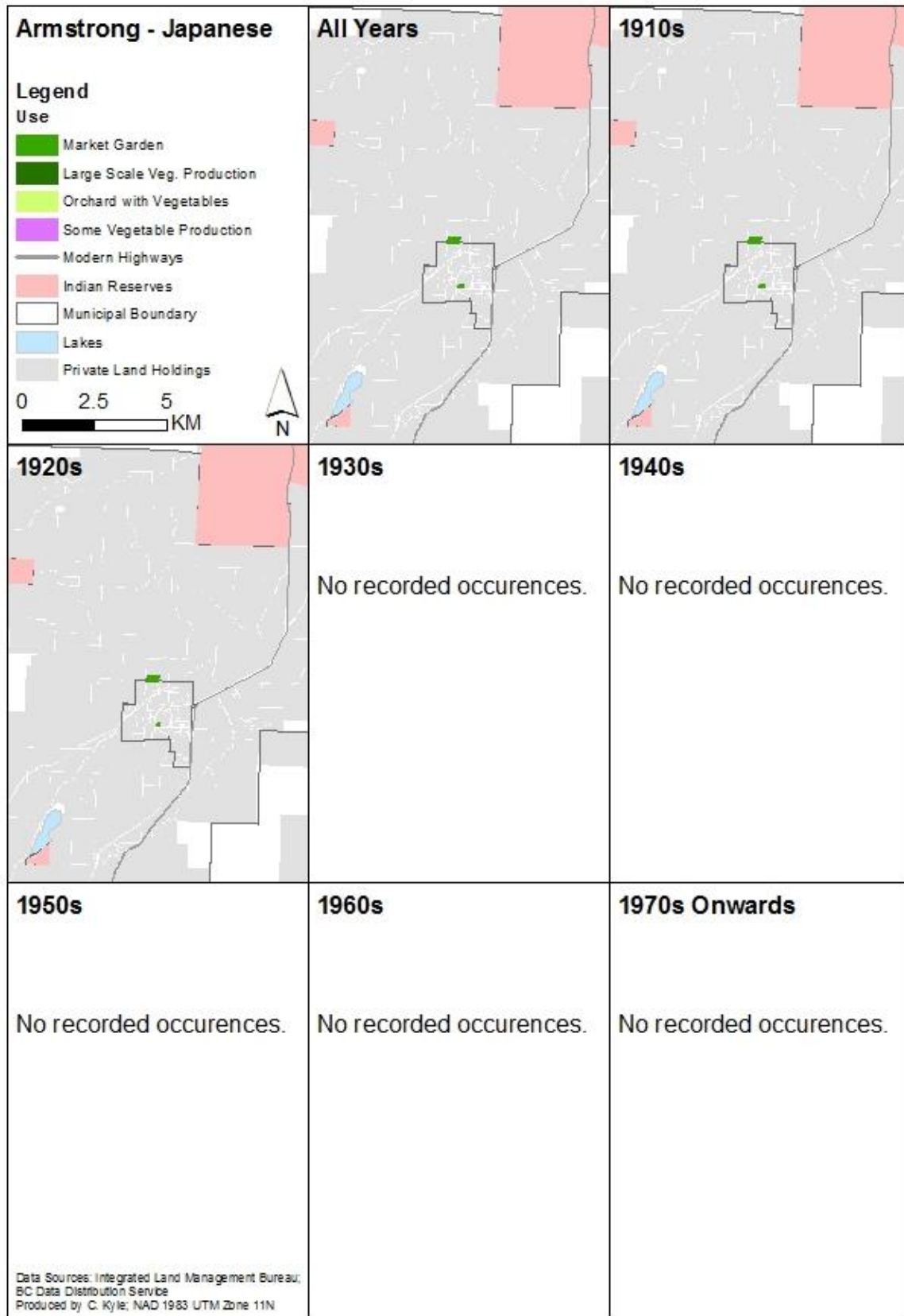


Figure 5.21: Land use type for Japanese in the Armstrong area.

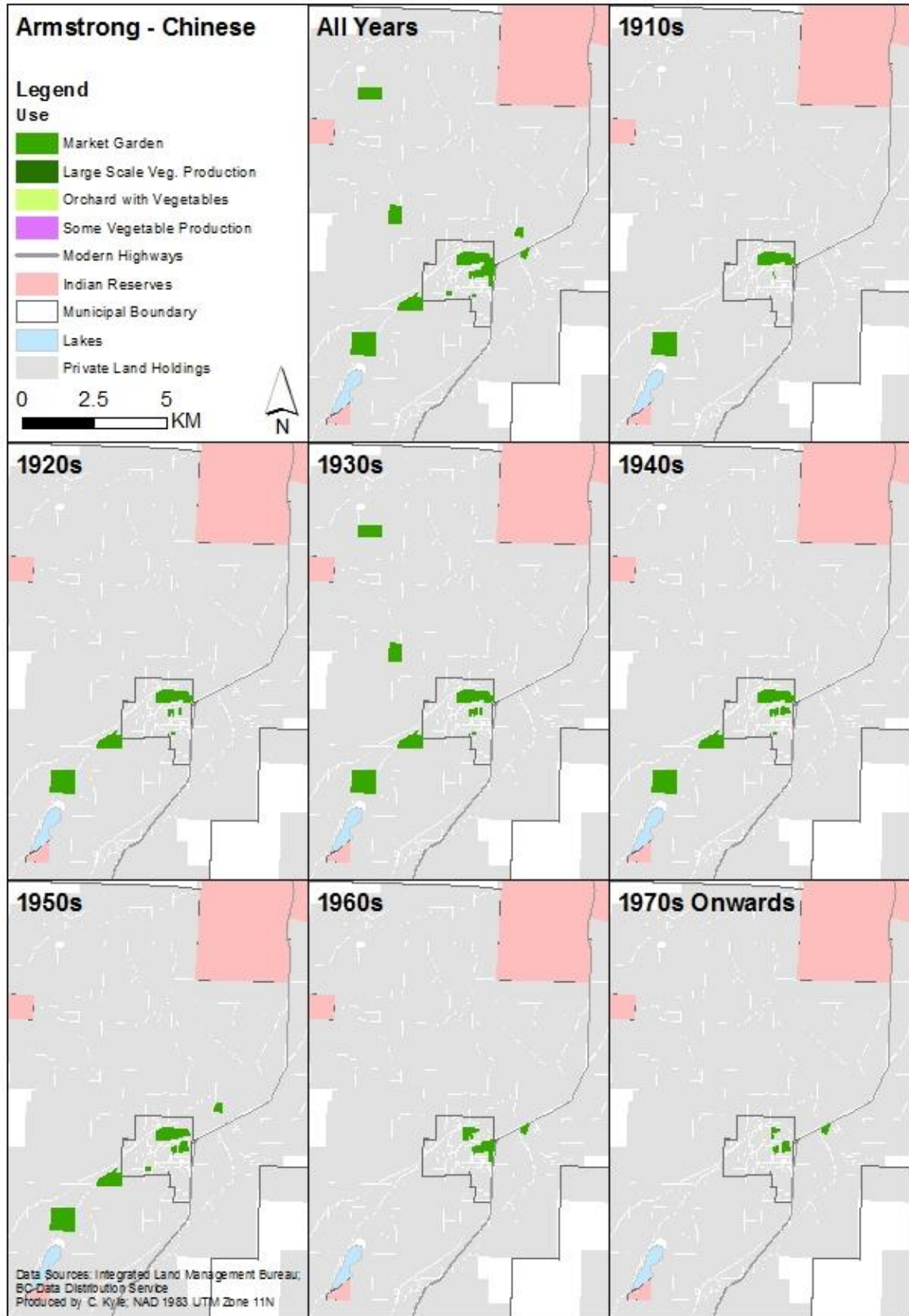


Figure 5.22: Land use type for Chinese in the Armstrong area.

5.2 Qualitative Results

The experiences of many market gardening families in the Okanagan, particularly ones who had long-term success in the industry, are effectively summed up in the dedication to the book *The Vision Fulfilled*.

To the memory of the pioneer Issei, who by destiny or circumstance, by chance or by choice, emigrated to this land, and accepted and endured its harshness, its hardships, and its heartaches, and who brought with them a work ethic and fortitude sufficient to persevere in pursuit of an elusive dream. (Hoshizaki 1995:2)

Many examples drawn from interviews and text sources will demonstrate that it was indeed a hard life, and not just because farming is challenging work. Where many of the Chinese had at least some agricultural experience, few of the Japanese came from farming backgrounds. For the Japanese in particular, stories of young picture brides coming from middle or upper class families, traveling to British Columbia to meet their new husbands only to find their expectation of a new and better life in Canada quickly dashed by reality were especially striking. Very rarely are voices of immigrant women from this era found in archival records, particularly their experiences as young mothers and wives living on farms, but their children saw fit to remember them in the published reminiscences. Published first person accounts and interviews often reveal a greater range of experiences than the archival record, accordingly they are particularly useful for this research.

This section weaves together the results of data collected through interviews, archival research, and published reminiscences to document the experiences of the market gardening communities. The interviews ranged in length from forty-five minutes to three hours. Ninety locations identified in these interviews and in the community mapping event were included in the GIS database as the geographic information provided by the participants provided sufficient detail to be included in the GIS analysis. Each interview transcription was coded

using the qualitative analysis software NVivo, resulting in nineteen individual codes. After the coding was complete a cluster analysis was performed using the NVivo software to identify relationships between codes. The results of the cluster analysis informed the organization of this portion of the chapter into four themes: (1) Who were the market gardeners?; (2) Working with the land; (3) Experiences of the market gardeners: Beyond the farms and fields; and (4) The decline of the industry. *Appendix C Interview Codes and Cluster Analysis Results* provides a complete list of codes and the diagrammatic results of the cluster analysis process. Where appropriate I have included quotations from the interviews in order to preserve the voices of the participants.

The archival research portion of the data collection revealed an abundance of material. The Chinese Community Collection in Kelowna provided a large number of letters (translated) and ephemera that paint a picture of what life was like for Chinese bachelor farmers. Various files in the Family History Collection and the Chinese Information Binder at the Armstrong-Spallumcheen Museum and Art Gallery contained other ephemera, obituaries, notes, and miscellaneous documents that reveal details of the experiences of market gardeners in that area. Three published reminiscences recalling the experiences of Japanese families in the Okanagan were key sources of information. There are no comparable books published by the Chinese community as there were very few descendants from this community and descendants are typically the driving force behind these types of publications. One interview participant reflected on the fact that there are very few old Chinese families in Kelowna. According to I7DL (2014), “Like I said there aren’t that many Chinese families around Kelowna from that era, most of them are new and they’d know nothing about ‘Chinatown? There’s a Chinatown! We had a Chinatown?’ It comes as a

surprise to many.” However, descendants from a handful of families that lived in the Okanagan participated in this research as interview participants. As well, there are a small number of published reminiscences in *Okanagan History*, from these families and also from individuals who interacted with the historic Chinese community.

5.2.1 – Who were the Market Gardeners?

It is difficult to determine the total population that was engaged in market gardening at any given time. Historic population figures are difficult to ascertain and this is further compounded in rural and remote areas. The task becomes even more challenging when looking at minority and immigrant populations, particularly those engaged in seasonal work, as they may or may not be captured in systematic counts like censuses. There were only a few specific references to population figures made in the interviews, as well as some general trends and anecdotal evidence mentioned in a few interviews.

Both I3BL and I4JG reported the Armstrong Chinese population to be in excess of five hundred men in the early days; I13ML also supported this number. Only one Chinese woman is known to have lived in the Armstrong area prior to end of the Chinese exclusion period which ended in 1947. I3BL identified this period as prior to 1922, the time before the Chinese exclusion period. I4JG felt that the decline in population started a little earlier, closer to the end of World War I. Newspaper accounts from World War I tell of an acute labour shortage in the area and the need to hire more workers for a new evaporation plant to produce food for the military. Recruitment of Chinese labourers was actively pursued during this time and this likely contributed to the high population numbers. Supporting the idea that a steep decline in population occurred starting sometime after World War I and increasing with the Chinese Exclusion Period, a list of Chinese growers in Armstrong for 1929 includes only 34

names (Chinese Information File). A little more than a decade later, during 1941, the Interior Vegetable Marketing Board lists 24 registered growers with Chinese names (Unaccessioned Interior Vegetable Marketing Board Fonds). Seven names appear on both lists.



Figure 5.23: Chinese market gardeners in Armstrong circa 1921. (Photographer unknown. No title, Image No. 119. Photo courtesy of Armstrong-Spallumcheen Museum and Arts Society. Used with permission.)

The Interior Vegetable Marketing Board's List of Registered Producers for the 1941 season shows a multicultural farming community in District No. 5, which included all the areas that are now part of Kelowna and all of Lake Country except Oyama, which was part of District No. 4, Vernon. Of the 183 names of individuals or businesses on the list for the Kelowna area, fourteen (7.6 percent) were Chinese and thirty (16.4 percent) were Japanese. A further eleven (6 percent) were South Asian, all operating in the Rutland area, and seventeen (9.3 percent) were Italian (Unaccessioned Interior Vegetable Marketing Board Fonds). Most striking is that a further forty-three European names on the list (23.5 percent) appear in *The Vision Fulfilled* (Hoshizaki 1995) as employing or sharecropping with Japanese during this time period. Between named Japanese producers and farms employing or sharecropping with Japanese, over 40 percent of registered farms in 1941 in the Kelowna area directly involved Japanese. This number likely increased in the following years due to a shortage of white labourers during the war years (I10ST 2014).

There were many causes and mechanisms of immigration, both to Canada and to the Okanagan, which were revealed in some of the published reminiscences as well as in the interviews. It is important to consider where individuals came from because their previous level of experience with farming may have impacted their experiences in the Okanagan. Frequently, Japanese were sponsored to come to Canada by distant kin or a neighbour from their home community. Part of this sponsorship typically included a fixed-term work contract. This had obvious benefits for both sides as the person providing the sponsorship received labour and the person being sponsored had the opportunity to learn the craft and to meet other new immigrants, and in some cases develop some English language skills. If they were not sponsored directly then it was often the stories of success of kin or neighbours that spurred individuals, especially men who were not first born sons, to try a new life in Canada (Hoshizaki 1995).

The Coldstream Ranch was identified as both a major recruiter of Japanese workers to the region and as a training ground for many Japanese who later went on to pursue agricultural careers of their own (Ouchi 1982). While the introductory chapters to all three Japanese books acknowledge the connection to Coldstream Ranch, what is striking is how frequently individual reminiscences, family histories, and interview participants also made note of this. Some families, like the Kawano family, stayed at Coldstream Ranch for over 30 years (Hoshizaki 1995). Bill Hoshizaki, editor of *The Vision Fulfilled*, believes at least 40 individual family histories noted the Coldstream Ranch in their stories. Two men in particular are key figures in the relationship between the Coldstream Ranch and the Japanese community: Denbei Kobayashi and Eijiro Koyama. These two men are identified as recruiting many of the Japanese men who came to work at the ranch (Hoshizaki 1995; Ouchi

1982; I5AK 2014). Both I5AK and I10ST noted that nearly all Japanese who came in the early years worked for Coldstream Ranch.

Three interview participants discussed the work as agricultural labourers their families undertook prior to operating their own agricultural enterprises. For I1MJ (2014) of Armstrong, her father arrived in the area 1908 as a member of a road gang but quickly gained employment in the burgeoning market gardening industry. He worked primarily as a labourer for others or rented plots until 1954 when he was able to purchase the land where the family still operates a small market garden. Both I5AK (2014) and I10ST (2014) spoke of their families participation in the orcharding industry in Lake Country and Coldstream prior to owning their own orchards. Neither family ever became fully engaged in market gardening but did practice intercropping and sold excess produce from the family vegetable garden. Another interview participant spoke of his family's work as agricultural labourers but this was strictly in orcharding (I1TW 2014). Many participants spoke in general terms about Chinese and Japanese involvement in agricultural labour.

It was not uncommon for some individuals to engage in other occupations prior to working in agriculture. Moichi Ogasawara, reportedly the first Japanese to settle in Vernon, originally operated a tailor shop before moving first into pig and cattle raising and then into market gardening, growing onions, cucumbers, cauliflower, and melons (Ouchi 1982). Family histories in *The Vision Fulfilled* (Hoshizaki 1995) include references to every kind of industry, including fishing, tourism (working in grand hotels like the Hotel Vancouver and Banff Springs Hotel), delivery drivers, logging and sawmills, railroads (construction, engineers, cooks), bookkeepers, accountants, taxi dispatchers, salesmen, restaurateurs and

more. In some cases these occupations preceded their arrival in Canada; in others they were a result of sponsorship agreements for immigration.

While many new arrivals were simply encouraged to take up agriculture because it was more enjoyable than road or rail work gangs (Ouchi 1982; Hoshizaki 1995), some Japanese were drawn to agriculture as an occupation for cultural reasons. I5AK recalled that her grandfather

seemed to be quite happy there and he appreciated being able to work in agriculture which he valued very highly because in Japanese tradition agriculture has the highest respect. They denigrated anyone in commerce, this is traditionally during the Meiji period, of course, just, the Taisho period was just starting. So his ambition was to be in agriculture but he, as he wasn't a first son he was not going to inherit the farming property in Japan so he thought it was great to be able to come here and work in agriculture. Which I think that background is quite important in terms of understanding agricultural aspirations of Asian immigrants. (I5AK 2014)

Another interview participant thought that perhaps the Japanese were drawn to agriculture because of a natural aptitude even if they did not come from an agricultural family. I10ST stated that his father did not come from an agricultural background. He further commented that

I don't know what it is. Whether that comes naturally to them or whether, I don't know. I don't know how they were raised in the old country but I know that the Japanese people that worked for the [Okanagan] Land Company they were the only ones that were allowed to do the grafting and budding because they could do it successfully and so they were always chosen to do that job. So it must be something that comes natural to them, I don't know. (I10ST 2014)

5.2.2 – Working with the Land

These early farmers worked from dawn to dusk, with little more than hand tools and determination, clearing, preparing, and cultivating the soil, before farming could begin. (Hoshizaki 1995:141)

Hard work was a theme that wove its way through much of the material I reviewed.

The hard work associated with pioneering and farming was not unique to the Chinese or Japanese communities but various circumstances did at times make the situation difficult to bear. In many instances farmers had no experience and relied on white labour bosses or neighbours to teach them a few basic agricultural skills (Ouchi 1982). Furthermore, in the case of the Chinese it was rare for a man to bring his family from China due to racist government legislation (Roy 1989). In the case of the Japanese, many families were separated for a number of years due to immigration quotas (Hoshizaki 1995). Yet they persevered and many took pride in the hard work of building a community. For example, the family of Eijiro Koyama recalled that

Dad was never afraid of hard work – it was a challenge, and he buried his life in the small twenty-acre farm. Back-breaking labour, and underneath lay that fertile loam soil waiting for willing hands and hearts to claim it and bring forth a harvest and a future. In those days there was neighbourly rapport, an interest in each other as they shared the ups and downs of life and had common goals. It was Mr. Powely on one side and Sam Tyndall on the other. Dad respected them and so did we. Even as Duck Creek flowed from Duck Lake through Mr. Powley's land and ours, we felt a continuity of being included in the activity involved in the opening up and settling of this part of the district. (Itami 2013:29–30)

I3BL (2014) described the process that would begin months before planting in the fields even started. Using hotbeds, “a structure that is done with 2x12s and then you have sheets of glasses, or frames of glasses, that you cover your hot bed or your vegetables with,” they started “the seedling, until it gets bigger, then you transfer it out.” The hot beds involved

a lot of work, “you cover it every night with sacks and tar paper on top so that if it would rain you’d cover it and it also keeps the heat in. And every night you cover it and every morning you take it off.” This work was done by the children in the family. “Ya, that was our job and we’d do that every night, after school before it gets dark. Every morning we’d take it off and go to school.” Originally they had used the new sacks ordered for the coming season to cover the hotbeds at night. However, he said when they realized you could sew the individual sacks into one large piece they saved a lot of time by simply rolling it up to take it off. Not all market gardeners grew from seedlings. Many of the Japanese market gardeners in the Kelowna area used starter plants that they obtained from a local Japanese-run greenhouse (I12ST 2014). At the Mori greenhouse operation in Kelowna, sons “[Satoshi] ... and Ted [Teruo] took alternate nights in making the rounds of the greenhouses to make sure the fires didn't go out during the winter months” (Hoshizaki 1995:77).

In speaking of the work performed by Chinese labourers and sharecroppers on his grandparents mixed farm operation in Ellison, one participant explained the process for growing onions. He described that “the soil has to be just as fine as sugar. So they would plow this field back and forth, back and forth literally hours, days until there were no lumps or anything and then they would seed the crop” (I6BH 2014). Sometimes people took chances, with mixed results.

Mr. Terai recalls some of his early farming experiences. He and Mr. Ito decided to try a new kind of tomato planting machine one year and were pleased with the results, but on the first evening after completing the task, a heavy frost fell, and they lost all their plants. He describes how prior to planting, the seedlings were placed in cold frames which were large wooden boxes with a layer of manure placed beneath the soil and a cover of cotton fabric placed on top of the box. Planting always took place after May 24. (Hoshizaki 1995:136)

The Terai’s farm was located in Kelowna. Although this happened many decades ago it is still the practice in many places to not plant until after the May long weekend.

Investing in farm equipment was a great expense and would have only been possible for families that owned their own farms and been successful for a few seasons. It was a life-changing event for many families when they acquired a tractor. The summary of the Numada family of Rutland provides an example of the joy that came with having such a tool at their disposal.

Some of the heavy farm work was done by their lone horse (Jimmy), which pulled ditchers, ploughs, cultivators, and hauled wagons full of stone, planks, etc. It was a great day when a tractor was purchased, and all the necessary equipment with it. The children were soon driving it, and farming became more enjoyable and fun. Even [family matriarch] Tomiyo, after much coaxing, became a very confident driver. (Hoshizaki 1995:95)

Another tractor story came from Armstrong. Next door to I1MJ's family's market garden was a tractor dealer who "saw my mom with these huge, you know the Chinese baskets... full of produce... I remember her, you know, carrying it across the fields." Impressed by the efforts of the young mother, the dealership loaned the family a tractor for as long as they needed it to farm their 18 acre property. Access to a tractor and other large farm equipment was an important factor in maintaining competitiveness in a tight market.

As on other family farms, market gardeners with children relied heavily on their offspring for labour both on the farm and in the household. I7DL recalled how he and his three brothers did their share on the farm, working right through their university years and returning home in the summers. It was when he pursued professional certification in his field of accounting that he stopped returning to work on the farm; around this time his father chose to retire. According to I8HT, the only boy in a family of five children, "you grow up really fast when you're growing up on a farm." He shared a story of the perils of showing proficiency at a task.

When I was very young I used to sit on my Dad's lap on the tractor. You know when I was about five, it was the winter when I was five, they left the tractor down on the far end of the property.... And it snowed, I remember, and they had gone down into town and I walked down and drove the tractor back. And they came home and my dad said "How'd the tractor get home?" and I said "Well I drove it." "Oh, you can drive that?", "Ya." So next spring I was plowing the field. And that's kind of how it went. (I8HT 2014)

I12ST (2014) recalled sharing the workload with her three siblings, "we took our turn working out in the field and helping with customers and making the meals." She believes that her father's switch from growing mainly for the packing houses to operating a full scale market garden was a result of his children being of an age to help him, "he had us kids to be able to go and pick the vegetables, wash them, and we'd sell to the customers as well." Because the period to make an income was limited to only a few months of the year, the whole family often worked until dark in the summer. The seasonal cycle of work meant that parents were often present at school functions and generally around all the time, but it also meant no summer holidays or special events except "the odd family outing like to maybe a church picnic or Regatta, that was something parents always said 'OK', we'll take part of the day off and we would go down there, like an afternoon... but there was no going on a week holiday of anything like that"(I12ST 2014).

Ruth Nakamura writes of her family's various farming endeavours. She noted that "with the shortage of workers, I remember taking the month of September off from school each year to help with the harvesting" (Hoshizaki 1995:52). The summary for the Ito family made numerous references to their children, and in particular their three sons, working on the farm. Even after their school years, middle son Ken continued to work on the family farm while brothers Toe and Morio worked on the farm part time while working elsewhere in the community. Further to providing physical labour, children performed other services to their

parents as well. Rose Naka stated that her “father did not understand English very well, so in early years, I had to go with him to the cannery, on the wagon with a load of tomatoes” (Hoshizaki 1995:34).

During the farming season many of the Chinese, particularly those on rented land, would construct small huts that they would live in during the season. I3BL acknowledged that the Chinese market gardeners would camp out during the summer season and then return to one of the Chinatowns in the valley, most often Vernon as it was the largest. They often worked in teams. I4JG described how a group of three would work together on a single property.

They would eat their breakfast together in one of the huts. Sometimes they all lived all three in one hut, sometimes they had two huts besides one another. They worked from dawn, breakfast, dawn. At lunchtime one of the three would go in and prepare a bit of lunch and they’d all eat it and then they’d go again until supper time or dark, and then they would eat their evening meal together. (I4JG 2014)

The need for irrigation varied by location. Armstrong was “muck soil” (I3BL 2014) so there was no need to irrigate; the entire town is surrounded by swamp which made it good celery land. Some small areas in Kelowna were like this but most required at least some irrigation. In one market gardening area a series of ditches was built to collect the overflow from Mission Creek in the spring and divert it across the fields; if there was any excess water it emptied at the other end into Mill Creek, to the north (I12ST 2014). The water would be pumped by hand out of the irrigation ditch, where it would then run down across the fields and back into the irrigation ditch (I8HT 2014). Sometimes there was too much water. *The Vision Fulfilled* included a few stories of farms nearly destroyed by Mission Creek flooding, including one in 1941 “which nearly washed out an entire bridge and ruined many farmers' crops” (Hoshizaki 1995:87). This was a regular occurrence, happening every spring.

Rose Naka recalled how “since we lived next to Mission Creek, the creek used to overflow every spring onto the land, about the 24th of May. Our driveway would be washed away, so we had to go through Casorso's bush” (Hoshizaki 1995:34).

The types and varieties of crops varied by both geographic area and by the particular land use practice. For example, intercroppers mainly grew tomatoes or onions. For sharecroppers the focus was typically on only one or two types of crops grown on a large scale, often onions. Responses from interview participants to the question “What did you grow?” included “Everything” (I1MJ 2014), “Everything you’d find in the supermarket” (I7DL 2014), “He grew... you name it!” (I12ST 2014). The interview transcripts reveal at least twenty-two different types of crops grown and that does not include varieties within a single type of crop, of which there were many. This is also reflected in the records of the Interior Vegetable Marketing Board. In a statement titled “Shipment of Regulated Products During 1940 to April 30, 1941,” thirty different varieties are listed. Some of the more significant crops included over 380,000 boxes of tomatoes, 83,000 boxes of cucumbers plus another 11,794 lbs sacked cucumbers, over 40,000 lbs of watermelon, 35,000 crates of cantaloupe, 6,250 tons of regular onions and 83,835 lbs of silver skin onions (Unaccessioned Interior Vegetable Marketing Board Fonds).

Most market gardeners who owned their land grew a large variety of crops. For those that distributed mainly through direct farm sales this was fueled by the need to remain competitive. In some cases it was also in response to requests from specific clients. One interview participant whose family market gardened for at least three generations on the same property reported that his father grew over twenty-five varieties of peppers for their

Italian clients, many of whom would bring seeds back after visits home to Italy (I8HT 2014). They built up a loyal clientele through word of mouth.

An example of an Interior Vegetable Marketing Board Registration of Owner and Producer form for 1943 illustrates the variety and volume of crops produced by a single market gardener. On this particular registration form the owner is listed as “H. Glenn, being the owner of 3 acres....described as Glenn Residence Lot [illegible]. Leased to Wong Wing of Kelowna, B.C.” Under the Producers section four different crops are listed: 1/8 acre lettuce, 1/2 acre carrots, 2 acres fall onions, and 1/8 acre beets (Unaccessioned Interior Vegetable Marketing Board Fonds). Like many Kelowna area Chinese the address for Wong Wing is “c/o Lee Sang Lung.” This was a rooming house in Chinatown; Lee Bon was the manager (Okanagan Telephone Company 1935). Wong Wing held Business Licences with the City of Kelowna for the “business or profession” of Market Gardener for most years between 1935 and 1941 (Chinese Community Collection, Licence/Permits folder). Wong Wing also rented land from the City of Kelowna for the purpose of market gardening for a number of years between 1936 and 1946 (City of Kelowna Council Minutes Vols. 11–19). However, correspondence from 1938 indicates that for that year the City denied Wong’s request to rent the land but no reason is given (Chinese Community Collection, Licence/Permits Folder, Letter from City Clerk February 26 1938). This market garden is an example of a small operation. Larger operations, such as the Kwong Chong Ranch in the Vernon area had 80 acres planted out in twenty different varieties, including 2 acres of Chinese vegetables (Unaccessioned Interior Vegetable Marketing Board Fonds).

Celery was only grown in areas with the right soil conditions. Armstrong was the main location for this due to its soil conditions (I3BL 2014; I4JG 2014). The moist growing

area extended from Armstrong south towards Otter Lake. As I3BL described it, “all the land was moist, very moist, grew celery well. All that, all the way out to Otter Lake, the land used to be all farms in the lower areas.” I4JG (2014) identifies this land as mainly being owned by the packing houses in Armstrong and then rented out to Chinese for growing and supplying the packing houses with product. Figure 5.5 show the proximity of celery fields in Armstrong to the residential areas in town.

However, there were a few other pockets of land throughout the valley that were suitable for celery farming as well. A swampy area in Kelowna, just off the appropriately named Swamp Road, was another location where celery was grown by Chinese (I2TW 2014; I7DL 2014). Around Swan Lake, just north of the City of Vernon, the types of crops differed from those in Armstrong because of the warmer and drier conditions. Carrots and beets were popular along with many acres of onions, Chinese vegetables, and cabbage (I3BL 2014).



Figure 5.24: Armstrong circa 1946. Looking south over market gardens on the flats in the north part of town from the perspective of Highland Park. (Photographer unknown. No title, Image No. 01420. Photo courtesy of Armstrong-Spallumcheen Museum and Arts Society. Used with Permission.)

Tomatoes were the main crop that was grown between the rows of trees in orchards. I11SK explained the process that his parent's experienced as sharecroppers of tomatoes in the 1920s and 1930s on the Taylor Orchard in Kelowna. They grew tomatoes and then they had to haul them to town, quite a few kilometers away, to sell to the packing house. In 1957 that same interview participant was named "Tomato King of BC" for growing tomatoes in his own orchard. As he explained it, "it was quite a prize. I got an award and a \$500 cheque. And that's pretty big in those days" (I11SK 2014)⁴. He described the conditions for the prize.

You had to have a certain amount, you had to be big enough to have at least 10 acres. So I grew 12 acres and I specialized in tomatoes that year and I put everything in to it, you see, and we had the most tonnage per acre and the best grades per acre. So that was sponsored by the canneries of BC, you see. Ashcroft was included too. (I11SK 2014)

This was the last year that I11SK grew tomatoes in his orchard as it was also the point at which his orchard became sufficiently established and he could focus his efforts on his trees. Later, thanks to his early efforts, his son won another industry prize, the Golden Apple Award. Strawberries were another crop that some grew in the orchards (I5AK 2014).

Onions were grown throughout the Okanagan. I3BL identified Vernon, particularly the area around Swan Lake, as a large onion growing area. Speaking of the Rutland area, I9EV stated that "Bags of onions used to go out of this area." In the lowlands around Woods Lake one interview participant's father grew onions and tomatoes on rented land (I12ST 2014).

⁴ \$500 in 1957 is equivalent to \$3943.00 in 2015 (Edvinsson 2015).



Figure 5.25: Onion fields in Kelowna circa 1909. (Photograph by G.H.E. Hudson. “Mr. Casorso's onions on the ground, (30 tons to the acre), Roman Catholic Church in the background,” Image No. PA-032336. Photo courtesy of Library and Archives Canada. Copyright expired.)

Organization within the market gardening industry varied by community. In some parts of the province there were formal organizations such as the Chinese Peddlers Association in Vancouver (Mar 2010), but no evidence was found of an equivalent in the Okanagan. Some farmers did work together to form companies, such as the Wong Choy Company in Armstrong (I3BL 2014). As their numbers grew some of the Japanese farmers formed a Japanese Farmers Association but this was not limited to those engaged in market gardening. Some farmers also joined Farmer’s Institutes, which were predominately white associations so the level of acceptance varied over the years. For example, I10ST (2014)

talked about the war years, describing an experience a friend of his father's had had. Prior to the outbreak of war his father's friend had been a

member of the Farmer's Institute and they used to have him out for meetings and what not, well when the war broke out he was asked not to attend. But, you know, this is all part of World Warfare. It's amazing, you know, the very same people are there after the war ended, too, you know, the very same people that said these things, and how they forgot all that... so it's just the hate from the war that produces a lot of those actions. It's unfortunate but it happens. You know, I think we just accepted it that way, too. I can honestly say that I didn't go through much discrimination myself. (110ST 2014)

Efforts to organize in the marketing of products in the Okanagan goes at least as far back as the 1890s, and by 1913 a central selling and distribution agency did exist which records show shipped products including potatoes, carrots, beets, turnips, parsnips, and onions (Buckland 1951). Despite a long history of cooperative marketing and industry organization, it was not until the imposition of the Interior Vegetable Marketing Board of the 1940s that many Japanese or Chinese market gardeners began to be affected by controls such as defined distribution areas (I3BL 2014). The Interior Vegetable Marketing Board developed as a result of increased efforts to organize and standardize the farming industry in British Columbia, and arose out of various provincial and federal legislation (Ormsby 1935a).

One of the tasks undertaken by the Interior Vegetable Marketing Board was to regulate and document who was producing and what they were growing, how they distributed and to where, and what volume of product was being shipped from the area. Producers had to purchase tags from the Marketing Board. If a producer shipped beyond their defined distribution area they would likely be threatened by the marketing board or else your product could be seized. Correspondence between two representatives of the Board, one in Armstrong and one in Grand Forks, from August 1939, is indicative of the actions taken by

the Board to control the trade of vegetables. This particular letter tells the story “this Dook racket” who was selling vegetables and fruit out of his region. The letter writer stated to the receiver that “this case could come into court if you like” (Unaccessioned Interior Vegetable Marketing Board Fonds, Letter from Meggitt August 25 1939). The Table 5.3 shows the seizures for the summer of 1940 from Chinese market gardeners. While 36 percent of registered producers in the Vernon District were Chinese (forty-eight of 132), 75 percent of seizures were from Chinese producers (three of four).

In the cases of seizures presented in Table 5.3, the farmer’s all took the product back to the farm but this was not always the case. Correspondence from the secretary of the Interior Vegetable Marketing Board to a Mr. Meggitt, a representative of the Board in Grand Forks explicitly states that some recent seizures “are to be sold for the account of the Board. Do this in the case for every seizure.” Therefore, it was in the direct financial benefit of the Board to seize product (Unaccessioned Interior Vegetable Marketing Board Fonds, Letter to Meggitt August 29 1939).

Table 5.3: Record of seized produce, adapted from *British Columbia Interior Vegetable Marketing Board Statement of Detentions and Seizures – 1940* showing Chinese names only⁵. (Unaccessioned Interior Vegetable Marketing Board Fonds)

August 27	Louie You	Vernon	5 crates of peppers	“Louie You was given the option of taking produce back to farm, or having same seized by Board. Louie You agreed to take produce back to farm, and produce was released from detention, August 29.”
August 27	Lee Yuen	Vernon	4 crates of peppers	“Lee Yuen was given the option of taking back produce to farm or to a packing house of having same seized by Board. Lee Yuen agreed to take produce to a packing house, and the product was released from detention August 28th.”
September 9	Yuen Lee	Vernon	2 crates of peppers	“Produce was released to grower upon understanding that it be returned to farm.”

I1MJ (2014) felt that the marketing board was “really, really tough on the Chinese.” In response to a direct question on whether the Chinese were treated differently than white producers, I3BL acknowledged that there may have been some difference in treatment but noted that there were very few white market gardeners so it was hard to compare. The family of I1MJ received numerous “threatening letters” and she advised that “you didn’t want to cross the marketing board.”

Correspondence about the seizure of products from the family of I3BL reflects the challenges of shipping perishable products. Correspondence from 1939 indicates that onions seized were able to be sold “at the Board price of \$26 per ton... but the celery and lettuce were in such poor shape on delivery that it was impossible to obtain anything out of them, and they have been dumped” (Unaccessioned Interior Vegetable Marketing Board Fonds, Letter from Kay November 6, 1939)⁶. The regulations imposed by the Marketing Board

⁵ Note: Both Lee Yuen and Yuen Lee appear on the list of Registered Producers for the IVMB.

⁶ \$26 in 1939 is equivalent to \$361.09 in 2015 (Edvinsson 2015).

made the distribution of certain type of vegetables very difficult. I3BL (2014) explained some of the complexities of working within the marketing board system.

I dropped in to see McDonnell who was the Minister of Agriculture and I mentioned to him the difficulties that they were putting on the farmers. He agreed with me but he didn't agree too much. Although I gather he did talk to the board. But as my parents had said and as McDonnell agreed that you can control vegetables but certain types of vegetables like lettuce, which is very perishable, you can't keep it out in the field for weeks. When it's ready it has to be, lettuce has to be cut and stored and so on. Whereas if they are controlling potatoes, my dad had no problem with root vegetables to be controlled. If the marketing board wanted to make some money so they'd sell you a tag, 'cause you have to put a potato tag on your potatoes or you'd have problems through the board. So they'd make some money selling you these tags. But lettuce and celery, when it was ready it has to be marketed. (I3BL 2014)

I3BL also indicated that he felt that more than anything the marketing board saw the opportunity to make some money by forcing producers to purchase tags. He explained that if the tag did not say "Interior Vegetable Marketing Board" you could not sell the produce.

The log book of correspondence between the Office of the City Clerk and the City Solicitor indicate that at least as early as 1928 the City of Kelowna required a farmer or market gardener to purchase a peddler's licence at a cost of \$5 to sell his own produce, but if a "servant or agent" was to do the selling then licence would be \$50⁷. In 1932 the issue was raised again looking specifically at the case of a Chinese man renting land within the city limits and selling the products door to door. The City Solicitor, E.C. Weddell, advised that no specific provision existed in the city by-laws but based on case law from out of province advised to charge him a trade licence "under the general clause." Moreover, he advised that he felt "it would also be reasonable not to insist upon a licence until he actually starts to sell his produce, and I think issue the licence to him as a 'market-gardener'" (Correspondence Journal for Trade Licences 1917–36). A number of trade licences issued by the City of

⁷ \$5 in 1928 is equivalent to \$62.15 in 2015; \$50 is equivalent to \$621.59 (Edvinsson 2015).

Kelowna for the purposes of market gardening were issued over the next several years. Each of these covers a six month period starting in March or April. The small number of available records indicate that the city followed the recommendation of the solicitor and only charged for the period when the market gardener actually sold his produce.

Identifying mechanisms of distribution is an important aspect in understanding how the industry functioned at various scales. Many market gardeners distributed their produce directly through local grocery stores. The family of I2TW (2014) grew vegetables in their backyard in Kelowna's Chinatown mainly for their own consumption, but in the spring they would grow a large crop of radishes to sell to the local shopkeeper. I7DL (2014) recalled semi-trailer sized trucks coming to their farm to collect produce that was then distributed either to local grocery stores, including Safeway or Super-Valu, or through a local distributor called the Valley Fruit Stand the supplied fruit stands throughout the Interior.

In addition to being purchasers and distributors of the produce, packing houses played a major role in the development of the celery industry in Armstrong. According to I4JG many of the packing houses owned large parcels of land that they then rented to the Chinese who then sold the celery back to the packing houses for distribution. She explained that

the packing houses, they were run by usually prominent Caucasians in the town. They had power and money and very, I would say have to say very good people. They of course would build good relationships with these Chinese people on the whole, at least that's anything I've read and anything I remember. That was certainly the case. (I4JG 2014)

Packing houses typically worked on contract, where they would draw up a contract with a grower to provide a certain amount of product (I10ST 2014). Delivering farm produce to the packing houses also provided an opportunity for busy farming families to visit with each other. Rose Naka recalled how "there was such a lineup at the cannery, it often took us

all day. While waiting, we would visit with the Kawahara family, and Mrs. Kawahara would give us home-baked bread. I can still remember the joy of eating this delicious bread” (Hoshizaki 1995:34).

Some market gardeners distributed different crops through different modes. For example, the family of I12ST (2014) sold onions to the packing houses and tomatoes to the cannery, but the family also sold direct to consumers who would come to farm. Those that produced vegetables through intercropping mainly sold to the packing houses or canneries (I11SK 2014). Even those families that engaged in direct farm sales still sold to grocery stores like Safeway and Super-Valu (I8HT 2014) or the Pandosy Food Basket (I12ST 2014). A number of receipts located in the Kelowna Public Archives also show the prevalence of selling direct to grocery stores. For example, on June 9, 1934 Wo Wing sold to the local Safeway three dozen lettuce, six dozen carrots, one dozen beets, and one dozen onions in exchange for a credit of \$4.30. This credit was carried forward and on June 12, 1934, Wo Wing also sold an additional five dozen lettuce, three dozen carrots, beets, onions, and green onions to bring his total credit up to \$7.75 (Chinese Community Collection, Business Receipts Folder)⁸.

For those who engaged in direct farm sales, they did not typically construct a farm stand as you may see today. In the case of I8HT’s family, customers would come directly to the house to purchase produce (2014). I12ST’s father built a shed for the children to sit in and wait for customers but the product was picked on demand as customers arrived. I12ST (2014) further added that once they had a telephone occasionally they would take an order by

⁸ \$4.30 in 1934 is equivalent to \$61.70 in 2015; \$111.21 in 1934 is equivalent to \$141.75 (Edvinsson 2015).

phone if a customer was coming from out of town, but she noted that this was the exception, not the norm, even at a time when most people had a phone.

When asked if their customer base for their family's market garden was mixed ethnicity or mainly White, one respondent replied that

They were all Caucasians, all Caucasians. There wasn't an Oriental family that would come because they would grow, you know, they would all grow their own. So it was Caucasian. And we got to know some people very well and became friends and that. It was nice, year after year, seeing people coming back and buying vegetables. People coming from Trail, Castlegar, Grand Forks, Revelstoke, Golden. It was the time when they'd come and buy 200 lbs of potatoes or 100 lbs of carrots and so many pounds of cabbage for sauerkraut and peppers and tomatoes to make their sauces, stuff like that. But no one does that anymore. (I12ST 2014)

On a farm located very close to I12ST's family, I8HT's family served a largely Italian clientele, even though most of the Italian families in the area were also farmers.

In Armstrong, the father of I3BL (2014) hired people to work his land and focused his efforts mainly on his distribution business. Initially he was just distributing the products grown on his own land but quickly he expanded the business to distribute others as well, such as buying onions from the Vernon area and shipping those by the train load. His father distributed for white farmers as well as Chinese farmers. I4JG (2014) explained that the big packing houses in town used the freight railways but that I3BL's family did smaller orders so they typically shipped it express but still on the railway. She described the process followed by another local supplier how also shipped express, Mr. McDonald, who used to spend the winter months on the Prairies getting orders from small grocery stores all over and then he would return to Armstrong and "would buy so many heads of lettuce from the Chinese and so many heads of cabbage maybe and celery stalks and then he would ship them off to a little place in, I don't know, Airdrie, Alberta, or all the small towns across the prairies" (I4JG 2014).

In Armstrong, at the Interior Provincial Exhibition locally known as the Armstrong Fair, the family of I1MJ (2014) used to sell tractor loads of vegetables directly to customers as well as enter their produce in the fair for competition. The proprietor was required to get a temporary business permit to sell at the fair; original permits were located in the archives for this family and others. I1MJ continued this practice until only a few years ago. In the 1970s as farmers' markets became popular this developed as another mechanism of distribution, one that is still practiced by this family and others today.

Very few participants recall door to door peddlers. This is perhaps due to the semi-rural nature of most of the communities included in this research; houses were located far apart and most people would have had the space to grow a vegetable garden to meet their household needs. In a reminiscence published in the *Kelowna Daily Courier*, long time Kelowna resident Dorothy Zoellner reflected on various kinds of home delivery. She recalled the special efforts the local Chinese vegetable man took in presenting her mother with only the best quality tiny white onions for pickling, and how her mother would make cakes and pies for him to take home to the other men in Chinatown as they were all separated from their wives (*Kelowna Daily Courier*, October 20, 2000). I4JG did share some fond memories of her

little neighbourhood Chinese fella.... he was very old, but mind you I was a child. But such a kind, lovely man. But he had the yolk with the two big baskets and he would come around to the house every, I don't know, three or four days and my mother was a very good pie maker. He always loved a piece of pie but he would never come in the house, very interesting. He would sit outside. He loved her pie. She'd give him a cup of coffee or a cup of tea or whatever and she paid him and of course, very generous, she paid him for what she bought but he always threw in some extra. Always, always. And, so I just remember him and seeing him eating his piece of pie. (I4JG 2014)

The railways were also a market for Armstrong celery. I4JG (2014) told of how the railway would advertise "Armstrong Celery" on their menus. Copies of these menus can be

seen in the Armstrong Archives. A menu from the Royal Anne Hotel in Kelowna also advertises the use of Armstrong celery in their soup (Kelowna Museum Collection, Royal Anne Hotel Folder).

Two interview participants shared stories of Chinese peddlers serving the rural area around Armstrong. I4JG (2014) recalled that friends who lived outside of town used to purchase from a Chinese peddler. She noted that it was very far from town and quite an uphill walk. I13VP (2014) spoke of the Chinese peddler that used to frequent their home on the V & A Ranch, located just north of Vernon; however, he brought fish, not vegetables. A receipt for rent paid by Song Hing to the V & A Ranch for the 1929 season was located in the Kelowna Public Archives. The receipt did not specify what the rent was for but based on the sum of \$50.00 and numerous other receipts documenting the sale of vegetables made out to the same individual, it was likely for the rental of land for market gardening purposes (Chinese Community Collection, Business Receipts Folder).

I12ST (2014) recalled a Chinese peddler by the name of Long Bow who used to operate in the Winfield area. She recalled him walking around carrying a long pole with two baskets balanced on either end. Long Bow of Winfield, British Columbia, also appears on the Interior Vegetable Marketing Board list of registered growers for 1941. Further south, in Rutland, I9EV (2014) did not recollect any door to door vegetable peddlers but did recall going to the farms of Chinese or Japanese market gardeners to purchase certain produce, and also recalled that they sold directly to local stores.

A number of participants recalled working for other farmers in their youth even though they lived on a family farm. Most examples of this crossed ethnic boundaries. A white participant, I13ML (2014), recalled her late husband being hired to plow fields for

Chinese market gardeners in Armstrong in the late 1940s or early 1950s. Another white participant, I9EV, grew up in Rutland in the 1950s and recalled the local Japanese farmers hiring neighbourhood children to pick during harvest season regardless of ethnicity. She stated that “up on Black Mountain, here in the Belgo area, us kids used to go pick tomatoes for them..... So there was a lot that was going on and they did hire a lot of the younger students during the summer to help them pick their wares” (I9EV 2014).

Inter-ethnic cooperation was not limited to the high season. A Japanese man was employed "assembling vegetable crates during the off season on the orchard, and the crates were sold to Chinese vegetable farmers in Enderby" (Hoshizaki 1995:80–81). A list of registered producers shows a white producer co-listed with two South Asian and one Chinese producer, and a South Asian producer co-listed with one Chinese and one Japanese, demonstrating that the intermingling of ethnicities was not limited to hiring local children. Both instances occurred in the Rutland area (Unaccessioned Interior Vegetable Marketing Board Fonds).

Although I8HT (2014) grew up on his Japanese family’s market garden he recalled being hired by the Chinese father of another interview participant, I7DL (2014), to work at their farm beginning around age 11. I7DL recalled working with his friend I8HT, noting that

he worked with me for a long time. Him and I worked the same, we worked hard, we just went and got it done, but the kids I hired from school, they needed a job so we gave them a job but they just couldn’t take it, in the end they quit. ... We did it faster, but no, they didn’t have the...a few of them stuck with me for a while but not really. They just needed a job but back then there was no McDonald’s, you know, there was no Burger King so what else could kids do in the summer?” (I7DL 2014)

Growing up in an agricultural family was good training for work later in life. I10ST (2014) noted that farm work was “a way of life for us. It was good for my family, we had five kids. They all knew menial tasks because they had to be part of the operation or it

wouldn't work, so that helped them later in life, too, later in their life." I3BL (2014) believes the hard work that was the hallmark of farming life may also be one of the reasons why later on new immigrants did not pursue agriculture, noting that "they came to make a living and take life easier than what they could do in China."

I1MJ described how due to a combination of prejudice and market conditions there were times it was not worth the effort to harvest the crops.

A lot of prejudice in those days and I know that my dad was saying that ship loads of lettuce or celery would be in the cars and not taken away. There was a lot of prejudice, they just wouldn't take it, you know the engineer. So a lot of it rotted in the cars alone. So, and it, so my dad said it wasn't even worth, they let it rot in the field, it wasn't even worth harvesting at times because they gave such a low price. (I1MJ 2014)

I1MJ spoke of her family's hardship numerous times throughout our conversation. In concluding the interview she reiterated that there was a lot of hardship, but was quick to add that "there was a lot of good people too, equally."

5.2.3 – Experiences of the Market Gardeners: Beyond the Farms and Fields

The experiences of market gardeners are not limited to farming activities. This section focuses on experiences of daily life, including life on the farm but not specific to the work of farming, as well as activities and experiences in the wider community. As with many pioneering communities, there were hardships encountered by the Chinese and Japanese market gardeners. While some experienced extreme hardship and periods of isolation, others felt like they were wholly accepted members of the community. Ruth Nakamura recalled the

hardships [her mother] encountered during her childbearing years. We farmed on a 1/2 share basis at Butt's place in Westbank. We generally had no meat, but at special seasonal times, the First Nations people would often barter their deer meat with us. Eggs were plentiful since we had our own hens. Milk was raw, but mother drank it without hesitation. To cover up the awful raw taste and the odor of the cow, she mixed cocoa with milk for us to drink. (Hoshizaki 1995:51)

Stories of simple diets, sharing what little they had with neighbours, and difficult conditions were central to many of the family histories in *The Vision Fulfilled* (Hoshizaki 1995) and elsewhere. Similar to pioneering families across the West, many families built their own homes and lived in cramped quarters for many years until their farm prospered. Harue Taguchi described the life for her and her siblings.

We didn't have much in the way of material things, such as shoes for our feet and clothes for our backs, but we never lacked for love, and had a strong family bond. Our laundry was scrubbed by hand, with water dipped from the creek, and heated on the wood burning kitchen range. Rinsed out in the creek, it was then hung to dry on a line Dad had attached to a tall poplar tree. In the winter, the clothes were frozen stiff and hard like a board, and when space was available, were brought indoors to dry, on a makeshift line around a pot-bellied wood heater. (Hoshizaki 1995:67)

Isolation was a reality, especially for women as many did not have opportunities to develop English language skills, particularly in more rural locations. Some families moved closer to town to have more opportunities to interact with other families (I12ST 2014). Harue Taguchi shared the story of how her mother used to long to hear from relatives in Japan.

I still recollect the many times we climbed the hill to the west, to wait for the mailman, who came from Vernon to bring us mail....At times a bulky envelope with many colourful Japanese stamps on it would arrive. We knew mother waited patiently every day for this, so we all ran as fast as we could to deliver this letter to her. It was written by brush on paper folded like a scroll, and it was unravelled as she read it. No matter how busy she was, she always made time to sit down and read the letters aloud, often with tears streaming down her face. Her only means of communication with the loved ones in Japan, was by these letters, which took a month or more to reach her, with welcome news of her two children and other relatives. (Hoshizaki 1995:67)

Despite the many challenges and difficulties faced there were good times as well. The Uemoto family summary in *The Vision Fulfilled* described how even in tough financial times the family always made an effort to balance work and play with activities that were specific to the season.

The next few years were very lean years. The family sometimes only earned approx. \$100 per year, but they were also happy years. In the spring, the children enjoyed riding on the horse driven float, and hiking the hills behind their home. Summers were filled with work, of course, but there was time for fishing in Mill Creek, swimming, floating down the creek in tubs, and in the winter, there was sleigh riding down the hill behind the house, and skating on the frozen creek. (Hoshizaki 1995:149)

Many strived to retain important Japanese traditions, such as the use of an Ofuro (a traditional Japanese bath), but efforts were also made to learn new ways of doing things. Yoshi Honkawa recalled that "My mother learned to make jams and chili sauce. She also learned to preserve fruit, tomatoes, corn, and beans. Fall was a busy time of year. Our cellar was filled with potatoes, carrots, and onions which we ate during the winter. We never knew hunger during the long winter months, although the meals were not fancy" (Honkawa 2013:35).

In addition to daily life, there were examples of the tragedies of life on the farm. Both *A Century of Community* (LCMA 2013) and *The Vision Fulfilled* (Hoshizaki 1995) included the story of Yoshitaro Ito who died June 26, 1935, age 47 years. "His death was caused by a tragic accident; he was hauling fruit (possibly strawberries), by horse and democrat, to the Vernon Fruit Union packing house in Winfield. The grade was too steep..." (Lake Country Museum and Archives 2013:69). Another haunting story is that of the Koyama family. In 1930, Fumi Koyama was pregnant with the couple's tenth child when she became ill with pneumonia. She delivered the child prematurely and then suffered a fatal heart attack soon after. The infant, a baby girl named Masae, survived and was being cared for by close relatives when she died in a house fire at aged 4 months (Lake Country Museum and Archives 2013; Hoshizaki 1995). Eijiro Koyama was widowed with nine young children. As

daughter Harue recalled, “Dad became a mother as well as a father to us... patching the boys’ pants or repairing shoes for us to wear to school the next day. Out of necessity, he also learned to knit...He learned this skill from neighbour ladies” (Hoshizaki 1995:69). In addition to his role as homemaker he continued to farm his 20 acre farm.

I2TW emphasised the role that the seasonal nature of agriculture played in dictating the lifestyle of Chinese farmers, noting that they would sit idle for four or five months a year and “they’d get bored” (I2TW 2014). One participant described how many Chinese would spend the off-season, typically December, January, and February, renting rooms and having “social connections....I think there was a fair amount of gambling that happened” (I4JG 2014). I13ML commented that the Chinese boarding houses elicited a sense of mystery. Gambling as a pastime was not limited to the Chinese. For example, like many other Japanese farmers, Kichiji Ikenouye "worked hard all summer, but when winter came, like many Issei, he became an avid Shogi player, often playing through to the early morning hours" (Hoshizaki 1995:39).

Experiences with racism and discrimination varied dramatically, even for an individual or within a family. That historical records for Japanese or Chinese are scarce and sporadic is a permanent reminder of how they were often treated in the past. A prolific writer on local history and regular user of historical records, I6BH commented on this unfortunate situation in our interview. However, speaking again of Armstrong, I4JG stated that she thought that “this town is so much better because we’ve had the Chinese in this town. That made for, we all lived with the Chinese, maybe it made for a little more tolerance. We knew they were great people” (I4JG 2014).

The most visible form of segregation was the persistence of Chinatowns. Kelowna, Vernon, and Armstrong all had permanent Chinatowns that swelled in size during the winter months. At one time Armstrong had as many as three Chinatowns, but only one remained by the 1940s (I4JG 2014). I6BH (2014) commented that the idea behind Chinatowns was “to keep them sort of segregated.” Reflecting on the driving forces behind this need for the white population to feel in control, he further commented that

there was always that fear that these people were going to come in and take over and I think that the irony is that they just wanted to be left alone. And I think there was definitely systemic mistrust. It didn't matter what they did, they were wrong. If they saved their money, they were being cheap. If they didn't save their money, they were wasting it. So I don't think they could win really at all. No matter what they did society they were being misjudged, judged poorly. (I6BH 2014)

Despite the appearance of segregation, Kelowna's Chinese population extended beyond the limits of Chinatown, with Chinese-owned businesses extended along the main downtown streets (Kyle 2014). The Chinese business community was very integrated with both the white and Japanese communities. For example, Quong's City Park Café was a popular restaurant for over 50 years. According to one interview participant, a member of the white community, “everybody went to Quongs....That was the place to go” (I6BH 2014). I7DL (2014) stated that his family went there weekly. I6BH also spoke of another Chinese restaurant in Kelowna, The Golden Pheasant, located in the heart of downtown that was frequented by both Chinese and Whites. A Japanese participant, I11SK, spoke of patronising a Chinese-owned store in Chinatown in the 1920s and 1930s that brought in many Japanese products. Another important store was the K. Iwashita Store in Kelowna's Chinatown. Originally a meeting place for newly arrived Japanese men, the store developed in the home of a woman named Tami Miyake and had various partners and managers over the decades

(Hoshizaki 1995). Newspaper advertisements from the era reveal a wide selection of merchandise (BC Historical Newspapers, *Kelowna City Record/Orchard City Record*).

In order to maintain relationships with other members of their own ethnic community it was often necessary to travel throughout the valley. I7DL (2014) stated that when he was a child in the 1950s there were very few other Chinese families in the Kelowna area, where his family farmed, but there were many Japanese families. He also recalled that his family used to travel to Vernon's Chinatown rather than the closer one in Kelowna because there were more Chinese farming families in that area, including some from the same village as his family in China. Earlier, in the 1940s, the family of I2TW (2014) was the only family in Kelowna's Chinatown.

It was especially important among both the Chinese and the Japanese market gardening communities to maintain ties based on kin connections or with those from the same village (Chinese) or prefecture (Japanese). As one interview participant described it "it was a big thing if you came from the same area. It was like kinship. I mean, they would help each other out." He explained further that "if people came from the same prefecture they'd look after each other. Like on my grandfather's farm there, there were several other buildings there that other people from the same area of Japan that he came from stayed. He employed them during the Depression and what not" (I8HT 2014). For the family of I7DL (2014) it was a village connection that brought his Victoria-born father from his farm in the Vancouver area to work with a partner in Kelowna. Numerous examples in both *The Vision Fulfilled* (Hoshizaki 1995) and *'Til We see the Light of Hope* (1982) echo this sentiment.

In describing the "close-knit community" of Japanese farmers in Kelowna, I8HT recalled how for many years his grandfather was one of the only Japanese in the area with a

truck. He explained how “when they had activities at the temple,” his grandfather and one other Japanese man with a truck “used to put big signs on there on the back and they’d drive around and pick everybody up and they’d just climb on the back and they’d haul them down to the temple.” His grandfather was a successful market gardener who owned his farm and therefore was able to save for the purchase of a truck. Access to a truck would have increased his competitiveness.

One of the highlights of the year in Armstrong was the Lee family’s Chinese New Year’s dinner. All interview participants from Armstrong mentioned this event, as well as almost every other source on Armstrong history and any volunteer that I chatted with on my visits to the archives. The host family, a large family with many children, would always invite a number of friends and neighbours, most of whom were White. The ingredients for the ten-course meal would be ordered from specialty stores in Vancouver and included many special treats such as raw sugar cane, lychee nut, and fox ginger. The family would seat more than fifty people in their small home (I3BL 2014; I4JG 2014). As one participant put it, “I think the Lee’s party every year was considered a, you know you get invited to the Lee’s party, and you’re in. It was always a special time” (I4JG 2014). Not surprisingly this family was widely accepted by the community (I13ML 2014).

However, while there are many examples of acceptance and interaction, there are also sad reminders of how despite personal feelings societal structures also played a role. During our interview I4JG commented that she wished she could remember the name of the Chinese man who used to sell vegetables to her family. A moment later she stated “But I wonder if maybe I never knew it? He was just the Chinese who brought the produce” (I4JG 2014).

I6BH grew up in the 1950s and 1960s and recalled how parents of white children were often quite supportive of their children having Japanese friends as the Japanese families “were all held in such high regard,” also noting that “these kids were always very smart, you want your kids to hang around with them” (I6BH 2014). The situation had been different in the 1930s for I11SK (2014). He found that while many of the white children were happy to make friends with Japanese children, their parents often tried to intervene and forbid them from associating with one another. He pointed to school sports as a common ground where he came to be friends with some white students. I2TW also mentioned sports as an area where different communities came together. Although Chinese, he played on a Nissei (Japanese) baseball team. He figured that the white teams could not tell them apart so no one seemed to mind.

Language barriers could be very challenging. A few participants reflected on the role their parents played as translators for other members of the community. I1MJ shared that her father had been a scholar in China prior to emigrating to Canada. As a result, “Dad wrote lots of letters, read lots of letters, and corresponded for the families” (I1MJ 2014). I8HT (2014) recalled that “quite a few of them had language barrier difficulties and so they had asked him to help. My parents were both bilingual. So he would go and help them with their pension applications and what not.” The ability to communicate with the white business community would have been a major advantage and improve competitiveness for those with English skills.

I3BL, who grew up in Armstrong, said that he had been asked numerous times in his life if he had faced discrimination and that he honestly had to say “I can’t recall.” However,

he then stated that while he had never experienced “straight out discrimination but there was still some talk about, you know, the Chinese and so on” (I3BL 2014). He suggested that “because [Armstrong is] a smaller community it’s more of a multicultural community than the others,” and that perhaps that was why there was less racism than in Vernon or Kelowna. One sign of integration identified by a white interview participant was her recollection of a Chinese abacus at the bank in Armstrong, an example of the bank’s efforts to work with the Chinese population, further noting that “there were always Chinese men on the streets” (I4JG 2014). However, I4JG also shared that she had heard stories of unkind treatment of the Chinese at the hands of white residents, particularly young men, in the 1930s. She also shared a story she had followed through a series of articles in old copies of the town newspaper. At one point a white farmer had planned to sell his land to a Chinese man and he was ostracized by the community as a result because “at the time it wasn’t against the law but it was against the social law.”

I11SK (2014) recalled how his experiences with racism were worse as a sharecropper than as an independent farmer, and that the Japanese sharecroppers were expected to work for less money, supporting the notion that landownership was held in high regard. I3BL (2014) argued that the community of Armstrong was more accepting of the Chinese community because they recognized the importance of Chinese workers to the success of their farms.

As an example of good relations, I7DL (2014) talked about the trust system that was employed by the distributor of their produce. Their family sold mainly through a white-owned fruit and vegetable market and they would simply pull the truck up, unload their produce themselves into the coolers in the back and then report to the owner how many cases

they delivered and no one ever counted it or double checked. He stated that “there was no problem there, he always treated my dad fairly. They remained friends until [the vegetable dealer] passed away.”

An interview participant from Kelowna did not recollect feeling any discrimination in her youth but said that her brother felt very discriminated. She supposed that perhaps this was a matter of gender differences, suggesting “maybe boys were meaner than girls” (I12ST 2014). Elsewhere, I1MJ spoke of her difficulties at school, in particular her inability to pass inspections because her finger nails were dirty from weeding before school and also her inability to earn recognition for healthy eating as her family ate a traditional Chinese breakfast of congee pudding rather than follow the Canada Food Guide so she was unable to earn “stars” like her classmates (Chinese Information File).

The mothers of two interview participants were the only Chinese woman in their respective communities for many decades, and each bore eleven children. While neither participant was in a gendered position to reflect on the sense of isolation that their mothers may have experienced, especially as new mothers in an all-male society, fragments of their stories paint a lonely picture. At aged 21 years, the mother of one participant was widowed with two young daughters after her husband, twenty-four years her senior, was robbed and murdered in his own store. A few years later she married again, a man fifteen years her senior this time and bore him nine more children, at home with her husband serving as midwife while the other children waited in the next room. Widowed again with seven children still in school she made tofu that she sold throughout the valley, delivered for free to Vernon in the police officer’s trunk, to ensure all eleven of her children completed high school (Wong 1999). Although not directly engaged in market gardening, this family sold

radishes from their garden to the local shops and some of the children worked as agricultural labourers.

The father and grandfather of I3BL worked together to save enough money for his mother's head tax (a brief history of Canada's Chinese head tax is provided in Chapter 2). I3BL (2014) shared that his father and grandfather had been able to rent their own land right away, rather than labouring for someone else, so they would have had more income than the average Chinese market gardener. Once they had saved enough money his father returned to China to find a wife and then brought her back to Armstrong around 1920, 10 years after he first came to the area. I3BL credited his father's business skills and his opportunity to learn a bit of English when he first arrived in Victoria as being the driving forces that made it possible for him to bring a wife over. I4JG (2014) stated that "I think she was quite amazing, I really do. And had a large family, was expected to work very hard. I'm sure that it must have been tough for her, no female contact."

I11SK (2014), a Japanese participant, felt that World War II actually helped to reduce racist attitudes, whereas I6BH (2014), a white participant, argued the opposite. I11SK (2014) attributes this in part to unofficial government policies of forced assimilation during the war years. He recalled that the Japanese community in Kelowna was forced to close their Japanese language school, break ties with Japan, and discontinue many Japanese traditions. He said that while they willingly complied and acknowledges that these actions did help them assimilate, he does have regrets. For example, his son speaks very little Japanese. Other interview participants expressed similar sentiments about the loss of language skills (I8HT 2014; I10ST 2014).

Although Japanese in the Okanagan were not subject to evacuation as they were on the coast, local governments did attempt to put controls in place. City of Kelowna council minutes from February 16, 1942 demonstrate these wartime attitudes. Of particular concern was that “these Japanese are steadily seeping into the Okanagan Valley seeking to purchase land, residences and to settle, many of them coming in new automobiles and acting in a very truculent and insolent manner.” Members of Council, in response to “public indignation...being roused to such an extent that violence against this infiltration may easily breakout,” resolved that all Japanese men of military age should be interned by the federal government, that land sales, lease, or rental should be prohibited during the “present crisis,” and that police supervision should over see any further evacuations (City of Kelowna Council Minutes Vol. 15). A letter detailing these resolutions was sent to the Prime Minister’s Office.

There was a difference of opinion among interview participants on the role of religion and whether it created barriers within the Japanese community. I5AK (2014) felt quite strongly that the decision to become Christian or to remain Buddhist dictated whom you associated with and also whom you could marry. I12ST (2014) noted that her father’s Buddhist faith was what drove her family to move from Lake Country to Kelowna as there were more Buddhist families around and regular social activities. But, contrary to I5AK, she also felt that religion did not create barriers in the community and that it did not matter what religion you were when it came to participating in community activities. Furthermore, I12ST noted that some intermarriage did happen between the two religions. She further added that the decision to convert was often more based on political disagreements or personal affronts rather than an actual shift in religious beliefs. Another interview participant stated that:

there was a separation that way but the community, you know what, our Buddhist Temple here it was almost like the cultural centre here in Kelowna. With Japanese language school there, people that weren't Buddhist, anytime they had any kind of gathering for that, there people from all over. Even now we are a mixed community but if we have a funeral for a long-time resident there's people from, doesn't matter how they were raised, their all friends. Ya, I don't, there might have been more of a separation back then but on the cultural level they were still all kind of together. (I8HT 2014)

Many families also continued to practice elements of both religions, such as keeping Buddhist traditions in the home while also attending Christian church services (I10ST 2014; I12ST 2014). I10ST explained how although his mother attended a Christian church, she maintained a Buddhist altar at home where she would put oranges and other "goodies." He recalled how years later he had travelled with his mother and father, wife, and young children to Cranbrook to locate the grave of his mother's younger brother and to place a tombstone on the site. "And I took our young kids at that time with them so they watched Grandma put these nice big oranges on the grave site. And of course they're wanting these oranges. Anyways, she did this little prayer and then said 'That's good enough', and she took the oranges and give it to the kids" (I12ST 2014).

For one interview participant religion flowed through different periods of his life. He commented that he was "a baptised Buddhist from way back....so I am actually, I'll be dying a Buddhist" (I11SK 2014). He further explained that he was "part-Catholic" and attended Mass every Sunday with son's family but that he was actually married in a United Church in Kelowna, St. Paul's United Church, which was not the Japanese United Church even though both he and his late wife were Japanese. By his recollection people of various faiths attended the Japanese United Church mainly for the social connections. According to I12ST (2014) "everything social was based around the church."

Intermarriage between Japanese and Whites and Chinese and Whites was personally experienced by one Chinese and three Japanese interview participants. I10ST joked that “I married my wife because I wanted to make sure she wasn’t a relative.” He further commented that he “never did date a Japanese girl, I was mostly with white people. Maybe they thought I was Chinese!” (I10ST 2014). Another interview participant explained the necessity of inter-ethnic relationships.

If you look at our situation, we were the only Chinese family in Kelowna, so who do I date? Who do I marry? It’s a female-male relationship and that’s tough and its tougher in those days for a Caucasian to marry a coloured person, a visible minority. Boy, they paid some prices for that and you know I give credit to my wife and everything else because I’m used to it. They’re not used to it, type of thing. But it’s changed. (I2TW 2014)

One interview participant suggested the high rates of intermarriage between Japanese and Whites was in part due to World War II era efforts of the Japanese to integrate into broader society. He felt that this was limited to the Japanese community and was likely not similarly experienced by the Chinese, and now knew of very few Japanese who married other Japanese (I8HT 2014). I11SK (2014) agreed that very few Japanese who descended from these early settler families are married to other Japanese. One interview participant commented that he did not understand why people were so afraid that the Japanese would not be able to assimilate since they all married white people in the end anyways (I8HT 2014).

At least two interview participants from Armstrong described the importance of the sawmill whistle in regulating the lives of the Chinese market gardeners in the area. I4JG described the sawmill whistle: “it had a whistle and I think in the morning, seven o’clock whistle, they had a noon whistle, for lunch hour, and then five o’clock whistle, and the fellas in the field sort of regulated their lives by these whistles that were part of the sawmill business.” In written notes provided by I1MJ, she shared a story of how her brother, aged 5,

would have to look after her as an infant while their parents worked in the fields. Her brother knew that once they heard the whistle their parents would be home soon. If he heard the whistle and they did not arrive shortly thereafter he would start to cry until their mother arrived.

Many interview participants reflected on changes that had occurred in their lifetime or the lifetime of their parents. In most cases these reflections were broad in scope, describing changes to the landscape, the nature of race relations, to the practice of farming, or to society in general. Some also provided very specific examples of change. I3BL (2014) described how changing railroad technology increased both the variety and volume of produce that could be shipped. Lettuce grew very well in Armstrong and was less labour-intensive to produce than celery; however, in the early years only celery and cabbage could be shipped because they were hardier than lettuce. When ice cars were introduced they were able to ship much larger quantities of lettuce. Lettuce used to be shipped in boxes of 5 dozen, with ice chips packed in between the layers. The ice came from Otter Lake and supplied most of the town with their ice needs, including the packing houses and the meat locker. I3BL also recalled skating there regularly in the winter as a boy in the 1930s and 1940s.

Changes to the landscape were more commonly talked about than changes to the industry. Nearly all interview participants talked about changes they have witnessed in their lifetime, in some cases things almost coming full circle. I1MJ (2014) noted how the general population are just beginning to grasp the benefits of eating locally, whereas market gardeners have “always known it.” I4JG (2014) stated that while the community has changed over the years, the “wonderful black loam soil” still remains and supports a small market

gardening industry in Armstrong, acknowledging that “it’s changed but still it’s the richness of that soil that makes it such a good growing area.” Change was also mentioned in many of the family reminiscences in *The Vision Fulfilled*; for example, Mickey Takeda reported that “in the 1970s, Dad went to Kelowna, and visited Mr. & Mrs. Terai. He said that the place had changed so much he couldn't recognize it” (Hoshizaki 1995:87).

In the Lake Country area, I5AK (2014) described how at one time her family name dotted the hillside with “properties all the way along Camp Road and all the way along Oceola.” Her grandfather had six children and her great uncle had seven children and as each retired they divided some portion of their property to each of their children, resulting in over a dozen families in the area. Even today, over one hundred years since her grandfather arrived, the family name is still present but not as visible on the landscape as it once was. Also in the Lake Country area, I10ST (2014) identified the transition to vineyards as a major shift in the agricultural landscape in the area.

In Kelowna, one participant heralded the 1960s as the turning point at which Kelowna changed from being largely rural to mostly urbanized (I6BH 2014). In addition to rapid development of both residential and commercial areas, Kelowna also changed its boundaries a number of times during this time. I6BH (2014) noted that “the reason Glenmore became part of Kelowna was Kelowna needed the land and Glenmore didn’t have a tax base because it was just agricultural, so it seemed a good fit,” a reflection of just how fast Kelowna was developing. In Rutland, which was amalgamated into Kelowna in 1973, I9EV stated that since she arrived in 1946 “there have been lots of changes,” but that these did not really begin in earnest until the 1960s, when suburban development began to eat up farmland. She described what it was like when they first arrived.

There was basically the orchards and the vegetable farmers and like I said there was the one tobacco farm and there was very few homes. When we came in in 1946 we drove from Kelowna to Rutland and we were lucky if we saw lights along the way so there weren't, it wasn't much at all. (I9EV 2014)

I8HT (2014) talked about how black it was at night as a child in the area that is now the highly developed centre of Kelowna: “we were way out in the tulies then. And Rutland was miles away and downtown Kelowna was miles away. We were kind of stuck in the middle of nowhere.”

I2ST (2014) described having mixed feelings about the disappearing agricultural landscape. She thought that “if [her] father was still living he'd be shocked at the change. ...It's changed. It's unreal.” She talked about the timeframe of farmers retiring, noting that a few may have felt pressure to sell to developers but most were probably just waiting for the best opportunity to get what money they could out of their land in order to retire as she doubted that “they would be able to build up any nest egg living on three month's income.” She commented that “there's a real need for market gardening. It's a shame that all the good land is gone, so close into town. But I guess that's what happens when there's progress.”

5.2.4 – The Decline of the Industry

Some interview participants had very definitive ideas about the decline of the market gardening industry. I1MJ (2014) felt strongly that “it's because the California market came in and then also Vancouver had a bigger market.” Furthermore, I1MJ felt that the Interior Vegetable Marketing Board was an important factor to consider as the Board was uncompromising when it came to enforcing rules for distribution. “Marketing Boards were really, really powerful in those days. And you got pennies for what you worked for. And they underhandedly paid the Chinese less than the Caucasians.”

I2TW (2014) stated that a number of things coalesced in triggering the decline of the industry, such as an aging population, lack of descendants to continue in family operations, and in cases where there were younger generations they often looked to other types of careers rather than continuing in farming. I2TW also pointed to the basic laws of supply and demand.

I think that any industry that is prosperous generates more people entering with the possibility of making money, then suddenly you get greater acreages being farmed, you've got greater competition with trying to sell your product to the same group, and suddenly because of the competition your pricing starts to drop and it's no longer as profitable and then people start dropping out of it. (I2TW 2014)

I3BL (2014) felt that the decline was due to the lack of new farmers to take over as the older generations retired or passed away and also by the uncertainty associated with farming.

Well I think the reason why is that there is no younger people, persons, interested in farming. Those who have come even from China or are Chinese from China would rather be in the bigger in city and mix with the Chinese community, you know, in a larger city, rather than come into a small community. And I don't think they came to hard labour, they came to make a living and take life easier than what they could do in China. I think this is one of the major reasons. And even younger folks not interested in hard labour. And the other things is it's a gamble. You never know if a frost comes and kill all your plants that you have put out. We've seen that. You know you plant acres of it and then one night, it takes one night, that's all it needs, is for a frost to come and kill all your lettuce plants that you have nurtured for months. (I3BL 2014)

Insecure forms of land tenure such as leasing, renting, or sharecropping, were other possible contributors to the decline identified by interview participants. According to I11SK, Japanese farmers who owned land, and particularly those that had no debts or mortgages, were able to hold on longer than those who did not own land. He was a career orchardist who grew up sharecropping vegetables and also grew tomatoes for many decades on his own property. Specifically talking about orcharding, he noted that it was no longer a "very lucrative business. It's really gone downhill. It was good, shortly after the war ended it was good" (I11SK 2014).

Three interview participants spoke of the difficulties in obtaining quality labour. In particular, they noted that this became more difficult as the years passed and as children grew to adults and pursued professional careers. I3BL (2014) spoke of the entertaining experience of inviting high school students in a vocational class in the 1940s or 1950s to come learn the market gardening trade. As he described it, this was a last resort as there were no available agricultural workers in the area at the time. The students rarely lasted more than half a day as the work was very physical and they were not prepared. “Hehe [he laughed], too hard, they’d say.” This insight is especially amusing as this participant spent his professional career as a teacher. I7DL (2014) shared that his brothers believes that the difficulty in obtaining quality labour was one of the final reasons their father retired from farming in the 1980s. He recollected that for the last decade before his father retired it had been a constant problem. For many years they had hired local Chinese women but when they grew too old to work in farming his father had to look elsewhere.

Both I7DL (2014) and I3BL (2014) discussed hiring local Indigenous labour. For the family of I7DL this was not successful. He claimed that they often would not show up as scheduled. They also tried to recruit South Asian labourers but the pool of available labour was mainly older and so this also did not last long. I12ST (2014) recalled her father sharing labour during picking season with other nearby farmers. In this case it was young Japanese girls from the Monte Lake area who would be brought in for the picking season. At least one interview participant pointed to the lack of white agricultural labour in the war years as being a major boon to the Japanese (I10ST 2014). Newspaper accounts from World War I describe a similar situation for the Chinese, particularly in the Armstrong area, due to the shortage of white workers.

Many participants recalled working on their family farms as children and right through their university years but then not returning after they had completed their education (I8HT 2014; I7DL 2014). While a few had worked in orcharding or continued to market garden part time, none had been engaged full time in market gardening in their adult working lives, nor had their children or their siblings. One interview participant had a distant cousin who was still engaged in market gardening in the Okanagan (I5AK 2014) and one family still operates a market garden; however, it is a fraction of its original size and most of the family, and especially the youngest generation, were engaged in off-farm work. Depending on the generation, most of the interview participants or their children had received university degrees or pursued off-farm work that required a high level of training or certification.

I2TW (2014) pointed to the desire for an easier life and more reliable income as a main cause for children pursuing other careers than farming, stating that “I wanted something that would probably be more lucrative, something that would be easier on your life.” Children getting an education and becoming professionals was a point of pride in many of the family histories in *The Vision Fulfilled* (Hoshizaki 1995). Any of the family histories that discussed the children of farmers explicitly stated what careers they had pursued, where they obtained their education, and any other related success they had had. Most of the interview participants shared similar stories, and expressed that they were supported by their parents in completing school and pursuing post-secondary. Only one interview participant, I11SK had to quit school at a young age against the wishes of his teachers. He was excelling in school but he was the oldest son and his family needed him to work. When I asked another participant if he had felt pressured to do well in school, I8HT expressed that he had not been a good student and that “I had lots of discussions with my dad on that one.” He then added

that “with our one son going to university now my parents would have both just been tickled pink. Oh yeah, they’d just be over the moon over that.”

In response to a question on whether it was perceived as a loss if a child choose to pursue an education rather than continue in farming, I3BL simply responded “Na, not really.” Regarding his parent’s support of him and his ten siblings participation in school activities he stated that

basically I know that whenever there was anything at school my parents would support that, even though we had chores at home. They would say “hey, school’s important.” So if there was a basketball game or track or whatever then they would encourage us to attend those rather than just stay home. Which I felt was very, very encouraging for them to support it, because they did support education. They’d see how difficult it is to do hard labour so if you can get an easier job, a progression, then so it should be. (I3BL 2014)

The sentiment underlying I3BL’s statement above implies that his parents wanted a better life for their children than the farming life, even if that meant no one was there to take over the family farm. I3BL’s family still owns much of the land it gardened in Armstrong but has not farmed it for many decades.

Some interview participants talked about the influence of the Interior Vegetable Marketing Board and unfair treatment towards the Chinese in particular, but others could not recall it being an issue. I1MJ (2014) was very forthcoming about her family’s adverse relationship with the IVMB. She felt very strongly that they were treated unfairly and that general prejudice in society was reflected in the practices of the marketing board. They received multiple reprimands for selling products beyond the defined geographic limits of their approved territory as per marketing board guidelines but felt that there only alternative was to let the product rot in the fields. According to I1MJ “the marketing board really killed a lot of people.” This began to change in later years, perhaps in the 1970s, but as I1MJ tells it this was too late to save the industry.

Land ownership was a goal for many of the Japanese who settled here. Besides explicit statements demonstrating this, the use of specific language implying that purchasing land was a major accomplishment or a goal further supports this notion. Examples where losses were incurred due to insecure land tenure situations and other hardships also demonstrated the desire to own land, and a desire for the security that came with landownership. For example, the Hoshizaki family left a sharecropping situation as “the financial returns were discouraging, and a fire which destroyed Rowcliffe Cannery meant their tomato crop had no market” (Hoshizaki 1995:31). If a family did not own their own land it was typical to move every two or three years.

Directly related to the issue of land tenure was the pressures of development. This was a factor in Kelowna more so than in smaller communities, such as Armstrong or Lake Country. The area of Kelowna that had the greatest concentration of market gardens is now a heavily developed retail shopping area. This development began in the late 1960s and continues today as a number of the farming properties on the fringe await removal from the Agricultural Land Reserve. The timing of this development, which occurred immediately before the Agricultural Land Reserve was put in place, coincided with many of the farmers reaching retirement age and many of their Canadian-born children pursuing other careers.

A final possible contributor to the decline of the market gardening industry was the age of the population. I6BH recalled walking through Chinatown as a boy in the 1950s and noting that most of the residents were “all men, and most of them, probably in their sixties and older” (I6BH 2014). Population decline was a real concern for the industry as farming is very hard work. Many of the stories that interview participants shared regarding the

challenges of finding reliable labour centred on the fact that many groups they had turned in the past simply got too old for farm labour (I8HT 2014).

5.3 Chapter Summary

The maps and quantitative analysis reveal that Chinese strictly practiced market gardening while Japanese practiced a variety of commercial vegetable farming, including sharecropping and intercropping on orchards. Japanese tended towards landownership (86.9 percent overall) whereas Chinese had a mix of renting (30.6 percent) and landowning (67.5 percent). The maps also reveal a variety of spatial patterns in the distribution of land tenure type and land use type, as well as difference between the Chinese and Japanese market gardening communities. There was no one core area where market gardening was concentrated and the balance between urban and rural fringe changed overtime as urban areas became more populated.

The qualitative data reveal a range of rich and challenging experiences for both Chinese and Japanese market gardening families. There were stories of both discrimination and kindness, hardships and successes, good times and bad. These stories present an image of interwoven communities, where each ethnic community, white, Chinese, or Japanese, maintained distinct and separate lives in some respects but were completely integrated in other respects.

The intent of this chapter was to present the results of both the qualitative data collection and the GIS collection and analysis. The next chapter will examine in greater depth the both the causes and implications of these findings. The GIS results, quantitative analysis, qualitative findings, and anecdotal evidence support existing interpretations of Chinese and Japanese migration and occupational patterns but also reveal opportunities to

push the limits of those existing interpretations. Specifically, I question the long term consequences of race-based government legislation and how this may have contributed to the decline of the industry.

CHAPTER 6 DISCUSSION

In this chapter I interpret the results presented in the preceding chapter. In responding to my case study, the demise of the Chinese and Japanese market gardening industry in the north and central Okanagan, I begin by addressing each of the three groupings of research questions presented in the introductory chapter. I then focus on two key findings. A second section presents an assessment of the methodology developed to address the overarching research question assessing the efficacy of qualitative historical GIS for documenting minority experiences in historical landscape research. In this section I reflect on methodological decisions and challenges I encountered working in a rural and remote area with ethnic minority populations in an historic time period.

Using landscape phenomenology as a lens to understand the experiences of the market gardeners, I leveraged the power of a qualitative historical GIS to locate the experiences of Chinese and Japanese market gardeners as identified through archival research; as recalled by descendants of White, Chinese, and Japanese settler families who participated in the research through one on one interviews and a community mapping event; and as reported in various published reminiscences. I employed a data collection approach focused on qualitative resources and utilised GIS to bring together disparate data sources in a meaningful way to critically examine the demise of the market gardening industry in an effort to elucidate the specific factors that contributed to that demise. While a small market gardening industry existed as early as the 1860s and continues today in a very limited way, at the peak of the industry there was an extensive network of farms and the majority of vegetable farmers in the area were Chinese or Japanese.

6.1 Research Questions Revisited

At the outset of this dissertation, I identified three groupings of research questions. In the following pages I endeavour to respond to each of these questions.

- (1) Where were market gardens located? What type of land tenure was in operation? Were there differences in location and land tenure type between Chinese and Japanese market gardeners? How did this differ throughout the study area? How did this change over time?

These research questions were addressed primarily through the use of qualitative historical GIS. In sum, market gardens were located throughout the valley. There was no one single core area. Furthermore, market gardens were located both in urban and rural fringe areas, but this varied by time period. Some gardens were as small as a single city lot, but this was more typical in the early part of the twentieth century as newly formed towns were not yet densely populated. By the middle of the twentieth century most market gardens operated on larger lots in the rural fringe. Records of population growth in town centres support the conclusion that urban development is likely the main cause pushing market gardens outwards as many formerly vacant lots in the urban core began to be filled in with homes and businesses.

Many types of land tenure were in place for market gardeners in the Okanagan including ownership, renting, leasing, and employment or sharecropping with residential privileges. The quantitative summary of the GIS results show high rates of land ownership but this is misleading. To own land requires paperwork; to rent or lease does not necessarily. Consequently, evidence of ownership persists in the archival record much more frequently than evidence of informal rental or lease agreements. At least one rental agreement for market gardening purposes was located in the Kelowna Public Archives indicating that sometimes paperwork was created during the rental process. The lack of evidence of formal

agreements is further compounded by the anti-Asian movement in the valley during the early part of the twentieth century. In many communities it was frowned upon to rent or lease land to Chinese or Japanese; even trade organizations and veterans associations voted to ban the practice. As a result rental arrangements were often made in secret to avoid the scorn of these associations. Some instances of the City of Kelowna renting vacant lots for market gardening are recorded in City Council minutes but these were limited to the City of Kelowna and only for a handful of years. Another factor in documenting land tenure is that ownership is likely to be disproportionately recollected in interviews and published reminiscences because it was a point of pride among families.

Interior Vegetable Marketing Board Owner/Producer registration forms for 1943 covering the entire study area do report who the producer was, who the owner was, and what the tenure was (Unaccessioned Interior Vegetable Marketing Board Fonds). However, they contain little in the way of explicit spatial data. While these data were not incorporated in to the GIS analysis, they do still provide some idea of the frequency of different types of land tenure for 1943. In the Kelowna area, twelve of fifty-one (23.5 percent) all registered producers were operating on leased or rented land. In Armstrong-Spallumcheen, north to Salmon Arm, thirty-seven of 143 (26 percent) of all registered producers were on leased or rented land. In Vernon it was forty-four of 199 (22 percent). In all three area the leasers were predominantly Chinese or Japanese, and the owners of leased or rented land were frequently White.

Employment and sharecropping were classified as “land tenure” because these roles typically included residential privileges, including for families, which in many cases lasted decades. Furthermore, there were multiple instances of wives and children operating small

market gardens near the residence provided to them by the land owner while the husband/father worked in a prominent or managerial role in the orchard. For sharecropping families, many of them lived on these properties year-round. This was a benefit to the families but also a benefit to the landowner as the sharecroppers needed to maintain a good relationship. Accordingly, they worked diligently to produce a good crop, not just to earn an income but to secure a home for the following year. An added benefit for the landowners was that rural properties had a human presence year-round, with tenants being watchful for destructive wildlife and pests, fire, or transients.

Differences in location and tenure type between Chinese and Japanese market gardeners varied by time period. There were no Japanese present in the Okanagan until about 1908. Published reminiscences revealed that the first wave of Japanese to the valley were mainly orchard workers or sharecroppers. By the 1910s there were many Japanese working in market gardening. Available data show nearly equal participation between Chinese and Japanese agriculturalists for some years; however, Chinese remained primarily in market gardening whereas overtime many Japanese gradually moved into orcharding.

I argue there are at least two reasons why the pattern of Japanese market gardeners moving to orcharding exists. Because they were not subject to a head tax or total immigration exclusion as the Chinese were, Japanese farmers were in a stronger position to make long-term investments such as purchasing and improving land because they have more disposable income. They were able to have a family and establish roots in Canada and therefore they were not as limited financially by the need to support their family back home, although many did still have some financial responsibility for family in Japan. Having a family also contributed to the desire to build a life in Canada, as their children and grandchildren could

benefit directly from their investing in land. The transition to orcharding was spurred by the notion that an orchard was likely more profitable than market gardening. This pattern supports Ward's arguments that "like most immigrants who entered new societies at the bottom of the economic scale, the west coast Japanese sought higher incomes and improved living standards. For this reason many Japanese soon abandoned the seasonal, low paid work which they had performed on arrival. They preferred the greater stability of less seasonal occupations or the prospect of higher profit from a self-owned enterprise" (Ward 2002:111-112).

- (2) How did each of the four major factors (governance, technological innovation, infrastructure development, and changing population demographics) contribute to the demise of the market gardening industry? Are these effects visible in the memory of the landscape as reflected in changes to the distribution, extent, and composition of market gardens over time?

Others have taken a computational approach to this type of question, actually determining a percent contribution value that each factor contributed to landscape change based on a modeling approach (Geist and Lamblin 2002). It would have been inappropriate to do so in this instance due to the inconsistency of source material across both time and space. As a result, a purely qualitative analysis informed by the results of the GIS guides this discussion.

Governance and a changing population demographic are the most critical factors and these will be discussed in more detail below. Technological innovation and infrastructure development contributed to changes in the agricultural industry in general with repercussions through all aspects of farming including market gardening. Infrastructure development and technological innovation go hand in hand, with technological innovation typically enabling and driving infrastructure development.

The greatest landscape changes spurred by infrastructure development that affected the market gardening industry were the extension of the railroad, and later the growth in truck traffic as highway construction ensued. While this made it much easier for local farmers to get their product to larger markets, such as Vancouver or the Prairies, it also made it much easier to bring in competitor's produce as well. A long-time market gardening family from Armstrong points to competition from the California vegetable market as a major factor in the industry decline (Critchley 1999).

The ability to leverage the ease of transportation and speed of delivery without spoiling the product improved throughout the early part of the twentieth century, first with ice cars and then later with the invention of the refrigerated truck. The refrigerated truck was invented by American Fred Jones in the 1940s (Edgerton 2007). The invention of the refrigerator truck coincided with the rapid development of British Columbia's highway system (Harris 1983), leading to major changes in a very short amount of time, both in how Okanagan products got to other markets and how products could be brought into the area. Andrew (1950) noted the construction of many new cold storage facilities throughout the Okanagan Valley in the late 1930s through the year 1950, also coinciding with the development of the provincial highway system and the implementation of long-distance refrigerator truck travel. With the addition of cold storage, produce could be stored longer and the imperative to move product as quickly as possible to prevent spoilage or the need for the 'just in time' harvesting that had been practiced by market gardeners to serve clientele the freshest product possible was reduced.

Immediately following this period of cold storage, refrigeration development, and highway construction was the post-World War II era. Throughout North America, a massive

shift in patterns of consumption occurred, including trends towards pre-packaged food such as canned and frozen, and the closure of many smaller grocery stores which were quickly being replaced by larger supermarkets that catered to self-service shopping (Friedberg 2009). Refrigerators in homes were also an important factor in changing patterns of consumption. As refrigerators became more affordable and more households converted to electricity it became commonplace to have one, especially as refrigerators were seen as a “mark of affluence” (Edgerton 2007:169). By this time, a few major grocery store chains had been present in the valley for a number of decades. Safeway Stores had been operating in the area since the late 1920s, having purchased a local company called McDonald’s, and Overwaitea also had a long history in the area so they were well situated to change with the times, constructing larger supermarkets that met the demands of a modern city and increasingly competed with local farmers (Chinese Community Collection, Business Receipts Folder). Evidence from a number of interviews, as well as from archival records, demonstrates that local vegetable farmers often sold directly to supermarkets which prolonged their involvement in the industry as other mechanisms of distribution declined.

In response to the second half of the research question “Are these effects visible in the memory of the landscape as reflected in changes to the distribution, extent, and composition of market gardens over time?,” the answer is both yes and no. There is very little tangible evidence of the historic market gardening industry remaining on the landscape that is discernible to the average citizen or tourist. However, the influences of the four factors (governance, technological innovation, infrastructure development, and changing population demographics) are reflected in changes to the distribution, extent, and composition of market gardens over time as well as in many small ways that I will outline in the following pages,

such as road names. Landscapes are palimpsests, accumulations in and of the built environment that reflect decades of decisions at all levels of society and all levels of government. One lesson I have learned is how complicated it is to answer the question “is the industry still visible?” Often, landscape elements that we thought were lost to time can reappear. For example, in May 2016 a building slated for demolition was being abated for asbestos and other pollutants. In removing the siding of the building a one hundred year old sign from when the building housed the Kelowna Grower’s Exchange was uncovered (Moore, *Castanet*, May 6, 2016).

Records in the Kelowna Public Archives Chinese Community Collection show that many local Chinese market gardeners utilised this exchange in the 1920s and 1930s for the purchase of seeds and then later in the year for the sale of crates and sacks of vegetables, including cabbage, beets, carrots, and potatoes. This building also served as the offices for the Interior Vegetable Marketing Board. Thus, a visible relic on the landscape briefly returned but it will be gone forever by the time this dissertation is defended, replaced by a multi-story hotel complex, a prime example of Kelowna’s shifting values from agriculture to tourism.

An important example of remnants on the landscape can be seen in the farmers’ markets throughout the valley. All major communities in the study area have seasonal farmers’ markets. The first was started by a market gardening family in the 1970s, and this family went on to support a number of other communities in establishing farmers’ markets (IIMJ 2014). Furthermore, the small number of Chinese and Japanese families who are descendant from these early communities still engaged in market gardening sell through

these farmers' markets. There is a clear lineage linking the historic marketing gardening industry and the modern farmers' market movement in the Okanagan Valley.



Figure 6.1: Farmers' Markets signs in (clockwise from top left) Kelowna, Lake Country, Armstrong, and Vernon. (Photographs by author.)

There are other human elements imposed on the landscape whose connection to the historical market gardening communities are easily overlooked by the general population, such as street and park names. These examples, located throughout the Okanagan Valley, acknowledge in a very limited way the contributions of Chinese and Japanese to the

development of the valley. As explained in *Vernon and District Pioneer Routes: The Stories Behind Our Street Names*, “The history of a town is reflected in its street names. An individual pre-empting land might have his access road named for him, or, as a town grew, streets were named for those men and women whose initiative, business acumen, or civic service merited the honour” (Hurst 1997:122).

The names of some early Japanese families dot the landscape in the form of street names, parks, and other less obvious features. There are no streets in the Okanagan named in honour of Chinese. Some point to Hoy Street in Kelowna but this was in fact named for either the provincial horticulturalist who resided in Kelowna, Ben Hoy, or a renowned pilot, Ernest Hoy (Lundy et al. 2010). However, there is one very prominent feature in the Rutland area named for one of Kelowna’s most celebrated citizens, a former market gardener from Armstrong who became the first teacher of Asian descent to work in the Okanagan, Ben Lee. In March 2016 Mr. Lee passed away at the age of 86. At his passing the flags at Kelowna City Hall were flown at half-mast for a week, a sign of the City’s great respect for his work. He was fondly referred to as the Mayor of Rutland for his decades of civic service, including twenty-three years on Kelowna City Council.



Figure 6.2: Image of Ben Lee Park in Rutland. (Photograph by author).

When I tell people I am studying the Japanese in the Okanagan Valley they often point to the community of Oyama, assuming this to be the centre of the historic Japanese community. However, contrary to popular accounts, Oyama is not named for its Japanese residents. There were very few Japanese that lived in that area. It was named in honour of Iwao Oyama who was an important figure in the Russo-Japanese war (Tassie 1943).

Street names that can be attributed to the Japanese agricultural community in Kelowna are: Terai Road/Terai Court, Hayashi Road/Hayashi Court, Naito Court, and Tanemura Court. In all cases these roads are short, often dead-ends, and located near the city's perimeter. Adjacent to Naito Court is a small park called Naito Park. Brief biographies for each of these families are included in *Kelowna Street Names Their Origins: A Brief History* (Lundy et al. 2010). All four families were involved in agriculture. Hayashis, Naitos, and Tanemuras worked in various forms of agricultural labour and eventually owned orchards. The Terais worked as labourers and as sharecroppers for many years and eventually

owned a large farm that was located at what is now a busy intersection in Kelowna, adjacent to what is now the location of Terai Road and Terai Court. There is a condominium development also located on Terai Road called Terai Place.

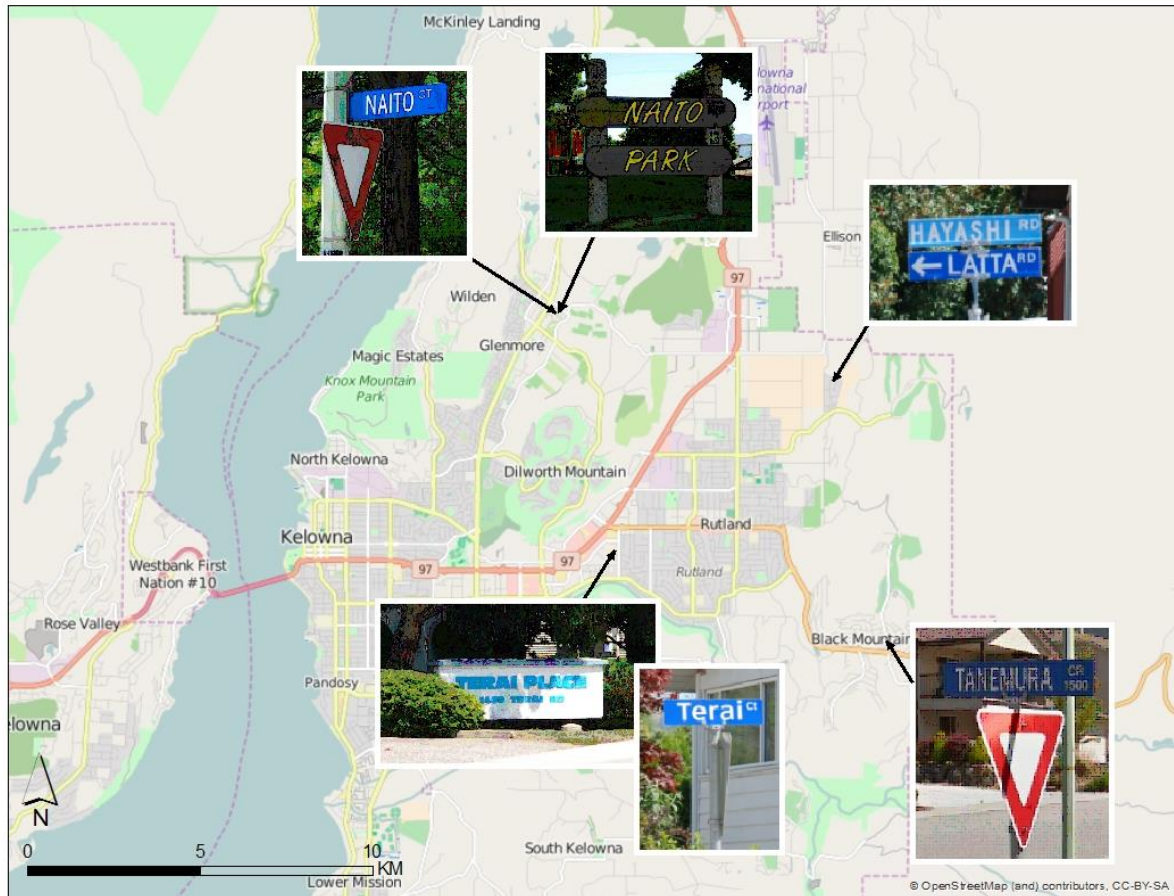


Figure 6.3: Map showing the locations of street names and other features named for the Japanese community in Kelowna. (Photographs by author. Image compiled in ESRI ArcGIS 10.2 by author. OpenStreetMap base map.)

In Lake Country, Taiji Road and Camp Road were both named for the Japanese community. Taiji Road was named after a two-generation orcharding family. Camp Road was so-called as it led to the Japanese workers camp; however, very few outside of the Japanese community or those interested in local history are aware of this connection (ISA 2014).



Figure 6.4: Intersection of Camp Road and Hallam Drive, Lake Country. (Photograph by author.)



Figure 6.5: Jack Seaton Park on Camp Road in Lake Country. Jack Seaton Park is the former site of the Japanese orchard workers camp for which Camp Road is named. (Photograph by author.)



Figure 6.6: Map and image showing location of Taiji Court. Areas used for market gardening and mixed farming by Japanese farmers are shown in gray hash overlay. Photograph and data by author. Image compiled in ESRI ArcGIS 10.2 by author. OpenStreetMap base map.

In the Vernon area only one road was named for a local Japanese vegetable farmer: Ogata Way in the Bella Vista neighbourhood. The map seen in Figure 6.7 shows the location of the dead-end Ogata Way in relation to the large tracts of land that were owned by Japanese farmers in the 1920s and 1930s. It is interesting to think that the large presence of Japanese in that part of Vernon has been acknowledged by only one short dead-end road.

There were no Chinese or Japanese road names or other marked features in Armstrong or elsewhere in the Spallumcheen area. However, I was recently informed by the administrator at the Armstrong-Spallumcheen Museum and Art Gallery that a project is

planned for a commemorative structure in Armstrong acknowledging the contributions of the Chinese community.



Figure 6.7: Ogata Way in the Bella Vista neighbourhood of Vernon. Areas used for market gardening by Japanese farmers are shown in gray hash overlay. These records of land ownership date mainly to the 1920s and 1930s. (Photograph and data by author. Image compiled in ESRI ArcGIS 10.2 by author. OpenStreetMap base map.)

Through actions and decisions people shape the future landscape as well as the present landscape. As farmers were retiring and their children were pursuing other careers, many of them were left to decide what to do with their farmland if their children were not interested in farming. For some, sub-division for residential development was a possibility. After the passing of family patriarch Katsuzo Hayashi in 1972 his wife, Shizuae, decided to sub-divide the family's property, located in the hills above Rutland (Lundy et al. 2010).

Around this time the neighbourhood of Rutland was developing quickly and developers were looking for opportunities (I9EV 2014). The following year, 1973, the Agricultural Land Reserve was implemented and much of the agricultural land in the valley became protected farmland. The timing of the Hayashi development and the implementation of the ALR indicates that these two events contributed to the resulting doughnut-like development, with the Hayashi residential sub-division being surrounded by agricultural land, as seen in Figure 6.8.

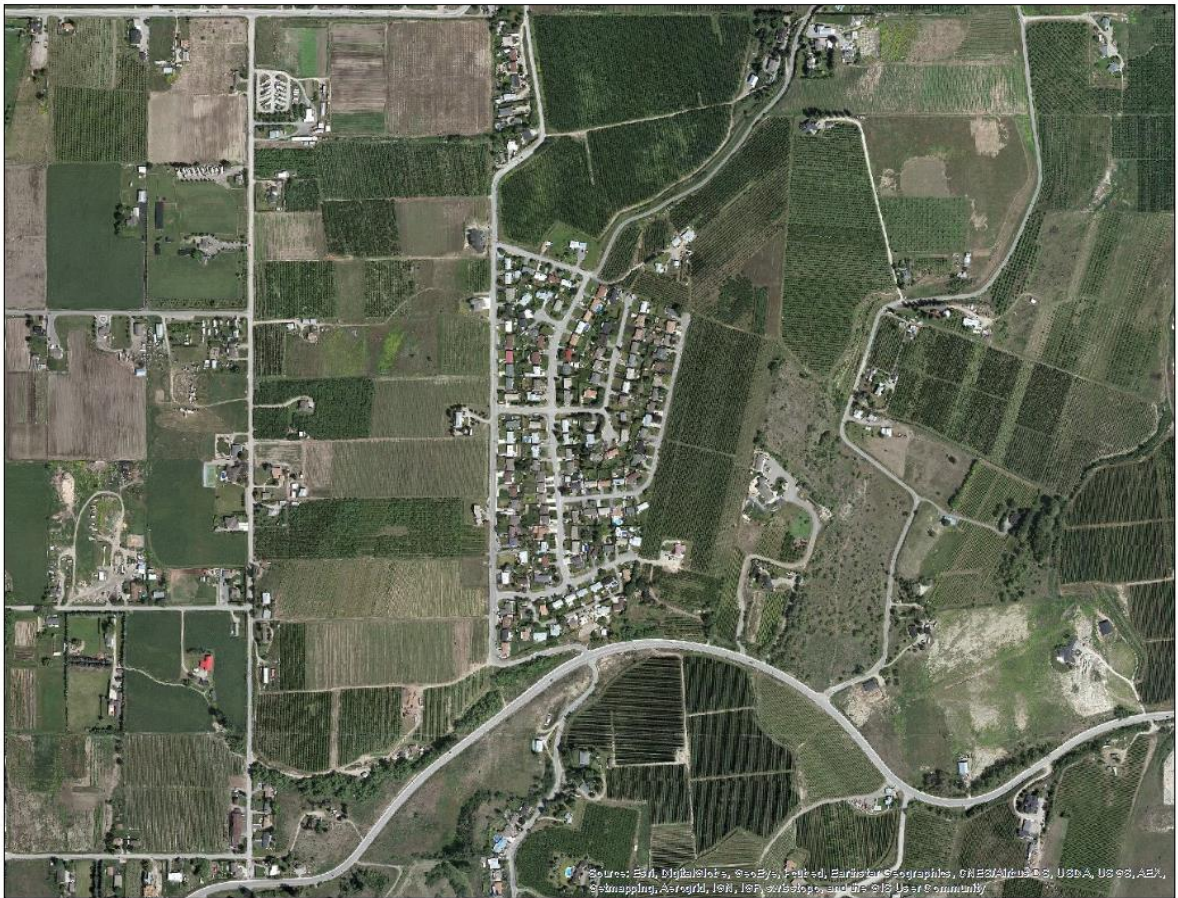


Figure 6.8: Aerial image of Hayashi sub-division in the Rutland neighbourhood of Kelowna. (Compiled in ESRI ArcGIS 10.2 by author. Image courtesy of ESRI imagery base map. Used with permission.)

Another important landscape feature attributable to a market gardener in Kelowna is the Kasugai Garden. This project was spearheaded by Roy (Yukihasa) Tanaka, a vegetable

farmer in Kelowna, whose “contribution in time and effort to community and multi-cultural activities [was] legendary” (Hoshizaki 1995:126). The garden project was a result of a sister-city agreement signed with Kasugai, Japan. As seen in Figure 6.9, the gardens have created an oasis-like atmosphere in the middle of a busy civic centre.



Figure 6.9: Aerial image of Kasugai Gardens in downtown Kelowna. (Image courtesy of ESRI imagery base map. Used with permission. Compiled in ESRI ArcGIS 10.2 by author.)

One of the only features on the landscape that acknowledges the presence of the Chinese community is a wayfinding structure located near the former site of Kelowna’s Chinatown. Due to limited display space this structure utilizes stereotypical descriptions of Chinese occupational history and the only mention of Chinese involvement in the agricultural industry is that of labourers. A number of buildings still stand that were owned by Chinese, and still are in some cases, along Kelowna’s main street, Bernard Avenue. These are not

directly relevant to the Chinese agricultural community but are important for understanding the overall impressions on the landscape left by the early Chinese community. This impression is essentially invisible – only close examination of archival records reveals the vast real estate holdings of members of the Chinese community. No similar wayfinding structures or other monuments to either the Chinese or Japanese communities currently exist in other communities in the valley. However, in Armstrong plans are proceeding for the construction of a park and a monument acknowledging the important contributions of the Chinese market gardener to that community. The park will be located on land that was gardened by the Lee Bak Bong family (*Vernon Morning Star*, November 6, 2016).



Figure 6.10: Wayfinding structure in downtown Kelowna with one side dedicated to commemorating Kelowna's Chinese community. Building in background is situated on the northwest corner of the former Chinatown. (Photograph by author.)

Okanagan History Museum in Kelowna and Armstrong-Spallumcheen Museum and Art Gallery each have a dedicated exhibit documenting key aspects of Chinese life in their respective communities. The Armstrong Heritage Committee has recently made efforts to

preserve the last remaining building in Armstrong associated with Chinatown (Knox, *Vernon Morning Star*, February 18, 2015). There are no exhibits specifically documenting the presence of the Japanese community in any museum in the valley.

Other important landscape features that confirm the existence of Chinese and Japanese in the valley are the numerous cemeteries. As a result of racial segregation in the past, most cemeteries have a separate section dedicated to either the Chinese or Japanese deceased interned there. The Kelowna and District Genealogical Society has recently completed extensive work transcribing and photographing grave markers in smaller community cemeteries throughout the valley. This was a continuation of a project that began over 30 years ago (Kelowna and District Genealogical Society 2016). Some archives have also created reference guides to their local cemeteries. In particular, Lake Country Museum and Archives and Armstrong-Spallumcheen Museum and Art Gallery have recorded the names of those buried and conducted research on their personal histories.

During the time that I undertook this research, I personally witnessed the eradication of some of the last remaining evidence of the market gardening industry. Located in Kelowna just south of Orchard Park Mall was a farm that had been owned and operated by three generations of the Tomiyama-Tanaka family. Tokuichi Tomiyama established the farm and later passed it on to his daughter and son-in-law, Sachiko and Roy Tanaka (Hoshizaki 1995). There they raised their five children who also farmed through their high school years and beyond. Following the death of their mother, the family sold the farm in 2011. The purchaser was interested in having the property removed from the ALR along with an adjacent property. I pass this property nearly daily on my commute to campus and recall the house that stood there until just recently. According to the ALR exclusion application and other

supporting documents, the new owners tore the house and other “dilapidated buildings” down to avoid attracting squatters or unwanted attention. The property now stands bare. The possible future for this property was foretold as far back as 1995, in *The Vision Fulfilled*, where it was noted that “Roy and Sachiko are still in good health, and living on the Tomiyama home property. It may not be long however, before they are crowded out by Orchard Park expansion” (Hoshizaki 1995:126).

Information and documents presented at the September 22, 2013 Kelowna City Council meeting include excerpts from the city’s own Agricultural Plan supporting the exclusion of the Tanaka farm and the adjacent property from the ALR due to their proximity to urban development. Also included in these documents is a short description of the history of use of the property based solely on information provided by the owner of the adjacent property who later purchased the Tanaka property. According to him, the property was a mixed orchard in the 1970s and a commercial vegetable farm in the 1980s and 1990s. This is inconsistent with information provided by the family and with the histories of the Tanaka and Tomiyama families in *The Vision Fulfilled* (Hoshizaki 1995). This is one more example of the disregard for non-orcharding and non-white farming in the valley. The exclusion application was denied in fall of 2015 and as of May 2016 no further application has been submitted.

A final example of the surprising ways that members of the Japanese agricultural community have left a mark on the landscape is through the introduction of cherry blossom trees. Denbei Kobayashi, a Lake Country orchardist who also intercropped berries and some vegetables, was an enthusiastic gardener who liked to try to grow different Japanese flowers,

trees, and vegetables. It is reported that he sent cherry blossom trees to cities across Canada and those were then planted in parks and boulevards (Nakayama 1983).

- (3) How did the market gardeners experience the changing landscape as the impacts of the four factors took effect?

It is important to consider not just **if** change occurred but **how** we assess change through time. Maps were created showing the changing distribution of commercial vegetable farms over time, one set showing land tenure and one set showing land use. These maps are an important mechanism for assessing change through time, allowing us to “see” the change and visualize the outcomes of the processes and factors that shaped the industry and precipitated the decline. Taken together with the qualitative results, these maps allow us to identify specific outcomes such as the transition from renting to owning, the transition from vegetable farming to orcharding, and changes in spatial concentrations of the industry.

Experiences related to technological innovation and infrastructure development were particularly relevant to the everyday lived experiences of the market gardeners. For example, a major technological advancement that affected all aspects of agriculture was the gradual transformation from ditch and flume irrigation to enclosed pipes and drip lines. By the early part of the twentieth century the whole economy of the valley had transformed as a result of the introduction of irrigation (Wilson 1994). Experiences with ditch and flume irrigation were often negative, such as crops lost and driveways washed away to flooding that interrupted the flow of farm life (Hoshizaki 1995). In the 1940s and 1950s all farmers were encouraged to transition to pipe and sprinkler irrigation. By the 1950s sprinklers had completely replaced the furrow method of irrigation (Oswell 1997). This had the effect of changing the landscape as ditches were filled in, but also of changing the market gardeners and their families’ experiences with the landscape as they were no longer exposed to the

seasonal flooding of the ditches as the creeks ran over. Remnants of a few large ditches remain, such as one at a local recreation centre and one in a large public park. Only now, decades later, are there attempts to reverse some of the interruption of natural processes that occurred as a result of irrigation infrastructure along Mission Creek in Kelowna (*Kelowna Daily Courier*, November 27, 2015; Johansen, *Castanet*, November 27, 2015).

Innovation in farming techniques was recognized as critical to the continued existence of a local market gardening industry. In the Okanagan, Japanese farmers were at the forefront of this. District horticulturalist Michael Oswell (1997) recollected that Vernon-area farmer Mitts Ikeda allowed new techniques to be tried on his tomato farm in an experiment supported by the Ministry of Agriculture. Although initially successful in improving crop conditions, this did not in fact save the local industry.

The land tenure maps and analysis for Kelowna and Vernon clearly show that owning land was an important factor in long-term success in these areas. The transition is visible beginning in the 1940s; by the 1970s nearly all properties shown on the maps are owned. This is most striking for the Japanese population but also applies to a handful of Chinese properties in the Kelowna area. For Chinese market gardeners in the Vernon area renting persisted through the 1950s at least. Clustering of Japanese farms in the Bella Vista neighbourhood southwest of Vernon city centre is also visible beginning in the 1920s. Published reminiscences and archival records indicate that many of the Japanese were drawn to the area to be close to friends or relatives (Ouchi 1982; Vernon Irrigation District Fonds).

More changes to the agricultural landscape experienced by the market gardeners can be seen in the land use maps. For both the Chinese and Japanese farmers in the Kelowna area the locations of farms gradually moved out from the city centre as the population grew and

urban density increased; by the 1950s there are no market gardens remaining in what is today Kelowna's downtown. By the 1960s the number of market gardens has been drastically reduced in the urban core. For the Japanese in particular this shift also accompanied the transition from market gardening to orcharding in many cases, and later the transition away from agricultural all together.

Many interview participants described changes both to the industry and to the landscape that they witnessed in their lifetimes. A few also reflected on changes in their parents' lifetimes. The family of I3BL transitioned from strictly market gardening to owning a wholesale vegetables business in addition to owning several market gardens that employed other Chinese. For his family, this transition was partly fueled by increased access to markets via the railroad and through technological improvements that allowed for easier shipping of perishable products. I3BL (2014) also pointed to the fact that his father and grandfather invested in land as early as possible after their arrival in Armstrong, which further supports the idea that land ownership provided security and was a necessary factor in long term success.

While experiences are unique to individual groups or persons, the changing landscape itself is not. All citizens were witness to changes overtime, even if they experienced them differently. Most striking was the rapid filling-in of formerly agricultural areas as towns developed in the later part of the twentieth century.

When I was a youngster [b. 1908] nearly all of Kelowna from Knox Mountain to the Golf Course, to the Parkinson Centre and Sutherland Avenue and west to the lake, was either raw land or orchards or vegetables and hay fields. The few houses and stores were mostly on Bernard Avenue from Ethel Street to the lake, with many vacant fields in between, with wild flowers growing on them. A few houses were scattered about on farms on Richter Street, Ethel Street, Glenmore Street and Pandosy Street. (Knowles 1986:27)

Figure 6.11 shows Kelowna in 1908, the year of Knowles birth, as viewed from Dilworth Mountain looking southwest towards the lake over the Kelowna Golf & Country Club. Figure 6.12 is a modern composite aerial photo of the central part of the City of Kelowna annotated with features mentioned by Knowles in the above passage. In the 1908 image perhaps one hundred homes appear among the farm fields. In the modern aerial image the entire area is filled in with homes and businesses showing the completeness of urban development in the Kelowna area and the total erasure of the agricultural landscape in the city centre. The location and angle of the 1908 image are noted on the modern aerial photo.



Figure 6.11: View of Kelowna in 1908 from above the Kelowna Golf & Country Club. (Photograph by G.H.E. Hudson. “Kelowna City, British Columbia, taken from Dilworth Mountain, 1908,” Image a02954. Photo courtesy of Patent and Copyright Office / Library and Archives Canada. Copyright expired.)

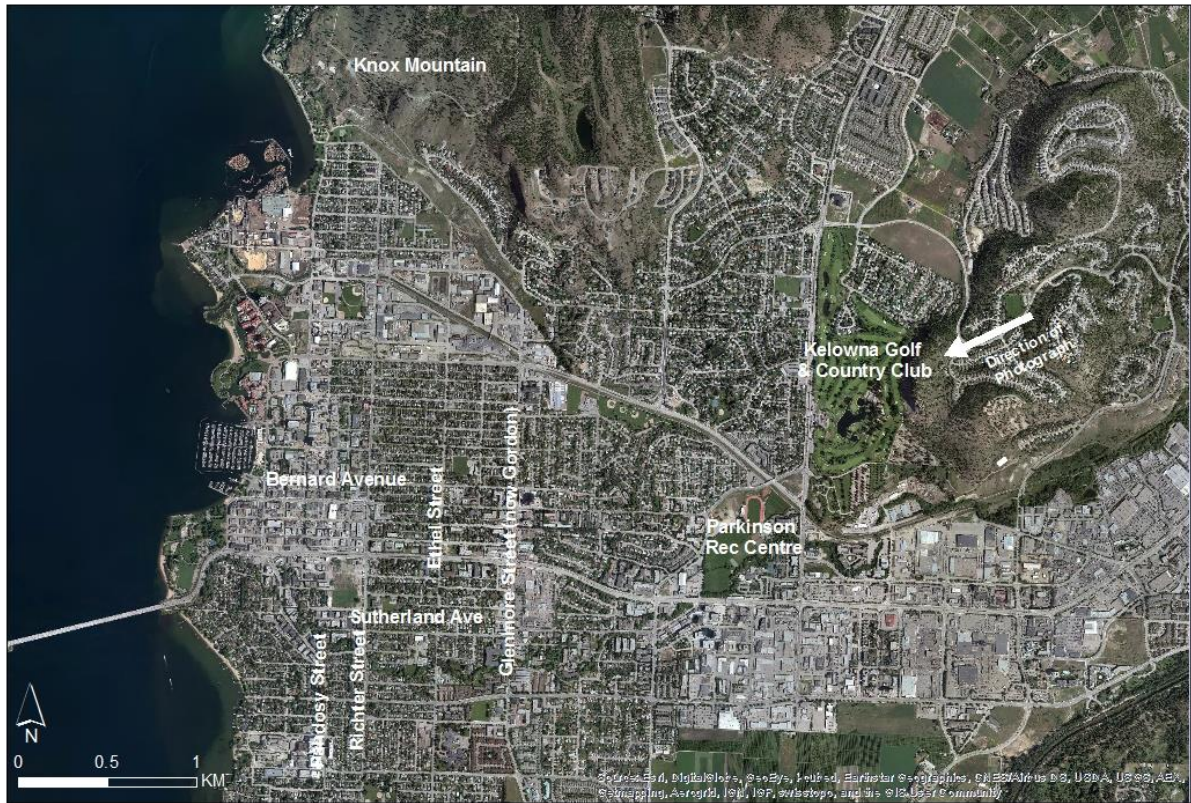


Figure 6.12: Map of Kelowna highlighting locations described by Bill Knowles (1986). (Cartography by author. Compiled in ESRI ArcGIS 10.2 by author. Image courtesy of ESRI imagery base map. Used with permission.)

Loss of agricultural land due to development is a common occurrence in communities everywhere (Nixon and Newman 2016). What is less common in urban areas is allowing the land to return to a more natural state. The City of Armstrong became the Celery Capital of Canada due to its “muck soil.” The ground was so wet that the crops did not need to be irrigated (I3BL 2014). On most of the land that was formerly used for market gardening in that city naturally occurring plant species have been allowed to grow uninterrupted in recent years. In other areas of the city, less boggy patches have been planted for hay or other low maintenance crops. Figure 6.13 and 6.14 compare the same area in Armstrong in the early twentieth century and today taken from approximately the same vantage point.



Figure 6.13: Facing southwest from train tracks over the flats north of Wood Avenue in Armstrong, date unknown. Note the triangular roof of the IPE barn towards the left hand side of the image just above the fields. (Photographer unknown. No title, Image No. 00970. Photo courtesy of Armstrong-Spallumcheen Museum and Arts Society. Used with Permission.)



Figure 6.14: June 2016 image showing the same perspective of Figure 6.13. Note the triangular roof of the IPE barn in the centre of the image. (Photograph by author.)

6.2 Governance and Race-based Government Legislation

I used a definition of governance that included “all processes of governing, whether undertaken by a government, market or network, whether over a family, tribe, formal or informal organization or territory and whether through laws, norms, power or language” (Bevir 2013:1). Castree, Kitchin, and Rogers (2013) emphasised that governance includes the actions of both government and non-government bodies working to support a specific goal. The “goals” of both government and non-government entities that can be identified include the desire for a “White Canada Forever!” (Ward 2002), as well as to develop the Okanagan as a major centre of agricultural productivity (Barman 2006; Ormsby 1935a). Most of the acts of governance that affected the Chinese or Japanese market gardening communities occurred at the provincial or national level; therefore, these acts were removed both administratively and geographically from the centre of action yet had profound and lasting effects at the local level.

Multiple lines of evidence support the idea that race-based government legislation, in particular the Chinese head tax, played an important role in the ability of the Chinese to survive and thrive in the market gardening industry. The connection between the head tax and the ability of the Chinese to participate in specific industries has not been examined elsewhere. Arguments for each line of evidence will be expanded on below. The first line of evidence stems from the fact that market gardening families with large numbers of children and successive generations sustained the longest in farming, with some branching into orcharding and some still market gardening today. Market gardeners with families did not have to pay for outside labour or divide income with partners as their labour was comprised mainly of dependent children. The second line of evidence stems from the demographic

structure of the Chinese population as compared to the Japanese population. A third line of evidence can be seen in comparing land tenure activities between the two populations.

Because they were not required to send most of their earnings home or saving to cover a family member's head tax, the Japanese were in a better position financially to purchase land than the Chinese were, consequently leading to higher rates of landownership among the Japanese. This argument extends to the ability to make capital investments such as purchasing farm equipment, such as tractors, that would make the farm more competitive. More cash on hand to cover annual start-up costs could also improve competitiveness, such as the ability to choose starter plants over seeds. Interviews and published reminiscences revealed a strong trend of Japanese market gardeners purchasing starter plants from Japanese-run greenhouses whereas Chinese market gardeners tended to grow from seed. Seed is moderately cheaper but much more labour intensive in the initial weeks to nurture seedlings.

6.2.1 – Role of Family Structure

Interviews, published reminiscences, and archival findings all demonstrate that market gardeners with families, especially large ones, were more successful and their farms sustained much longer compared to single men, those with families abroad, or those with only a few children. In some respects this is an obvious finding: those families with many children have lots of labour and there is always work to be done on a farm. However, at the outset of this research there was very little indication that family structure was such a key component. A changing population demographic had been identified as a factor in the demise of the industry; however, I was thinking at the scale of the community, not at level of the individual family. Interviews revealed that the importance of family structure in the long

term success of farm operations is closely linked to at least two other factors: a desire among many parents for their children to build a better life in their new country by pursuing professional work, anecdotally common to many ethnic groups, and general issues of obtaining reliable labour.

Although at times they were similarly reviled by the general population, different immigration laws applied to Chinese and Japanese in Canada so this provides an opportunity to compare situations and consider the long-term effects of restrictive government legislation. While both communities were subject to racially motivated immigration legislation and controls put in place by both the Canadian government and their own governments, only the Chinese were subject to the head tax and only the Chinese were subject to a near-complete ban on immigration during the exclusion period from 1923–48.

Among the research participants, the family structures of the Chinese families were similar to many of the Japanese families, and counter to the stereotypical image of the single sojourner Chinese male. For example, the matriarchs of two Chinese families were here prior to the 1923 Chinese Immigration Act. Eleven children were born into each of those families. In a third Chinese family, the father was here prior to 1923 but was not able to bring a wife over until after the immigration ban was lifted. The fourth Chinese family interviewed did not arrive in the Okanagan until the 1950s but had a large family that worked on the farm. These atypical examples are drawn from interviews; archival sources such as censuses, tax rolls, and other documents continue to support the image of the sojourner Chinese male as being the typical situation before and during the period of Chinese exclusion. These men left few known descendants in Canada, consequently archival sources are the only option for recovering their stories.

It is well documented that the head tax and the Chinese Immigration Act of 1923 resulted in a predominantly male Chinese population with very few wives or children in Canada (Ward 2002; Roy 1989; Chan 1983). Because the population had been predominantly male prior to this time there was little opportunity for natural increase, except in isolated cases such as the families who participated in my research or marriage with local Indigenous women (Barman 2013). The Japanese on the other hand were able to bring wives over, often through an arranged marriage process called picture brides, and this allowed the Japanese community to grow through natural increase. By the 1930s one-third of Japanese in British Columbia were Canadian born. Even though new regulations were imposed on the Japanese in 1928 limiting the number of new immigrants (Roy 2003), by this time many families were established.

Not only do children provide free farm labour, but having a family creates an imperative to build a life here, to set down roots and keep a roof over your children's heads. Evidence for the importance of large families in creating successful market gardening operations comes primarily from the interviews conducted and from the book of reminiscences of the Japanese community in Kelowna, *The Vision Fulfilled* (Hoshizaki 1995). One interview participant noted that the ability to "have a lot of helpers in the family" was a defining aspect of success even between operations of a similar size or land tenure (I11SK 2014).

However, children also grow up and move on, which creates its own set of issues, but also reinforces the argument that children *equals* free labour *equals* a necessary ingredient for success. Many of the interview participants spoke of the difficulties in obtaining quality labour, especially after they had grown up and left the farm. The desire among many parents

was for their children to receive an education and to seek professional degrees, something noted by nearly all the interview participants, so many of these children did not return to the family farm after completing their university education. Another major challenge of having a large family was feeding them during difficult times. The summary for the Iwajiro Yamaoka family in *The Vision Fulfilled* comments “sometimes it was difficult to feed such a large family, and [mother] Okiku would dig apples out of the snow to cook and feed her family” (Hoshizaki 1995:161).

The large families examined in this research demonstrate that in cases where market gardeners had many children they were able to sustain their farm operation longer. This is likely because they were able to invest in land and make improvements to their farms that made them more competitive and better able to endure challenges and seasonal fluctuations such as crop losses or poor market prices. Furthermore, because their children were living with them and not left behind overseas these farmers had the imperative to make improvements and investments.

6.2.2 – Population Structure

There are at least two major ways that the changing population demographic affected the Chinese and Japanese market gardeners in the north and central Okanagan Valley. In the first instance, population growth led to increased density in the urban centres thus reducing the amount of land available in the town centres for market gardening purposes. For example, Kelowna’s population more than doubled between 1921 and 1941 (BC Stats 2012). During this time the majority of market garden operations moved out from the city centre.

The second way that changing population demographics affected market gardening is closely related to issues identified under Family Structure. Without the influx of labour from

China it was difficult for some market gardeners to continue their trade as they aged because no new labourers were entering the valley to take on the physical work of market gardening. As discussed in the previous section, only a very small number of Chinese families were able to sustain their market gardens through the exclusion period as they were able to provide their own labour force.

The 1921 Census of Canada for Coldstream/Swan Lake sub-district gives a very clear picture of the need for Chinese market gardeners to acquire labour or work in partnerships whereas the Japanese lived and worked mostly in family units, supporting the notion that the ability to reproduce and thus provide farm labour was key to continued success (Dominion Bureau of Statistics 1921).

Table 6.1: Residential arrangements for Chinese and Japanese in Sub-District 5, Coldstream including Swan Lake in the 1921 Census of Canada.

Lodger/employee in White household		Lodger/employee in household of same ethnicity		Living with family	
<i>Chinese</i>	<i>Japanese</i>	<i>Chinese</i>	<i>Japanese</i>	<i>Chinese</i>	<i>Japanese</i>
28	1	152	8	0	19
15.5%	3%	84.5%	28.5%	0%	68.5%

Between the 1931 and 1951 censuses a large majority of Chinese were adult males. Furthermore, between each census the growth bulge for the Chinese aged by one decade: in 1931, 28.4 percent were in 25–34 age group; in 1941, 39.5 percent were in the 45–54 age group; and in 1951, 21 percent were in the 55–64 age group. In the 1941 census, eighteen years after immigration ceased, if you include the next largest age grouping, over 76 percent of Chinese were aged 45–64 years and these were predominately male (Dominion Bureau of Statistics 1931; — 1941; — 1951).

6.2.3 – Land Tenure Practice

The land tenure analysis demonstrates that as Chinese populations declined, because no new immigrants came to Canada and few children were born to Chinese families, the proportion of Chinese who owned their properties declined steadily, reaching an ultimate low towards the end of the Chinese exclusion period and then not rising again until after the exclusion period ended and immigration resumed (Table 5.1 in preceding chapter). In comparison, the Japanese rates of land ownership fluctuated during this time but remained consistently high. The most striking example of change due to government legislation can be seen in the steep decline of the number of properties owned by Chinese recorded in the 1922 and 1923 Kelowna Tax Rolls (Figure 5.1 in preceding chapter). Between 1922 and 1923 approximately two-thirds of properties owned by Chinese sold. This rapid sell-off of properties appears to be precipitated by the Chinese Immigration Act that came in to force in 1923. During this same period Japanese land ownership rose steadily as Japanese immigration continued and as families grew through natural increase.

The tendency among Chinese towards leasing or renting land versus owning was not unique to the Okanagan, which further supports the notion that it was a result of wider forces such as the head tax and the Chinese Immigration Act. Table 6.2 shows provincial government figures comparing Japanese and Chinese land ownership and land leasing for 1922 also demonstrate the low rates of ownership among Chinese during this time compared to Japanese (Department of Agriculture 1922). It is difficult to know precisely how the figures in Table 6.2 can be interpreted as a percentage or rate of ownership due to limited data availability for that time period. The 1921 Census of Canada does not break down the Chinese or Japanese populations by age or by occupation; therefore, while the 1921 Japanese

population of British Columbia was 15,006, how many of these individuals were of an age to own land and how many were engaged in agriculture is unknowable from the best available resources (Dominion Bureau of Statistics 1921). However, using a comparable value for each ethnic community demonstrates that there are disparities between the groups. Using the census values for the number of immigrants in each ethnic group and the total acreage owned as reported in the *1922 British Columbia Ministry of Agricultural Annual Report*, I calculated that province-wide 4.5 percent of Japanese owned land versus 0.5 percent of Chinese. The number of immigrant figures are slightly more reliable than the total population figures because of the high rate of natural increase among the Japanese, assuming that in 1921 most Canadian-born Japanese would be children and unlikely to own land. The 1922 figures also show the variety of agricultural activities that Japanese were engaged in as compared the Chinese who were mainly focused on market gardening.

Table 6.2: Showing land ownership, lease, and rentals, adapted from 1922 *British Columbia Ministry of Agriculture Annual Report*, Appendix No. 28, p. U 147 of British Columbia Legislature Sessional Papers

	No. of Owners	Total acreage	Orchard (Acres)	Small fruit growing (Acres)	Truck-farming (Acres)	Dairy Farming (Acres)	Mixed farming (Acres)
Land Owned by Japanese	492	8385.78	176	2096.21	281.3	80	631.28
Land Owned by Chinese	116	5664.61	14.5	25.81	1632.93	-	1228
Totals	608	14050.39	190.5	2122.02	1914.43	80	1839.28
Land Leased by Japanese	103	1781.26	139	155	560.23	435	236.75
Land Leased by Chinese	369	11087.12	37.5	64	8184.55	-	1381
Totals	472	12868.38	176.5	219	8744.8	435	1817.73
Grand totals, lands owned and leased	1080	26918.77	367	2341.02	10639.23	515	3677.03

The *Report on Oriental Activities within the Province* (1927) claimed that Chinese tended to rent their properties rather than own them. “The reason for this is, of course, the well-known fact that Chinese methods of cultivation exhaust the soil, rendering it necessary for them to move on periodically to fresh acreage” (British Columbia 1927:10), implying that investing in land was a waste of funds. However, I found no evidence to support this racially biased notion. Information collected during interviews and through published reminiscences showed that similar farming practices were used by both the Chinese and Japanese market gardeners in the Okanagan and these were not destructive. In the Armstrong area in particular, Chinese market gardeners were highly regarded for the tidy and well-maintained condition of their farms (Critchley 1999; I4JG 2014). The 1927 report is reflective of broader societal attitudes of the day. From the earliest days of anti-Asian sentiment there were many who denigrated the Chinese practice of using human and animal waste to fertilize gardens as they believed this to be unsanitary (Ward 2002; Roy 1989; Clute 1902). Human waste as fertilizer has been a central aspect of both urban waste management and urban agricultural practices in China for many centuries (McClintock 2010).

6.3 The Role of Increased Complexity in the Industry

Co-operative marketing, centralized selling, and increased government controls expanded throughout the 1920s and 1930s. These effectively increased the complexity of the market gardening industry which hastened the maturing of the market gardening industry and eventually resulted in the formation of the Interior Vegetable Marketing Board (IVMB). Most market gardeners in the valley had at least some interaction with the IVMB, especially after amendments were introduced in 1936 requiring all producers who had an intention to sell their products commercially to register every season regardless of the size of their operation.

For those farmers selling directly from field or farm stand there was only occasional interaction with the IVMB, but this was a rare situation as many market gardeners also grew large crops to sell on to the wider market and these products were subject to strict regulations by the marketing board.

In the years immediately following the implementation of the Natural Products Marketing Act (1934) and other related legislation, Chinese, Japanese, and white growers in the valley co-operated with one another. Over time, many of the Chinese and Japanese growers became concerned, specifically noting that the restrictions of controlled marketing were forcing them to lower their prices. Due to their large numbers in the Okanagan they were able to secure the place for both a Chinese and a Japanese grower to represent them at a provincial meeting of marketing boards (Roy 2003).

Roy (2003) notes that provincially there was a substantial suspicion that the marketing boards were put in place specifically to control Asian, especially Chinese, competition. While I discovered no direct evidence to refute or support these claims, evaluating the timelines and wider picture it appears that stemming the tide of Asian competition underlies much of the work of the marketing boards. IVMB records reveal the complicated relationship between producers and land owners and, more critically, between producers and the Board. However, as a former Armstrong market gardener reported, crops that were particularly affected by the marketing board's regulations on geographic distribution limits were primarily grown by Chinese, such as cabbage and celery (Critchley 1999). Interview data and archival records support the notion that perishable produce had to be disposed of after being seized by marketing board inspectors rather than returned to the grower because they often rotted during the seizure. Seized potatoes and other root crops

were often returned to the grower and they were allowed to then purchase the approved bag tags and sell the product legally.

The rising influence of the IVMB in the late 1930s and through the 1940s corresponds with the decline of the market gardening industry in the north and central Okanagan Valley. Experiences discussed in interviews, as well as archival records, indicate that in some parts of the valley the IVMB was more influential than in other parts of the valley. For example, market gardeners in Armstrong felt the ‘heavy hand’ of the IVMB more frequently than those in Kelowna. This is likely because vegetable farming in Kelowna accounted for only a small percentage of agricultural production compared to soft fruits and apples, whereas in Armstrong it was the majority of agricultural crop production.

While it is clear that the IVMB was influential in the decline of the market gardening industry, other factors were more so. These include the aging population of Chinese and the lack of new recruits to succeed the older generations of farmers as they passed away or returned to China when they were near death, all of which were effects of the Chinese Immigration Act of 1923 and the head tax. Furthermore, this increased complexity in the industry that arose throughout the middle part of the twentieth century is reflective of changes in the political and economic systems globally with the move towards more international trade and greater global interconnectedness. Retired district horticulturist Michael Oswell (1997) points directly at globalization and competitiveness as the death blow to the local tomato industry. Like so many other places there was apparently little room for a local economy.

6.4 Qualitative Historical GIS: A Methodological Assessment

There are three questions that immediately arise when commencing a discussion of the efficacy and usefulness of qualitative historical GIS for examining the experiences of Chinese and Japanese market gardeners and understanding the demise of their industry in the north and central Okanagan Valley. First, in what ways did qualitative historical GIS enhance the research process and enable the results? Second, how might the results be different if qualitative historical GIS was not utilized? Third, looking more broadly at available qualitative GIS methods, what more could have been done and what factors (e.g. data, resources) would have needed to be in place for that to happen? Prior to responding to these reflective questions I will outline some of the challenges specific to the research topic that directly affected the way the methodology was pursued.

This research faced three broad and interconnected challenges: the rural and remote study area, two different ethnic minority populations, and the historic time period. How I approached each can serve as examples to others. While each of these contributed to making this an interesting and complex research topic, they also resulted in issues of data scarcity, inconsistency, and incompatibility. The study area, today and in times past, is a mix of both urban and rural areas. During the studied time period, most of the market gardening occurred in the rural fringe within a short distance of town centres in order to access markets, packing houses, and shipping points. The Okanagan Valley was relatively remote, separated from the main economic centre of British Columbia, the Lower Mainland, as well as other important markets such as the Prairie market by numerous mountain ranges.

Both then and now the study area is divided into numerous different administrative areas. During the historic period of interest much of the study area was comprised of

unincorporated areas. Numerous boundary changes, amalgamations, and incorporations have occurred in the past several decades. As a result there was no one single record type that covered the study area. For this reason and others the historical cadastral was selected as the base spatial data, however, different maps produced at different times were used to create digital historical spatial data; a variety of qualitative sources provided the attribute information.

A further effect of the rural and administratively discontinuous nature of the area is the lack of a central repository for the maintenance of historical property records. While records pertaining to individual properties can be accessed at the Land Title office in Kamloops, BC, at a significant cost per property, this would have required extensive research in advance of a research trip just to isolate the properties of interest. Established urban areas like Kelowna, Vernon, and Armstrong each held their own records; however, each community also had a different relationship between the city government and the local archives. As a result some archives know that they have all available records whereas others are unsure of the completeness of their collections. In the case of Kelowna this is further exacerbated by a series of amalgamations that went on in the 1960s and 1970s. One area of particular importance, Rutland, roughly covers a third of the area of Kelowna and was home to many Japanese and some Chinese market gardeners. City of Kelowna records for Rutland only extend back to 1973. Prior to that the area was unincorporated. The location of records that prior to 1973 are unknown.

This research focused on the experiences of two different ethnic minority populations whose life stories were influenced in part by racist attitudes of the dominant (white) population and corresponding race-based legislation and policies that dictated many aspects

of their lives. The results demonstrate that while there are some similarities and very deep and complicated interconnections between the historic Chinese and Japanese communities, there are also very different outcomes as a result of specific race-based legislation that affected one group but not the other, in particular the Chinese head tax.

There is a large volume of government data that can contribute to studies of Chinese in Canada (Hermansen and Yu 2014). For the Japanese, there is less available documentary material from the early period as they were subject to less scrutiny than the Chinese. However, these data are primarily localized to major urban centres in the West. As a result, they are affected by an urban bias; therefore, it was not useful for my study beyond contributing to a broad understanding of Chinese immigration in the late 1800s. While a large amount of data was located through the various data collection techniques, there were inconsistencies across time and space. Furthermore, only a limited amount of data could be confidently attributed to the market gardening communities specifically rather than the historic Chinese or Japanese communities more broadly.

Further data issues specific to these communities occur as a result of cultural bias and racism. I encountered multiple reference in the archives where the names of Chinese or Japanese land users was omitted and only “Japs” or “Chinese” appeared. Spellings of names were anglicized and simplified. In the case of the Chinese last names and first names were often inverted. This makes it difficult to trace individuals in the historic record. For this research, names were taken at face value as tracing of individuals was not a specific aim of the research. The GIS was designed so that fields in the table for names or other similar details were allowed to remain empty to allow for situations where the ethnic origin of the individual was known but the name was not.

These first two factors, study area and population of interest, exacerbated the regular challenges of working in historical time periods. For a researcher from Eastern Canada or from Europe, the twentieth century history is barely historical, but in the frontier of British Columbia one hundred years represents a long time. The first European presence in the Valley only occurred in 1811 and the first early settlements by Europeans did not commence until the late 1850s. Even as late as the 1890s there were only a scattering of nonindigenous settlements throughout the valley.

All this led to the need to focus on diverse and unconventional resources such as published references documenting the history of the area from the perspective of individuals. These sources proved invaluable for context, individual and group experiences, and for explicit spatial data. These same sources proved very challenging for incorporation into a GIS. The approach I took for incorporating explicit spatial references into the GIS was to carefully reference the source of each piece of information including columns for page references for both published materials and multi-page archival sources, columns for file and folder information for archival documents, information on the repository, and a column for notes with room for notes on use and permissions if needed. One record (row) was created for each occurrence. This made querying data simple, especially in cases where a single document contained multiple references.

Returning to my reflective questions examining the effectiveness of qualitative historical GIS, responding to the first question, in what ways did qualitative historical GIS enhance the research process and enable the results, there are a number of aspects of the research that need to be considered. In particular, the individual data collection methods (archival, interviews, published reminiscences), the approaches to organizing that data, and

the choice of spatial data. On a more philosophical or fundamental level, I begin by asking what was inherently spatial about this research topic that encouraged a GIS approach? Farming is a land-based activity. To divorce the experiences of the market gardeners from the land would undermine the integrity of the research because those experiences occurred on the land, as a result of a complicated geography, and location at various scales had a marked effect on the outcomes of both individual and collective experiences. While the role of landscape could still be included in the analysis without the use of GIS this would have produced more generalized results, linked at best to the scale of the community (e.g. Kelowna, Vernon), rather than visible at the scale of the individual property. It would not have been possible to consider, even superficially, the distribution and extent of the market gardening community throughout space and time. The use of GIS enabled this, expanding it further to consider different types of land use and different types of land tenure. While only a limited amount of computational analysis was included in the final output due to issues of data inconsistency and incompatibility, this still contributed greatly to the final research results. Key findings, such as the stark drop in Chinese landownership at the commencement of the Chinese exclusion period, would not have been obvious without the use of computational analysis.

Regarding the research process, the use of GIS enhanced the experience in at least two ways. Despite its long history, GIS is still a novel concept to many outsiders. This caught the interest of many individuals working at the various museums and archives that were accessed as part of the data collection process, as well as the attention of interview participants. For museum and archives volunteers and staff, I believe that the idea of participating in research such as this that included a novel approach was particularly

appealing to those who typically deal with questions related to either family history research or undergraduate term papers. This was demonstrated through their enthusiastic willingness to unearth unusual or infrequently consulted materials in their collections. Upon return visits I was often met with fresh ideas and suggestions of materials, sometimes even already pulled off the shelves for me. For interview participants, many of whom have either been interviewed in the past or had participated in other types of documentary projects such as book projects, the use of maps as part of the interview process and the explanation of the use of GIS in the research seemed to be a major point of interest for them.

The other way that GIS enhanced the research process was that it provided a guiding structure that informed both the data collection and analysis stages of this project. Specifically, the decision to use qualitative historical GIS allowed a very diverse mix of data sources to be incorporated into this project rather than only focus on more traditional data sources for historical research like censuses and voters' records, especially important given the particular populations examined. While the 1921 census did contribute important information about some parts of the study area, such as the area around Swan Lake and Lavington near Vernon, these documents are notoriously inconsistent especially in rural areas and especially for typically non-English speaking minorities that were often treated with disdain. These areas in particular had a conscientious and diligent enumerator but this did not translate across the study area. For the 1921 census there were very few instances in the rest of the study area that could be attributed to individual properties as the location information was rarely recorded beyond the neighbourhood or community level.

Thus, both the research question and the chosen methodology strongly influenced the data collection process and the methodology in particular influenced the decisions that were

made at the analytical stage of the project. Obviously that the methodology and research topic influenced the data collection is not unique to this research, but it is important to draw attention to the specific ways that GIS influenced the data collection. For example, time and effort was spent on searching for historical spatial data. In the end the historical cadastre proved to be the most consistent spatial data set that covered the study area, and paper maps were located that could be digitized. However, in searching for maps that could provide some kind of base data for structuring the GIS, I found a number of annotated maps that noted land owner or tenant, particularly for the Kelowna area and for Armstrong. Due to a backlog of work at the Kelowna Public Archives, the maps I located for Kelowna would not normally have been examined if I had approached the archives asking for materials related to farmers or market gardeners in the area. In the end, one series of maps in particular proved invaluable for determining the location of a number of farms and market gardens mentioned in *The Vision Fulfilled* (Hoshizaki 1995) that I had not been able to confirm through other sources.

In another instance, because I had expressly stated that I was in need of explicit spatial data, the archivist in Vernon was able to direct me immediately to the Collector's Toll Rolls for the Vernon Irrigation District. Where normally I might have begun with information files on farming or on the Chinese or Japanese communities, I was able to immediately review a rich source of information that included not only explicit spatial information that I could then tie directly to a legal land parcel but these documents only included farming activities because only farmers had to pay for irrigated water so I did not need to do further research to determine if I should include these results in my GIS. This data set also included names of land owners and in some instances tenants, or at least noted if tenants were occupying the land.

In considering my second reflective question, how might the results have differed without the use of qualitative historical GIS, I will build upon some of the statements I made regarding the research process. I see the value in debriefing my major methodological decision as part of a larger consideration of the benefits of qualitative historical GIS. The maps demonstrate that although there was some clustering of market gardening in certain areas, the general trend was that market gardens for both Chinese and Japanese were distributed throughout each community and integrated with other farming activities. Furthermore, by aggregating the data by decade, changes over time are also apparent in the maps. Differences in land tenure and land use are also visible. This happens over time and space, as seen in changes over the decades and differences between sub-sections of the study area, but can also be seen in differences between the two ethnic communities. One of the major benefits of all forms of GIS is the ability to visualize your data. Even if the use of GIS stops at the visualization phase and no additional spatial analysis is performed, as is the case here, the use of visualization enhances the results by revealing patterns detectable by the human eye. Visualizations are also an important tool for the dissemination of results.

If the GIS component had not been included, a major outcome is that the results would have been uncoupled from the land itself. Although much of my discussion of the qualitative results focuses on experiences and outcomes of race-based legislation and this material does not draw specific attention to the role of the land, the use of GIS underpinning the process unquestionably influenced the discovery of specific results as well as the overall organization of the material collected that informed those results.

One of the greatest contributions of the qualitative historical GIS analysis to the results was the visualization of the differences between the Chinese and Japanese market

gardening communities, allowing for direct comparisons between the two communities. These differences occurred not only across space as the two communities had different centres of concentration, but also through time as each market gardening community experienced industry decline differently. It was these differences and the noticeable changes through time that led me to more deeply consider the role of race-based government legislation that was applied differently to the two communities.

My third reflective question could also be considered the converse of the second. In what ways could I have incorporated more advanced qualitative GIS methodologies and how might this affect the results? Perhaps an important extension of this question, or at least a way to more directly answer it, is to consider what conditions would need to be in place for the ideal qualitative historical GIS analysis of my research topic and how the limitations of my study area, population, and time period affected this.

Jung and Elwood (2010) outline three distinct methodological areas that most qualitative GIS falls into: (1) modifications and customizations of software for embedded qualitative analysis within a GIS; (2) manipulating, classifying, or categorizing qualitative data for use with conventional GIS tools; and (3) the use of hyperlinking of qualitative materials for more advanced visualization or interactivity with the data. My research is firmly embedded in the second methodological area, as is most qualitative GIS, in that it used the conventional tools of GIS but allowed for a broad array for data sources and the focus of the results was on visualization, not computational analysis.

I focused on using GIS for visualization and the generation of some computational results and did not go beyond this for a number of reasons. While my overarching research interest was to examine the efficacy of qualitative historical GIS, in doing so I also needed to

provide answers to my topic-specific research questions related to the decline of the market garden industry in the Okanagan. The data that were available had numerous limitations, were varied over time and space, and differed between the two different ethnic communities. Therefore one single approach to analysis, qualitative or otherwise, could not be applied for all, or even most, of my data sources. The time, effort, and technological skill that would have been required to modify or create tools from scratch for analysis that adequately supported all data sources was not reasonable within the scope of a single PhD project. Furthermore, excellent tools, such as NVivo, already exist that could be used in concert with the GIS for the purpose of extracting both spatial and thematic data from the qualitative sources. This echoes the sentiment of participatory GIS, another important subspecialty that developed out of critical GIS, which states that participatory GIS projects “are context- and issue-driven rather than technology-led” (Dunn 2007:616). Similarly, Gregory and Geddes (2014) have recently argued for more emphasis in historical GIS on uncovering information about the past and less emphasis on technological development of the field.

Hyperlinking or directly embedding some or all of the qualitative source material into a GIS is an attractive idea but was not practical for this project. Had dissemination to a public audience through the construction of an interactive website been a goal of this project then the use of hyperlinking or embedded data would have been a useful technique to help the research come alive on the screen. This was not an identified goal of this project at the start so dissemination to the public through this type of forum was not included in the institutional ethics application process. It may have added a lengthy delay to the research process if an addendum to develop such an extension of the project was added. The cause of the delay relates to the nature of the change as it would have elevated the potential risk above minimal

risk and therefore possibly necessitated a full review rather than an expedited review. Additional time and resources would have been spent on arranging data storage and web hosting services, as well as developing strategies for maintaining anonymity of research participants if such a public forum if desired.

Another important factor in not pursuing hyperlinking or embedded documents as a visualization or representational technique for this particular topic was the availability of data either in the public domain or that individuals were willing to share for the purpose of display in this manner. Many of the resources that were mined for spatial references were published, therefore it would have been difficult to acquire permission to include extracts in an accessible GIS. To include a copy of an image within my dissertation would have cost per image from some archives regardless of the age of the document, whereas others did not charge if the image was out of copyright. Even for institutions that have very permissive user agreements there are still limits to how that image can be used. For example, many specify that while you are free to reproduce the image, you cannot edit it. An added challenge is the persistent white bias that exists in archives and museums as most institutions charged with maintaining our historical record are solely dependent on donations of material and these typically come from descendants of white settlers. In sum, as with so many other aspects of this project, issues with the data did not encourage pursuit of this type of approach.

A final reason I did not pursue hyperlinking or embedding data, or the development of a public forum such as a website, was the number of dead websites I have encountered in my five years of historical GIS research. The creation of a website was a common goal among many early projects. Many of the early representative sites showing a wide array of

examples be found in the notes to Knowles (2008). While the book remains a key document in historical GIS literature, at the time of writing most of the websites listed are dead.

Without qualitative historical GIS, this research would have had the same gaps that have traditionally plagued so much other historical research that lacked a specific spatial analytical component. Even if that analytical component is mainly organizational and not explicitly computational, the GIS still contributes deeply to maintaining the spatial integrity of the research results because it does not artificially separate the analysis and results from the environment in which the original events under consideration occurred.

CHAPTER 7 CONCLUSION

Through the innovative application of qualitative historical GIS in a rural setting and historical time period, I demonstrate that a complex array of governance, technological innovation, infrastructure development, and a changing population demographic, combined with a lack of a stable land base, precipitated the demise of the Chinese and Japanese market gardening industry that previously existed in the north and central Okanagan Valley. This research focuses on the period from the 1910s through the 1950s, but includes some data from before and after these dates. I critically examine the impacts of these four factors on the historic market gardening landscape. Through the use of both quantitative and qualitative techniques this complicated relationship is elucidated.

The key findings are that governance and a changing population demographic were the most influential factors on the demise of the industry. My results show that while all four factors contributed to the decline, the factor that was most influential on the final outcome of the industry was governance. Specifically, federal legislation and its implementation at the local level affected the ability of some market gardeners to survive and thrive in the Okanagan despite an increasing population and good growing conditions. Some further unexpected findings include the prevalence of sharecropping, a form of land tenure that had not been considered previously, and the time period was extended to include the 1980s in some instances, increasing the duration of the industry from a few decades to well over a century.

In particular, the long-term effects of the Chinese head tax (1885–1923) and the Chinese Immigration Act of 1923 that resulted in the Chinese exclusion period (1923–48) were particularly detrimental to the Chinese market gardening community. During this

period, as market forces made market gardening less and less profitable, many Japanese families transitioned into orcharding. Their ability to make this transition was partly supported by the fact that they could have large families and reserve their excess income for investing in land and equipment, rather than having to support a family back home and partner with other farmers or hire outside labour.

Although the agricultural legacy of the valley is celebrated through exhibits at local museums, events organized by community groups, publications by local historical societies and other forms of popular literature, it is a selective and ostensibly whitewashed history that is recreated through these actions. The contributions of both the Chinese and Japanese market gardening communities, as well as other ethnic minority populations, are rarely acknowledged outside of publications produced from within their own ethnic communities. While their actions were central to the agricultural success of the region, their role in that success is rarely acknowledged. Those that make efforts to preserve the stories of the past are often guided by existing narratives, their own experiences, and their family stories. In most communities in the valley these are all overwhelming white experiences. Acknowledgement of the Chinese and Japanese communities of the past is framed through these white experiences. In this way, there is a limited acceptance of their role as agricultural labourers, but the market gardeners of the past were not labourers, they were entrepreneurs and independent business owners.

Current Okanagan narratives focus on orcharding and the wine industry and rarely include market gardening. Furthermore, the celebrated stories of agricultural development in the valley tend to limit Chinese and Japanese into stereotypical roles of transient labourers. Their stories are continually overshadowed by idealized images of white farmers immersed

in a bucolic setting of perfect Victorian order. Stunning black and white photographs are displayed at venues throughout the valley (e.g. Orchard Park Mall, Starbucks on Bernard Avenue, wrap coverings on electrical boxes) that reproduce images of the gentleman farmer and his careful ordering of the landscape. He is typically dressed in a suit, mounted on a sturdy steed, with tidy rows of orchards behind. Staged action shots occasionally show groups of workers. Early photographs available in the public record typically depict Chinese or Japanese workers as labourers, and rarely as the focal point of an image. Similarly, if women are included in the photograph they typically appear in a supportive role, such as picking or packing fruit.

The existing literature on the settlement of the Okanagan focuses on the peculiar situation of British settlers recruited by private land developers which differed from settlement schemes elsewhere in Canada that were typically government controlled (Bennett 1996; Koroscil 2003). To date, only one example critically examines the trend towards maintaining the image of Whiteness in the early settler period. While this is a valuable contribution, in “Lost Okanagan: In Search of the First Settler Families,” Jean Barman (1996) focuses mainly on intermarriage between white men and aboriginal women. The presence of other non-White minorities is not examined. Along similar lines, the dissertation research of Thomson (1985) focused on the relationship between “Indians and Whites in the Settlement Era.” Other works in Okanagan history direct their efforts at general history (e.g. Simpson 2011; Webber 1999); at specific aspects of agricultural history, such as irrigation (Wilson and Draper 1983; Wilson 1989, 1994); or at the functioning of the orchard industry (e.g. Dendy and Kyle 1990; Simpson and Greenwood 2006).

Regardless of intent, this selective remembering of history serves to reinforce past injustices and discrimination. For many decades, “White Canada Forever” was a common refrain, and the dominant (white) population considered both Chinese and Japanese people to be unassimilable. Racially motivated provincial laws and a strong anti-Asian movement supported by local trade associations throughout the valley limited land ownership opportunities among the Chinese and Japanese (Roy 1989, 2006; Ward 2002). This interdisciplinary research relies on a wide range of sources and brings these together in a novel way through use of historical GIS. The conceptual framework of landscape phenomenology guides the analysis; as a result, the interpretation is not limited by the same constraints as other historical approaches. The combination of historical GIS and landscape phenomenology with wide-ranging and diverse source material reveals a dynamic, complex, and varied history of the market gardening population of the Okanagan Valley.

Some interview participants shared private family photographs which give a very different impression than those images available in the public record. Photographs contained in family collections often depict Chinese or Japanese as entrepreneurs, land owners, orchardists, and rarely as labourers. There are some published examples as well, such as in *The Vision Fulfilled* (Hoshizaki 1995) or *A Century of Community* (LCMA 2013), but again these images are mostly from private family collections. Some perpetual White bias may be alleviated if more Chinese or Japanese families donated copies of their private collections to local museums and archives. Figure 5.23 is one example of only a very few that are currently available in the public record.

As Rains (2005:305) states in his own dissertation discussing the “complex, diverse and dynamic social landscape” of Chinese in historic Cooktown, Australia, “such layering

and interpretation is not easily explained by the old, positivistic models of overseas Chinese society, which have regarded [Chinese society] as homogenous, static, and disconnected from wider society.” Despite the distance, historical Chinese experiences in Australia were comparable to those in British Columbia in a number of ways. Like Rains (2005), this research demonstrates that while the Chinese, and in this case Japanese, maintained many practices and preferences specific to their cultural group, they were also highly integrated within the wider community. It was an intricate balancing act of relationships both within and between communities that allowed them to achieve some level of prosperity.

Focused on Chinese experiences in Montana, Merritt (2010) also contends that we must move beyond traditional narratives that have been the standard in Overseas Chinese Archeology, and history more generally, to understand the nuanced social structure among early immigrant societies. Traditionally, research on Asian experiences in historical British Columbia has included little quantitative analysis (except Lai 1973) and “the Chinese presence in British Columbia is still largely equated with Chinatowns” (Barman 2013). While a large corpus exists documenting the immediate and short-term outcome of race-based government legislation, there has not been a critical examination of the long-term outcomes of this same legislation. In her recent work, Barman (2013) points to marriage between Chinese men and Indigenous women as a consequence of the head tax. She states that the tendency of historians today to uphold the long-accepted image of the sojourning Chinese male reflects the attitudes and actions of the dominant population of the past. Like Barman (2013), my research demonstrates that there are numerous examples that defy this notion especially when examined at the community or individual level, rather than focusing on provincial trends or assuming that situations in major centres like Vancouver or Victoria

apply to all communities throughout British Columbia, something that has occurred frequently but perhaps unintentionally in much of the existing historical literature.

Historical GIS is limited by what is available in the historical record, which is inherently biased in numerous ways. A qualitative historical GIS approach was used in order to include a wider variety of data sources that might otherwise be incompatible with conventional approaches to GIS. While this methodological decision broadened the array of options of available source material, it also added complexity to the overall processes. Despite the inclusion of qualitative sources it was still difficult to find sufficient data coverage. The greatest limitations were related to data completeness. GIS is best suited for working with systematically collected data, ideally with complete spatial coverage. If complete spatial coverage is not available, then it is not possible to know if a lack of presence is the same as absence. Using a variety of data sources and data types can allow the user to compensate for a lack of systematically collected data but this does not fully make up for it. Furthermore, with data that has been pieced together the user is extremely limited in the types of analysis that can be performed compared to a robust, systematically collected data set. For example, in this research it was not appropriate to run statistical analysis to quantitatively determine clustering of farms locations. While it was theoretically possible to do this type of analysis, it would have given a false sense of the integrity to the results that simply was not present despite the use of a GIS and the thoroughness of data collection.

The lack of spatially complete data was not just a result of the time period or a reflection of the populations under examination, two traditionally marginalized groups. While both of these are important, the main factor in data scarcity was the study area crossed numerous administrative boundaries and included unincorporated rural areas. As a result, it

was difficult to compare communities even when good quality data were available because the types of available data differed between communities. Furthermore, it was a challenge to compare the two different ethnic communities, Chinese and Japanese, because even for the same geographical area, different sources of information were used. The use of GIS, and in particular the visual and numeric results, aided in this comparison. In the interviews I sought out equal representation from descendants of both the Chinese and Japanese communities. Unfortunately, the same was not possible for the archival and published sources used. For the Kelowna area in particular the results comparing the Chinese and Japanese participation in market gardening need to be considered with caution because the Japanese population was well documented through a book produced by the community that provided detailed information for many of the families in the area. No similar information was available for the Chinese community.

At the outset, I expected to be able to use the GIS results to quantify how much land was used in market gardening. For multiple reasons this is not possible. Intercropping between orchard trees was a major contributor to the overall vegetable production in the valley. This was practiced not only among land-owning Japanese but also frequently practiced under a sharecropping model. What makes this complicated was that while one part of a single farm operation may have been sharecropped, such as growing onions between the rows of a producing apple orchard, the apple production itself may have been done only by paid employees. Thus, multiple forms of land tenure and income generation were being practiced on the same geographic space at the same time, sometimes by the same people (I11SK 2014).

The GIS maps reveal where concentrations or patterning of certain types of tenure or land use, and for what time periods, but this was only an impression of the total landscape, not a quantifiable or statistically informed response. It is not possible to know what percent of the total number of market gardens I identified. I am confident that my conclusions about the decline of the industry are sound despite the uncertainty of the total number of market gardens because I relied heavily on qualitative material that spoke of conditions across the industry, not just on the farms I mapped. Furthermore, in their definitive text *Geographic Information Systems and Science*, Longley et al. (2006) point to visual analysis by the user as the first level of spatial analysis. Furthermore, they argue that “spatial analysis is best seen as a *collaboration* between the computer and the human, in which both play vital roles” (2006:316, emphasis in original). In many ways this is an apt description for the type of qualitative GIS advocated for by Preston and Wilson (2014), one which continues to allow for lines of inquiry and analysis outside of the computer environment. The authors pointedly argue that “the rigor of socially embedded qualitative GIS lies in the breadth of the data collection regime rather than the quantitative of statistical notion of reliability” (2014:520).

Obtaining reliable and comparable population data was a major challenge. For the 1870s and 1880s, I used provincial directories to obtain population information. While issues such as accuracy of reporting and missing information are legitimate concerns, provincial directories still provide a valuable snapshot of the population at the time they were published, as well as indicate what kind of development was occurring in the area. From 1881–1951, censuses also provided population information but only in ten-year intervals. There are many challenges to working with the historical census information. Comparing censuses from different years is difficult because the boundaries for each area often change from census to

census and there are no sub-district level maps available to determine where the boundaries have shifted. Consortiums like the Canadian Century Research Infrastructure have attempted to create maps of boundary changes; however, this work has been limited to the census district level. In British Columbia, census district boundaries typically followed federal electoral boundaries so it was possible to use electoral maps to understand where the census boundaries were (Obee 2012), but these cover a much larger geographical area than I was interested in.

An additional challenge was that the level of geographic data was typically not sufficient for determining where within the census district the individual resided. There were some cases of enumerators recording addresses but this varied by enumerator. As well as changing boundaries, the names and contents of tables changed from census to census. Also for some years ethnic origins were reported for sub-districts and other years only for districts. Existing spatial data for early censuses created by the Canadian Century Research Infrastructure was not sufficiently detailed for this research.

In summer 2015, as the data collection for this dissertation was in its final stages, a large cache of relevant records were located. The IVMB had its offices in Kelowna from 1941 through 1970. When the office moved to Vernon in 1970 many thousands of pages of records were abandoned in an outbuilding on the property as well as in an attic space. The records stored in the outbuilding were located a number of years ago but unfortunately had been destroyed by vermin and exposure and they were deemed non-recoverable by the former community archivist at the Kelowna Public Archives. The records recently discovered in the attic space were uncovered as the most recent tenant, a homeless services agency, was preparing to vacate the building in advance of it being demolished.

The agency contacted the Kelowna Public Archives, reporting that approximately three pick-up truck loads of documents had been recovered. One load was subsequently delivered but due to the state of the records and the small size of the archives they were not able to receive any more records at that time. As of May 2016 the location of the remaining records is unknown and it is feared they may have been disposed of. Status of the research at this time meant it was not possible to spend the additional time reviewing these records in detail or incorporating them into the GIS. However, records for one year (1943) were examined and these provided information on the frequency of land tenure among registered producers. Also, correspondence was reviewed which corroborated information attained in the interviews. Had these records been discovered at an earlier stage of the research, and had all locations described in the records been identifiable, these records may have provided complete spatial data for some years in the 1940s and 1950s. This is a possibility for future research.

While landscape phenomenology had figured prominently in my research proposal and guided my initial development of the research, in the end I was heavily influenced by qualitative GIS much more so than landscape phenomenology as a theoretical structure. At the time I commenced my research proposal and throughout the early stages of my research, qualitative GIS research papers were just beginning to be published in earnest. The qualitative GIS methodology I developed enabled me to use a variety of data sources and also guided the types of sources I was looking for; I had originally looked to landscape phenomenology for this flexibility. Furthermore, as I undertook data collection the number of sources that included true phenomenological descriptions were quite limited compared to other types of experiential descriptions. There were still some phenomenological aspects to

my research, such as my gardening activity and my numerous site visits which provided me important opportunities to enhance my understanding of the overall experience of market gardening. However, these contributed more to my own experience rather than to documenting the experiences of the market gardeners.

In most cases even the most disparate sources aligned very well. However, sometimes they did not. In particular, some of the descriptions of locations of farms reported in the interviews were either not where the archival sources indicated the farms were or more commonly, the description provided in the interview was much larger than what the archival information showed. In one case the farm as described by an interview participant was about ten times the size all other sources indicated it to be. As multiple sources existed that corroborated the smaller size, including historical maps of the area, the inflated description was disregarded. I believe that the inflated size was a result mainly of the interview participant attempting to use modern landmarks to explain where the farm had been located. The use of modern landmarks was common among many interview participants, as well as present in many of the published reminiscences. For those reminiscences that were decades old, the use of “modern” landmarks required additional research. Phonebooks and voter’s lists proved especially useful for this purpose. This was an important reminder of the ephemeral nature of the landscape.

A personal challenge was the belief that it was possible to undertake this project alone. While some small scale qualitative GIS projects are conducted by individuals, most historical GIS research is conducted in large interdisciplinary teams. Some examples exist of solo projects but these typically are based on an existing database. A notable exception is Raymond (2011). However, Knowles (2008:13) points to the “great benefit of all the

preparatory work that goes into creating a historical GIS [as] one gains intimate knowledge of one's sources and study area." She further states that "such deep engagement with historical sources and their geographical context can lead to remarkable discoveries and exciting scholarship." I believe that some of the greatest successes of this research stem from the fact that I alone was responsible for processing and organizing the data.

The timeframe for a historical GIS project such as this, with a wide and varying geographic area, multiple years, and multiple ethnic communities, was perhaps unreasonable to attempt within the allowable limits of a doctoral degree. Gregory (2003:15) describes the process of building a historical GIS as a "middling to long-term process with long lag times before the full rewards of the initial instrument are realized." Dunae et al. state that "we started building our historical GIS *several years ago*" (2013:29; emphasis added). Similarly, Bocking and Znamirovski note not only the long time frame, but the evolution of their project and all its parts.

Since its origins, the project has evolved considerably. This evolution and the numerous decisions that have been made regarding technical design reflect how the project has been a learning process for its developers, as challenges have been encountered and overcome. Project development has comprised several distinct activities: developing and applying software, assembling and processing historical materials and information, relating these to geographic locations, and exploring their application to environmental history. (Bocking and Znamirovski 2014:91)

While I do not regret holding steady to my original proposal, I do see some areas where I may have benefitted from more flexibility. While my results are still valuable and serve an important purpose, I wonder what more I could have done. Specifically with regards to the use of qualitative GIS, the incorporation of audio recordings directly into the GIS would have added rich contextual information. However, the technical and storage challenges outweighed any benefits of this approach. As such, this was not accounted for in the informed consent or ethics approval process. Greater consideration for all the possibilities

that technology affords projects such as this will be a more central part of my planning process in future research.

Despite the specific challenges with data and the broader challenges of working in a historical time period with ethnic minority communities, I was still able to provide deeper insights into the experiences of Chinese and Japanese market gardeners in the north and central Okanagan Valley. At the end of this process I see many opportunities for future research that will benefit from the experiences and insight I have gained in this project.

This study responds to the call to action initiated by the provincial government's official apology to the Chinese people of British Columbia that occurred in the Provincial Legislature in the spring of 2014 (Meissner, *The Globe and Mail*, May 15, 2014). This apology acknowledged the poor treatment of the Chinese during British Columbia's early years. Other relevant apologies include the 1988 apology by Prime Minister Brian Mulroney for the internment of Japanese Canadians during World War II, and the 2006 apology by Prime Minister Stephen Harper to Chinese Canadians for the head tax levied between 1885 and 1923. While these are important first steps and may bring closure for those affected, they offer little in the way of opportunities for re-education of the wider population. Research such as mine contributes to the slow reformation of our understanding of the important contributions of both the Chinese and Japanese communities in the formation of British Columbia and Canada. In the case of the Chinese that history extends back at least to 1788 (Chan 1983); in the case of the Japanese to 1854 (Barman 2010).

Currently three books exist that have been prepared by members or descendants of the historic Japanese community. Numerous books exist for the white community. No specific books exist documenting the history of the local Chinese community. A few articles

published in *Okanagan History* do provide insight into the early Chinese community and incorporate the perspective of descendants (Wong 1999; Wong 2014; Critchley 1999). These articles are not extensive but, when combined with the volume of untapped information available in the archives, indicates to me that enough material is available for a book-length document or series of articles to be produced. Such a record would serve to improve the general population's understanding of the multicultural heritage of the valley.

The dominant themes in the narrative of the agricultural history of the valley focus on orcharding and whiteness. To an extent I have discussed the issue of whiteness; however, I have not highlighted the issue of orcharding overshadowing all other aspects of agricultural in as much detail. I feel that more attention should be directed towards understanding the whole agricultural history of the valley, rather than focusing so directly on orcharding. By expanding the scope of the agricultural narrative to include all types of agricultural a greater awareness of our impacts on the landscape could be encouraged, which has important implications for water conservation as well as for those interested in preserving history because the history of agricultural in this valley is also the history of water consumption.

Food security, food sovereignty, and the local food movement are topics currently receiving substantial attention, both in popular media and in academia. A recent personal experience while talking to graduate students who study issues of food security, food sovereignty, and the local food movement in the valley demonstrated to me that few people are aware of the history of local food production, Asian or otherwise. Bill Knowles spoke of this in an *Okanagan History* article, asking “how many of you readers can remember when there were apple trees growing on the corner of Bernard Avenue and Ellis Street...? ... Do you remember tomatoes, onions or tobacco being grown in the vicinity of the Hospital?”

(Knowles 1986:27). Our memories fade nearly as fast as the physical landscape is plowed under or paved over. To date, rarely have presentations or written work reflected on the history of food production in the Okanagan beyond recent trends (e.g. Tudge 2010; Wright 2012; Morrison, Nelson, and Ostry 2011). This research has demonstrated that the current state of food production and consumption is directly a product of a long history and it is important to consider that history when endeavouring to develop solutions to improve accessibility to fresh, local food. There is potential for interdisciplinary collaboration between researchers and practitioners in this area.

Finally, this dissertation has demonstrated both the possibilities and challenges for qualitative historical GIS. There are significant bodies of literature on both qualitative GIS and historical GIS that detail the wide range of applications of these two subdisciplines but the literature specific to qualitative historical GIS is only beginning to emerge. Therefore, this research marks a timely and important contribution to that nascent area of research. One of the challenges specific to this project that may be useful to others is the demonstration of the breadth of sources needed to overcome data scarcity, or at least work towards mitigating the effects of data scarcity. Issues of data scarcity were exacerbated in this case by the particular population under consideration, the historic time period, the rural and remote nature of much of the geographic area, and the fact that the geographic area was divided into different administrative areas. By focusing on the content of sources rather than seeking a particular type of record, I was able to locate many thousands of examples of Chinese and Japanese market gardening in the archives, through interviews, and within published reminiscences, far more than was initially expected. For researchers interested in Okanagan history, this research also demonstrated the potential for utilising the *Okanagan History*

reports as a source of data, rather than just as secondary source material. This example can be extended beyond the Okanagan for any researcher seeking to incorporate historic published material as sources of primary data rather than as secondary source information only.

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APPENDICES

Appendix A Detailed Population Chart

Table A.1: Detailed population information for Census districts/divisions and sub-districts in the study area. Data from Censuses of Canada, 1881- through 1951. NR = Not Reported.

	District/ Division	Total Pop. (District)	Chinese (District)	Japanese (District)	Sub-district	Total Pop. (Sub- dist.)	Chinese (Sub- district)	Japanese (Sub- district)
1881	Yale	9,200	1,156	NR	Nicola & O'Kanagan	1,199	20	NR
1891	Yale	13,661	1,377	NR	Okanagan Mission	348	NR	NR
					Priest's Valley	739	NR	NR
					Spallumcheen	1342	NR	NR
1901	Yale & Cariboo	61,889	3,744	282	Yale, East	4,930	221	
					Yale, North	3,837	361	
					Yale, West	7,155	566	
1911	Yale & Cariboo	56,382	2,287	314	Okanagan	11,275	248	94
					Enderby	835	25	23
					Kelowna	1,663	109	9
					Vernon	2,671	162	0
1921	Yale	35,698	1,074	588	Okanagan	13,621	327	216
					Armstrong	983	70	0
					Enderby	783	14	56
					Kelowna	2,520	114	7
					Vernon	3,685	166	7
1931	District 3	40,523	1,032	553	Unorganized	8,826	809	
					Coldstream	867	78	
					Glenmore	303	14	
					Spallumcheen	1,629	52	
					Armstrong	989	107	
					Enderby	555	8	
					Kelowna	4,655	322	
					Vernon	3,937	218	
1941	District 3	61,605	692	778	Unorganized	12,182	184	552
					Coldstream	867	32	18
					Glenmore	404	2	26
					Spallumcheen	1,805	26	5
					Armstrong	977	64	0
					Enderby	538	7	0
					Kelowna	5,118	71	25
					Vernon	5,209	112	1
					Indian Reserves	673	11	5
1951	Division 3	77,476	443	2,188	Unorganized	18,625	NR	NR
					Coldstream	1,402	NR	NR
					Glenmore	1,119	NR	NR
					Spallumcheen	1,936	NR	NR
					Armstrong	1,126	NR	NR
					Enderby	877	NR	NR
					Kelowna	8,517	NR	NR
					Vernon	7,811	NR	NR
					Indian Reserves	821	NR	NR

Appendix B Ethics Approval and Consent Forms

<https://rise.ubc.ca/rise/Doc/0/5VJT7927UVL433H63J7AQM00D8/fromS...>



The University of British Columbia Okanagan
 Research Services
 Behavioural Research Ethics Board
 3333 University Way
 Kelowna, BC V1V 1V7 Phone: 250-807-8832
 Fax: 250-807-8438

CERTIFICATE OF APPROVAL - MINIMAL RISK

PRINCIPAL INVESTIGATOR: Diana French	INSTITUTION / DEPARTMENT: UBC/UBCO IKE Barber School of Arts & Sc/UBCO Admin Unit 1 Arts & Sci	UBC BREB NUMBER: H14-00976
INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT:		
Institution		Site
CO-INVESTIGATOR(S): NA		
SPONSORING AGENCIES: NA		
PROJECT TITLE: Lost Landscapes of the Market Gardeners: A Historical GIS Examination of the Demise of the Chinese and Japanese Market Gardening Industries in the Nicola and North Okanagan Valleys of British Columbia, 1860s-1940s		

CERTIFICATE EXPIRY DATE: May 13, 2015

DOCUMENTS INCLUDED IN THIS APPROVAL:		DATE APPROVED: May 13, 2014	
Document Name	Version	Date	
Protocol:			
Research Proposal: Lost Landscapes of the Market Gardeners	N/A	May 4, 2014	
Consent Forms:			
Community Mapping Consent Form	May 8 Version	May 8, 2014	
Interview Consent Form	May 8 Version	May 8, 2014	
Questionnaire, Questionnaire Cover Letter, Tests:			
Sample Interview Script	N/A	May 4, 2014	
Letter of Initial Contact:			
Letter of Initial Contact	May 8 Version	May 8, 2014	

The application for ethical review and the document(s) listed above have been reviewed and the procedures were found to be acceptable on ethical grounds for research involving human subjects.

This study has been approved either by the full Behavioural REB of the UBC Okanagan or by an authorized delegated reviewer

Lost Landscapes of the Market Gardeners: A Historical GIS Examination of the Demise of the Chinese and Japanese Market Gardening Industries in the Nicola and North Okanagan Valleys of BC, 1860s-1940s

Consent Form and Information for Interview Participants

Who is conducting the study?

The Primary Contact for this research is Catherine (Katey) Kyle, a graduate student at the University of British Columbia, Okanagan Campus, in Kelowna. She is conducting this research for her PhD dissertation. Katey can be reached by telephone at 778-214-1016 or by email at catherine.kyle@alumni.ubc.ca.

The Principal Investigator for this research is Dr. Diana French, Anthropology Program, Community, Culture, and Global Studies at the University of British Columbia, Okanagan Campus. She can be reached by phone at 250-807-9363 or by email at diana.french@ubc.ca. She is Katey's supervisor.

Why are you being asked to take part in this study?

You have been invited to take part in an interview because you may have information about the historic market gardening industry in the North Okanagan Valley or Nicola Valley of British Columbia that existed as early as the 1860s in some areas and continues in a small way today. Market gardening is the growing of vegetables for sale. Market gardeners grew a variety of crops and may have sold them either at a roadside stand or door to door. In later years some market gardeners also sold to the Vancouver market.

Why are we doing this study?

This research will contribute towards a richer and broader understanding of the Chinese and Japanese market gardeners of the North Okanagan Valley and Nicola Valley. This will build upon a large body of research that has developed over the past several decades documenting the contributions made by the Chinese and Japanese in early British Columbia. This research will help us understand why the market gardening industry, which had successfully provided healthy food to local residents for decades, came to an abrupt end in the middle of the 20th century.

What happens if you say "Yes, I want to be in the study"?

If you decide to participate in this research you will be asked to meet with Katey Kyle for a one-on-one interview. The interview will take about one hour but may be longer if you feel you have more information to share. The interview can be conducted in your home or at another location that is convenient to you. You will be asked questions about your knowledge of the historic market gardening industry in the North Okanagan or Nicola Valleys. We are especially interested in the location of market gardens, in the years of operation, the types of crops grown, and any information you may recall about the market gardeners themselves. You will be asked a little bit about your personal history, such as how long you have lived in the valley. If your family had a market garden you will be asked a little bit about your family history.

(please turn over)

What will happen to the information you provide in the interview?

The interviews are being conducted as part of Katey Kyle's research for her PhD dissertation. The information gathered during this research will be reported in her dissertation and may also be published in journal articles and books.

If you decide to participate in the study a research report will be provided for you that summarises all the information gathered during this project. This report will be prepared about one year after you give your interview.

What are the benefits of participating?

We do not think taking part in this study will help you directly. However, everyone benefits when we have a better understanding about historical events. By participating in this study you will be contributing towards the documenting of history and the acknowledgment of the important role played by market gardeners in early British Columbia.

How will your privacy be maintained?

Your confidentiality will be respected. Your name or other personal information will not be reported in any publications or the research report. A digital copy of your interview and a typed transcription will be stored on a computer. This will be protected by a password and stored at the University of British Columbia, Okanagan campus.

Who can you contact if you have any complaints or concerns about the study?

If you have any complaints about your treatment or rights as a research subject, you may contact the Research Subject Information Line in the UBC Office of Research Services at 1-877-822-8598 or the UBC Okanagan Research Services Office at 250-807-8832. It is also possible to contact the Participant Complaint Line by email (RSIL@ors.ubc.ca).

Participant Consent

Taking part in this study is entirely up to you. You have the right to refuse to participate in this study. If you decide to take part, you may choose to pull out of the study at any time without giving a reason and without any negative impacts.

- *Your signature below indicates that you have received a copy of this consent form for your own records.*
- *Your signature indicates that you consent to participate in this study.*

Participant Signature

Date

Printed Name of the Participant signing above

Lost Landscapes of the Market Gardeners: A Historical GIS Examination of the Demise of the Chinese and Japanese Market Gardening Industries in the Nicola and North Okanagan Valleys of BC, 1860s-1940s

Consent Form and Information for Community Mapping Event Participants

Who is conducting the study?

The Primary Contact for this research is Catherine (Katey) Kyle, a graduate student at the University of British Columbia, Okanagan Campus, in Kelowna. She is conducting this research for her PhD dissertation. Katey can be reached by telephone at 778-214-1016 or by email at catherine.kyle@alumni.ubc.ca.

The Principal Investigator for this research is Dr. Diana French, Anthropology Program, Community, Culture, and Global Studies at the University of British Columbia, Okanagan Campus. She can be reached by phone at 250-807-9363 or by email at diana.french@ubc.ca. She is ~~Katey's~~ supervisor.

Why are you being asked to take part in this study?

You have been invited to take part in a community mapping event because you may have information about the historic market gardening industry in the North Okanagan Valley or Nicola Valley of British Columbia that existed as early as the 1860s in some areas and continues in a small way today. Market gardening is the growing of vegetables for sale. Market gardeners grew a variety of crops and may have sold them either at a roadside stand or door to door. In later years some market gardeners also sold to the Vancouver market.

Why are we doing this study?

This research will contribute towards a richer and broader understanding of the Chinese and Japanese market gardeners of the North Okanagan Valley and Nicola Valley. This will build upon a large body of research that has developed over the past several decades documenting the contributions made by the Chinese and Japanese in early British Columbia. This research will help us understand why the market gardening industry, which had successfully provided healthy food to local residents for decades, came to an abrupt end in the middle of the 20th century.

What happens if you say "Yes, I want to be in the study"?

If you decide to participate in this research you will be invited to join other community members at a community mapping event. The event will be held one evening in a central location such as a community centre or church hall. The event will last approximately 1-2 hours. There will be large maps of the area spread out. Using the maps as guides you will be asked questions about the historic market gardening industry in the North Okanagan or Nicola Valleys. We will mark the locations of the gardens on the maps and make notes of any additional information you share. We are especially interested in the location of market gardens, in the years of operation, the types of crops grown, and any information you recall about the market gardeners themselves.

(please turn over)

What will happen to the information you provide in the interview?

The community mapping event is being conducted as part of Katey Kyle's research for her PhD dissertation. The information gathered during this research will be reported in her dissertation and may also be published in journal articles and books.

If you decide to participate in the study a research report will be provided for you that summarises all the information gathered during this project. This report will be prepared about one year after the community mapping event.

What are the benefits of participating?

We do not think taking part in this study will help you directly. However, everyone benefits when we have a better understanding about historical events. By participating in this study you will be contributing towards the documenting of history and the acknowledgment of the important role played by market gardeners in early British Columbia.

How will your privacy be maintained?

Your confidentiality will be respected. Your name or other personal information will not be reported in any publications or the research report. Notes taken during the community mapping event will be stored on a computer. This will be protected by a password and stored at the University of British Columbia, Okanagan campus.

Who can you contact if you have any complaints or concerns about the study?

If you have any complaints about your treatment or rights as a research subject, you may contact the Research Subject Information Line in the UBC Office of Research Services at 1-877-822-8598 or the UBC Okanagan Research Services Office at 250-807-8832. It is also possible to contact the Participant Complaint Line by email (RSIL@ors.ubc.ca).

Participant Consent

Taking part in this study is entirely up to you. You have the right to refuse to participate in this study. If you decide to take part, you may choose to pull out of the study at any time without giving a reason and without any negative impacts.

- *Your signature below indicates that you have received a copy of this consent form for your own records.*
- *Your signature indicates that you consent to participate in this study.*

Participant Signature

Date

Printed Name of the Participant signing above

Appendix C Interview Codes and Cluster Analysis Results.

- (1) Agricultural Labour
- (2) Change
- (3) Community Life
- (4) Crops
- (5) Culture and Kinship
- (6) Defining Market Gardening
- (7) Discrimination and Segregation
- (8) Distribution
- (9) Education or Careers
- (10) Farm Life
- (11) General History
- (12) General Land Reference
- (13) Industry Decline
- (14) Industry Organization
- (15) Interactions Between Communities
- (16) Land Tenure
- (17) Marketing Board
- (18) Population
- (19) Specific Land Reference

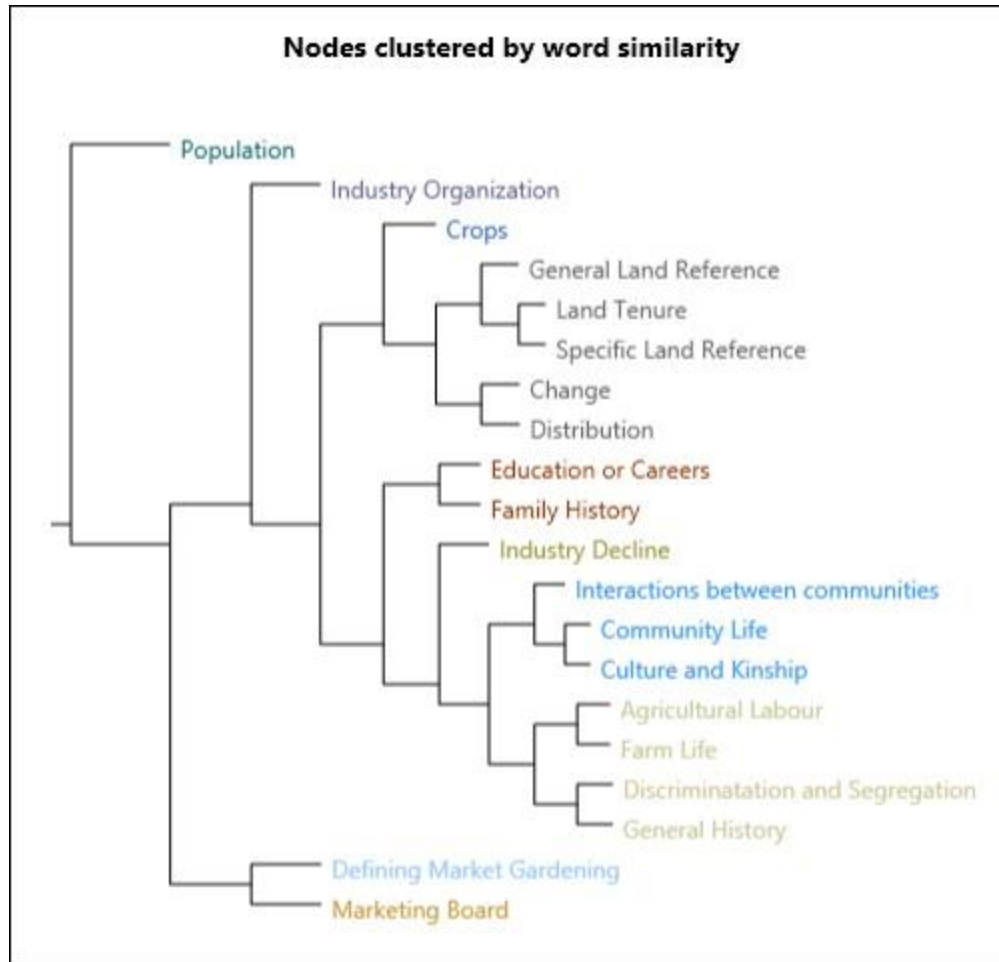


Figure B.1: Results of cluster analysis in NVivo 10 (QSR International 2015). This analysis groups interview codes (aka nodes) together based on word similarity. In this research this analysis informed the organization of the qualitative results.

Appendix D Code Block

This code was used for linking informational (attribute) tables for Armstrong to parcel data. The same code was used in all cases but the location name was changed in each case. See section 4.2.4 – *Linking the Informational Tables to the Digital Spatial Data*.

```
# -*- coding: utf-8 -*-
# -----
# lot_linking_ArmstrongMarch.py
# Created on: 2015-06-25 (updated 2016-03-01)
# Description: Query the PHD geodatabase for Parcel and Taxes information
# -----

# Import arcpy module
import arcpy
import pdb

# Local variables:
Excel_table = r"C:\Users\Katey\Documents\Research Misc\GIS\DataLink\ForsLink.gdb\Armstrong_1"
PolygonsToCopy = r"C:\Users\Katey\Documents\Research Misc\GIS\DataLink\ForsLink.gdb\Armstrong"
MergedResults = r"C:\Users\Katey\Documents\Research Misc\GIS\DataLink\ForsLink.gdb\MergedResults"

PolygonsToCopy_shape_field = arcpy.Describe(PolygonsToCopy).shapeFieldName
MergedResults_shape_field = arcpy.Describe(MergedResults).shapeFieldName

# Get an Insert Cursor for the new feature class
linked_parcel = arcpy.InsertCursor(MergedResults)

# SearchCursor(dataset, where_clause=None, spatial_reference=None, fields=None,
sort_fields=None)
# By default, all fields are included.
Excel_table_rows = arcpy.SearchCursor(Excel_table, where_clause="LotLink is not NULL")

# Following section runs as an iterative loop, once for each row in the Excel table
rowcounter = 0
for row in Excel_table_rows:
    rowcounter += 1
    # for each row I will match the LotLink in the Excel table to a polygon in
    # the PolygonsToCopy feature class
    LotLink_to_match = row.getValue("LotLink")
    # LotLink is unique in PolygonsToCopy, matches only one polygon; appears
    # multiple times in Excel table
    polygons = arcpy.SearchCursor(PolygonsToCopy,
        where_clause="LotLink = %s" % (LotLink_to_match),
        spatial_reference=None,
        fields=PolygonsToCopy_shape_field,
        sort_fields=None)
    # Variable polygon_being_copied now has Shape, next we will get the attributed from Excel
    polygon_being_copied = next(polygons)

    print "Generating the new linked parcel LotLink: %s" %(row.getValue ("LotLink"))

    # Create a new row entry in MergedResults
    new_linked_parcel = linked_parcel.newRow()

    # Copy the values from the Excel Row to the new row entry in MergedResults
    new_linked_parcel.setValue("Number", row.getValue("Number"))
    # Fix up the Year so it is a valid date
    if row.getValue("Year") is not None:
        new_linked_parcel.setValue("Year", row.getValue("Year").replace("-00", "-01"))

    new_linked_parcel.setValue("DecadeStart", row.getValue("DecadeStart"))
    new_linked_parcel.setValue("DecadeEnd", row.getValue("DecadeEnd"))
    new_linked_parcel.setValue("YearRange", row.getValue("YearRange"))
    new_linked_parcel.setValue("Name", row.getValue("Name"))
    new_linked_parcel.setValue("NameEth", row.getValue("NameEth"))
    new_linked_parcel.setValue("Tenant", row.getValue("Tenant"))
    new_linked_parcel.setValue("TenantEth", row.getValue("TenEth"))
    new_linked_parcel.setValue("TenureType", row.getValue("TenureType"))
```

```

new_linked_parcel.setValue("Aroll", row.getValue("Aroll"))
new_linked_parcel.setValue("Croll", row.getValue("Croll"))
new_linked_parcel.setValue("PropNotes", row.getValue("PropNotes"))
new_linked_parcel.setValue("AltLot", row.getValue("AltLot"))
new_linked_parcel.setValue("Lot", row.getValue("Lot"))
new_linked_parcel.setValue("Block", row.getValue("Block"))
new_linked_parcel.setValue("Plan", row.getValue("Plan"))

# Address is being clipped to 50 Characters to fit in MergedResults
address_value = row.getValue("Address")
if address_value and len(address_value) > 50:
    print "clipping Address to 50 charaters"
    print "From:"
    print address_value
    print "To:"
    print address_value[:50]
    new_linked_parcel.setValue("Address", address_value[:50])
else:
    new_linked_parcel.setValue("Address", row.getValue("Address"))

new_linked_parcel.setValue("LocDescription", row.getValue("LocDescription"))
new_linked_parcel.setValue("Frontage", row.getValue("Frontage"))
new_linked_parcel.setValue("Acres", row.getValue("Acres"))
new_linked_parcel.setValue("GradeAcres", row.getValue("GradeAcres"))
new_linked_parcel.setValue("Balance", row.getValue("Balance"))
new_linked_parcel.setValue("GrdABal", row.getValue("GrdABal"))
new_linked_parcel.setValue("LandVal", row.getValue("LandVal"))
if row.getValue("ImprovVal") is not None:
    # Note the typo in the MergedResults
    new_linked_parcel.setValue("ImprovVal", float(str(row.getValue("ImprovVal"))))
new_linked_parcel.setValue("AssessVal", row.getValue("AssessVal"))
new_linked_parcel.setValue("SewerCon", row.getValue("SewerCon"))
new_linked_parcel.setValue("SewerRent", row.getValue("SewerRent"))
new_linked_parcel.setValue("CoddMoth", row.getValue("CoddMoth"))
new_linked_parcel.setValue("LotLink", row.getValue("LotLink"))
new_linked_parcel.setValue("DocType", row.getValue("DocType"))
new_linked_parcel.setValue("DocDate", row.getValue("DocDate"))
new_linked_parcel.setValue("SourceFile", row.getValue("SourceFile"))
new_linked_parcel.setValue("Page", row.getValue("Page"))
new_linked_parcel.setValue("Source", row.getValue("Source"))
new_linked_parcel.setValue("Repository", row.getValue("Repository"))
new_linked_parcel.setValue("Community", row.getValue("Community"))
new_linked_parcel.setValue("Notes", row.getValue("Notes"))
new_linked_parcel.setValue("Use", row.getValue("Use"))

# Now add the copied polygon shape to the new feature being added to MergedResults
new_linked_parcel.setValue(MergedResults_shape_field,
    polygon_being_copied.getValue(PolygonsToCopy_shape_field))

print "Adding the shape to the MergedResults feature class"
# next line saves to the MergedResults feature class
linked_parcel.insertRow(new_linked_parcel)
print "Added", rowcounter

print "Processing complete."
del linked_parcel
del Excel_table_rows
del polygons

```