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IGS585: Knowledge Mobilization and Sustainability Policy

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Cultivating Community: Integrating Gardens into Lake Country's Parks

Students: Jared Brown(44424273), Armita Tehrani(27101237)

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Executive Summary:

As one of the fastest growing municipalities in British Columbia, along with its population becoming older and more urbanized, the District of Lake Country (DLC) is facing several challenges for maintaining its social and economic sustainability and resilience going forward. This report has identified four main challenges that will need to be addressed for the DLC to achieve sustainability and resilience going forward. These challenges are: 1.) A decreasing sense of community 2.) An increasing need to provide more opportunities for residents living in multi-unit housing to access personal greenspaces 3.) An increasing vulnerability to higher food prices and food insecurity, and 4.) An increasing need for age-friendly features seniors can easily access for maintaining their physical and mental health. This report has proposed the development of community gardens in city parks throughout DLC neighbourhoods as a cost-effective means to simultaneously address these challenges and help maintain the sustainability and resilience of the DLC and its residents.

Several social and economic consequences could arise for the DLC if no action is taken to address the needs of its aging and increasingly urbanized population. In regard to the former, not having easily accessible age-friendly features for DLC seniors could significantly decrease their quality of life, physically and mentally. In regard to the latter, increased urbanization often results in a decreased sense of community, decreased access to personal greenspace resulting from more multi-unit residences, and increased reliance on food imports which consequently increase vulnerability to higher food prices and food insecurity. Community gardens can offer several benefits to DLC residents by addressing these challenges. Academic literature demonstrates that they are important for community building, acting as spaces that participants can personalize with their own produce and flowers, allowing seniors to engage in an age-friendly physical and social activity, and providing residents an opportunity to access affordable, local food. Despite the benefits they can provide, however, there is currently only one existing community garden in the DLC, located in the Woodsdale neighbourhood. Its location makes it easily accessible to

residences in the immediate area, but less so for those in other neighbourhoods in the DLC. Consequently, the current supply of community gardens in the DLC is not enough for effectively using them to increase sustainability and resilience in the community.

To resolve this issue, this report focuses on the importance of developing additional community gardens for promoting sustainability and resilience in the DLC, specifically by developing them in city parks and within short walking distances (<15 minutes) of several residences. Increasing attention is being placed on developing community gardens in urban parks due to them often having adequate space and sunlight available, being able to provide community gardens long-term security, and generally having nearby access to essential utilities such as electricity and water. Increasing attention is also being placed on the importance of close proximity between community gardens and their participants, as it has been found to be crucial for encouraging participation. In particular, walking appears to be the most ideal and common mode of travel for participants to access their gardens. With these factors in mind, this report has proposed the Apex, Swalwell, and Okanagan Centre Parks as ideal locations for the development of additional community gardens in the DLC. Each of these parks can be walked to by several residents in their respective neighborhoods within 15 minutes or less and have overall adequate conditions for a community garden to be productive. They are also far enough away from the existing community garden in Woodsdale that they could help more DLC residents easily access community gardens as a tool to increase their social and economic sustainability and resilience. Developing community gardens in these city parks could also help the DLC meet several of its policy goals and objectives relating to parks and recreation, neighbourhood development, and urban agriculture.

In order to facilitate further development of the Apex, Swalwell, and Okanagan Centre Parks as community garden sites in the DLC, city personnel, external organizations that can provide funding, maintenance, and support, and residents living near the proposed garden locations are critical key actors who will need to be involved in the planning and development process. Challenges involved with developing community gardens in these parks have also been identified, many of which refer to

maintaining long-term support amongst funders, managers, and garden participants. Challenges regarding the lack of general gardening knowledge, resident concerns, as well as the accessibility of utilities near the proposed parks were also identified. A series of recommendations have also been made in response to challenges that are largely related to community engagement and collaboration between involved key actors. Additionally, this report also recommends revising OCP policy in the DLC to include the development of community gardens as an objective or policy for helping the municipality achieve its outlined Parks and Recreation Goals.

Section 1 - Introduction:

1.1 - Sustainability Definition:

Sustainability is a concept that has become immensely popular in both academia and government policy throughout the 21st century (Purvis et al., 2019; Saha, 2009). While the United Nations Brundtland Commission originally defined sustainability as “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland Commission, 1987), the definition of the concept has and continues to be highly contested between sustainability experts, non-experts, and between disciplines (Carew and Mitchell, 2008; Farley and Smith, 2020; Jacobs, 1999). It is likely that this is due to the fact that sustainability simultaneously incorporates and links environmental, social, and economic values (Kuhlman and Farrington, 2010; Rosen, 2020). As a result of this interdisciplinary nature, there is significant variation between scholars and disciplines around how sustainability is defined and understood (Rosen, 2020). Additionally, it also causes opinions to vary around what is considered sustainable and what should be sustained. For the purposes of this report, sustainability is defined as a balanced system that simultaneously satisfies environmental, social, and economic values, even if they are in conflict with one another, in a way that allows present and future generations to continue to thrive (Rosen, 2020). In the context of the District of Lake Country, we focus on an approach to sustainability that uses single solutions to simultaneously make positive contributions to the environmental, social, and economic well-being of the community. We largely seek to take this approach around local scale sustainability issues, as it is generally easier for individual contributions at this scale to feel more significant and meaningful compared to individual contributions toward sustainability issues at the national and global scale (Moallemi et al., 2020; Pesch et al., 2019; Wilbanks, 2007). Additionally, achievements made towards sustainability at the local scale can collectively contribute to addressing sustainability issues at the national and global scale (Moallemi et al., 2020; Wilbanks, 2007), highlighting the significance of taking the local scale into account for effectively achieving sustainability for all.

1.2 - Resilience Definition:

Like sustainability, resilience also continues to be a highly contested concept both within and between disciplines (Dornelles et al., 2020; Grove, 2018). The concept of resilience also incorporates environmental, social, and economic values (Dornelles et al., 2020), and is considered to be relevant for understanding the sustainability of the environmental, social, and economic conditions people find themselves in (Dornelles et al., 2020). Additionally, achieving resilience is often seen as a necessary precondition for achieving sustainability (Derissen et al., 2011), highlighting the essence of achieving this crucial state. However, due to the similarities between sustainability and resilience (Marchese et al., 2018), the relationship between the two concepts is not sufficiently clarified (Phillips and Chao, 2022). For the purposes of this report, resilience is defined as the ability for a system to withstand, adapt to, and quickly recover from periods of environmental, social, and/or economic setbacks (Klimanov et al., 2020; Phillips and Chao, 2022; Wiig et al., 2020). In the context of the District of Lake Country, resilience refers to improving the ability of residents living in the municipality to withstand, adapt to, and quickly recover from internal and external challenges imposed on their physical and mental well-being so that they can continue to adequately support themselves and each other. Making Lake Country more resilient would also mean ensuring that the environment within and around the municipality can continue to support itself for the well-being of its residents, ecosystems, and economic activities.

Section 2 - District of Lake Country - Setting and History:

2.1 - Geography and Natural Environment:

The District of Lake Country (DLC) is located on the unceded territory of the Syilx Okanagan Nation in the central region of British Columbia's Okanagan valley. Approximately 10 minutes north from the Kelowna International Airport (District of Lake Country, 2018a), the municipality has an area of approximately 12,200 hectares and is characterized by a mountainous, semi-arid climate with a mean

annual precipitation at the Kelowna International Airport of ~298 mm (District of Lake Country, 2020; Smith and Bowen, 2021; University of British Columbia, Okanagan Campus, 2021). Temperatures in the municipality and the rest of the Okanagan valley range from highs above 30°C during the summer months to lows around -25°C during extreme cold events in the winter months (Hewer and Gough, 2021; Rayne and Forest, 2016). The DLC is largely surrounded by ponderosa pine and interior douglas fir forests, which later transition into interior cedar and montane spruce forest east of the municipality with increasing altitude (Government of British Columbia, 2021). The forested area east of the DLC is also home to a critical wildlife corridor that helps link forest inhabitants between Kalamalka Provincial Park near the City of Vernon to Okanagan Mountain Provincial Park south of the City of Kelowna (District of Lake Country, 2019; Gerding, 2017). As implied by the name, several freshwater lakes are found within and around the DLC, with Okanagan Lake to the west, the southern portion of Kalamalka Lake to the north, the entirety of Wood Lake around the center of the municipality, and Ellison Lake just south of its boundaries in the City of Kelowna (District of Lake Country, 2024a; Haney and Sarell, 2006). A map showing the boundaries of the DLC can be seen in **Figure 1** (Appendix A).

2.2 - Settler History and Neighbourhoods:

The official “District of Lake Country” is a relatively new municipality, being originally composed of four wards (Carr’s Landing, Okanagan Centre, Oyama, and Winfield) before they all became officially incorporated as the DLC in 1995 (District of Lake Country, 2017). These four wards especially began to be inhabited by European settlers between 1890 and 1906 (District of Lake Country, 2017). The primary reason for why European settlers began to inhabit the area that the DLC now encompasses was due to agriculture (District of Lake Country, 2017; Thomson, 2011), of which the DLC is still well known for and continues to value (District of Lake Country, 2019). Starting between the 1840s and 1850s (Lake Country Museum and Archives, 2014; Vernon Museum, 2021), European settlers began to inhabit the area for cattle ranching due to the extensive grasslands found in the Okanagan valley (Lake Country Museum and Archives, 2014; Thomson, 2011; Vernon Museum, 2021). As time progressed, the establishment of

rail infrastructure that allowed products to be marketed outside the region more easily (Lake Country Museum and Archives, 2014), along with the sale of large cattle ranches (Thomson, 2011), the agriculture in the DLC began shifting towards tree fruit horticulture, which is believed to have started around 1908 (Lake Country Museum and Archives, 2014; Thomson, 2011). Tree fruit horticulture continues to dominate the DLC's crop production, with apples, cherries, peaches, and plums making up four out of the top five crops produced (District of Lake Country, 2020). Currently, much of the land within the DLC is still preserved for agricultural purposes, with approximately 5,400 of 12,200 hectares (43%) falling within the boundaries of the DLC being designated as agricultural zoning under the Government of British Columbia's Agricultural Land Reserve (ALR) (District of Lake Country, 2020; M. of A. and F. Government of British Columbia, 2024). 26% of the designated ALR land is farmed, which is evenly split between crop and livestock production, respectively (District of Lake Country, 2020). A map that shows where the ALR land in Lake Country is distributed can be seen in **Figure 2** (Appendix A).

Since the official incorporation of the DLC in 1995 (District of Lake Country, 2017), the composition of neighbourhoods in the DLC has changed dramatically. While Oyama, Okanagan Centre, and Carr's Landing continue to remain as active neighbourhoods within the municipality, much of the Winfield neighbourhood has been fragmented into others within its original ward boundaries (District of Lake Country, 2023), including Woodsdale, The Lakes, and the Town Centre (District of Lake Country, 2019). Areas once encompassed by the original ward boundaries of Okanagan Centre are also seeing new neighbourhoods being developed, such as Lakestone and McCoubrey Plateau on the southern end of the current Okanagan Centre neighbourhood (District of Lake Country, 2019).

Section 3 - Challenges Imposed by Lake Country's Changing Population:

3.1 - Increased Urbanization and Multi-unit Residences:

The population of the DLC has been rapidly growing (Barnes, 2024; District of Lake Country, 2019). According to Census data released by Statistics Canada, the estimated population of the municipality increased by 22.4% from 12,922 residents in 2016 to 15,817 residents in 2021 (District of Lake Country, 2019; Government of Canada, 2022), making the DLC one of the fastest growing municipalities in British Columbia (Barnes, 2024; District of Lake Country, 2019). A graph showing how much the population of the DLC has increased from 1996 to 2021 can be seen in **Figure 3** (Appendix A).

The population of the DLC is expected to continue rapidly growing going forward, with one estimate suggesting that it could be as high as 32,566 by 2046 (Barnes, 2024). To accommodate this increasing population while continuing to sustain its rural character, the DLC intends to increase urban development and contain its increasing population within its urban boundaries (District of Lake Country, 2019), specifically by encouraging the development of higher density multi-unit residences such as apartments, townhouses, duplexes, and triplexes (District of Lake Country, 2019). Such residences have, and are already being developed throughout neighbourhoods in which the DLC seeks to promote their development (District of Lake Country, 2019), including Woodsdale, The Lakes, and the Town Centre (District of Lake Country, 2019). Such changes to its population and housing pose several challenges for maintaining the social and economic sustainability and resilience of the DLC across several dimensions.

Multi-unit residences like apartments and duplexes often tend to have little to no access to a personal greenspace that residents can use for their needs and wants (Bolleter et al., 2024; Mees, 2007). As the DLC's population and the number of multi-unit residences increase, the number of residents living in those units will also increase. Consequently, the number of DLC residents that will have little to no access to a personal greenspace will also increase (Mees, 2007). Having access to such space is considered crucial for physical health (Pinault et al., 2021; Shahril et al., 2021), with the World Health Organization reporting that low physical activity due to poor access to a greenspace accounts for around 3.3% of global death (Shahril et al., 2021). In terms of how having easier access to greenspace promotes physical health, studies have reported that it can directly contribute to positive health benefits by helping to promote

circadian rhythms (Pinault et al., 2021). Access to greenspace can also increase exposure to microorganisms in the natural environment through inhalation, contact with the skin, and access to the digestive system (Rook, 2013). Subsequently, this increased exposure can lead to a stronger immune system (Rook, 2013), which can help reduce the risk of developing inflammatory and cardiovascular diseases (Rook, 2013). Having access to greenspace can also indirectly contribute to physical health by promoting physical activities (Browning et al., 2022; Lachowycz and Jones, 2013; Pinault et al., 2021), which can also help improve inflammatory and cardiovascular health as well as reduce the risk of Type 2 diabetes and obesity (Astell-Burt et al., 2013; Bikomeye et al., 2022; De la Fuente et al., 2021; Pinault et al., 2021). In addition to its importance for physical health, having easier access to greenspace is critical for mental health as well (Bolleter et al., 2024; Shahril et al., 2021). Studies have shown that it can help reduce health inequality and improve well-being by promoting pleasure and satisfaction (Houlden et al., 2018; Shahril et al., 2021). Having easier access to greenspace can also aid in the treatment of mental illnesses such as stress, anxiety, mood disorders, and depression (Barton and Rogerson, 2017; Heo et al., 2021; Nutsford et al., 2013; Pinault et al., 2021; Shahril et al., 2021). Additionally, the increased physical activity associated with easier access to greenspace can also help treat mental illnesses by promoting interaction with the natural environment (Lachowycz and Jones, 2013; Pinault et al., 2021; Shahril et al., 2021).

As a result of the positive effects having access to greenspace can provide for physical and mental health (De la Fuente et al., 2021; Pinault et al., 2021; Shahril et al., 2021), it is critical that such spaces are promoted and maintained in the DLC going forward as its population becomes larger and more urbanized. Having easy access to greenspace may not seem to be a problem for the DLC, given that the municipality is surrounded by and integrated with forests and agricultural lands. However, much of this greenspace is located on private and park land which does not provide the opportunity for other residents to personalize it. A study conducted by de Bell et al., (2020) found that residents who have access to a greenspace they can personalize such as a garden or private yard had higher psychological well-being and were more

likely to engage in physical activities compared to those who did not have access to such greenspaces (de Bell et al., 2020). As a result, increasing opportunities for residents to access greenspaces they can personalize and easily access may make greenspaces more effective at promoting physical and mental health. However, for residents living in multi-unit residences located in urban areas, access to those personal spaces is less accessible and may not be available for residents in higher-density buildings like apartments (Mees, 2007). As the urban population and the number of people living in multi-unit residences in the DLC increases going forward, it is crucial that more residents living in these areas and buildings have the opportunity to easily access a greenspace they can personalize and call their own.

3.2 - Increased Urbanization and Sense of Community:

In addition to increased urbanization resulting in decreased access to personal greenspaces through the development of multi-unit residences, it also tends to lead to a decreased sense of community amongst its residents. For example, a study conducted by Wilson et al., (1996) in Orange County, CA found that residents who lived in more populated and higher-density areas tended to have a lower overall sense of community (Wilson and Baldassare, 1996). The decreased sense of community in urban areas continues to be a problem today and in other communities (Douglas, 2022). A recent study that surveyed residents living in the Greater Vancouver Regional District also found that increased urbanization has a negative relationship to the sense of community amongst its residents (Douglas, 2022). Ironically, even though increased urbanization results in a larger number of residents within a single area, it has been found to segment social ties by discouraging interconnectedness (White and Guest, 2003), which may help explain why it leads to a decreased sense of community amongst residents. Although the DLC is not nearly as large as Greater Vancouver or Orange County and likely never will be, the increase in its population and urban development may still have consequences for the social sustainability and resilience of the community. Several surveys of residents have found that having a decreased sense of community can negatively impact general and mental health (Michalski et al., 2020; Park et al., 2023). In a particular example of this, a survey of residents living in the Milwaukee and Dane Counties in Wisconsin found that

those who reported a negative sense of community had significantly higher odds of also reporting depression, anxiety, and stress compared to those who reported a positive sense of community (Park et al., 2023). In contrast, other studies have found that residents who reported a strong sense of community were generally happier, worried less, and found themselves more capable of handling their lives (Mahmoudi Farahani, 2016).

A decreased sense of community and interconnectedness amongst residents can also have negative implications on physical health (Albanesi et al., 2007; Delerue Matos et al., 2021; United States Government, 2019). It has been found to lead to increased feelings of isolation and loneliness (Albanesi et al., 2007; United States Government, 2019), which in turn can lead to physical health impacts such as increased inflammation and a weaker immune system (United States Government, 2019). Increased social isolation caused by a decreased sense of community can also lead to negative physical health by decreasing the amount of fruits and vegetables people consume and decreasing motivation to engage in physical activities (Delerue Matos et al., 2021), the latter of which is considered one of the leading factors for obesity, chronic conditions, and non-communicable diseases such as cancer, heart attacks, and diabetes (Cunningham et al., 2020). As a result of the negative implications associated with increased urbanization and sense of community, along with the effects a decreased sense of community can have on the social sustainability and resilience of residents in urban areas, it is important that the DLC takes initiatives to promote community building and maintain a positive sense of community as its population grows and becomes more urbanized.

3.3 - Increased Urbanization, Agriculture, Food Security, and Climate Change:

Increasing urbanization in the DLC also poses challenges for maintaining the food security of its residents, as well as the agricultural character of the municipality, the latter of which the DLC seeks to preserve (District of Lake Country, 2019). Although the municipality is well-known for this characteristic (District of Lake Country, 2020, 2019), increasing urbanization to accommodate a large increase in

population may have impacts on this reputation, as it often results in decreased connections to agricultural lands and local food systems (Wang et al., 2022; Wieneke, 2017). Additionally, increased urbanization also tends to make residents living in urban areas more reliant on imported food (Dunphy, 2020; Wieneke, 2017). This reliance poses challenges to both the social and economic sustainability and resilience of DLC residents. For starters, grocery stores often tend to have lower quality food products and can also create “food deserts” where low-income individuals have limited access to healthy food (Wang et al., 2022). Consequently, both of these factors increase the risk of DLC residents living in urban areas to develop health complications (Wang et al., 2022). Increased reliance on imported food also makes urban residents more vulnerable to the impacts of higher food prices and food insecurity (Wieneke, 2017), the latter of which is expected to increase as a result of climate change (Schnitter and Berry, 2019; United Nations, n.d.). In turn, increased food insecurity induced by climate change can also contribute to higher food prices by increasing the probability of global crop shortages (Erdogan et al., 2024).

While the DLC has a large local agricultural sector, it may become a less reliable source for providing DLC residents with adequate food security and nutritional needs at a low cost, as climate change poses challenges that threaten the integrity and security of this industry. Because the DLC is located in a hot, semi-arid climate (Hewer and Gough, 2021; Rayne and Forest, 2016), the region is well suited for producing nutritional tree and vine fruits such as apples, cherries, and grapes (District of Lake Country, 2020; Hewer and Gough, 2021). However, it also makes the local agriculture dependent on irrigation since there is not enough precipitation throughout the growing season to produce adequate crop yields (District of Lake Country, 2020). As of 2019, 76% of all agricultural operations in the DLC use irrigation to produce their crops (District of Lake Country, 2020). With climate change expected to make the Okanagan hotter and drier going forward (Ishaq et al., 2023), the DLC is anticipating that annual snowpacks will become less reliable for replenishing water supplies, which will likely lead to less water in the summer (District of Lake Country, 2019). Additionally, due to climate change along with a rapidly growing population, the DLC is expecting irrigation and domestic water demand to increase (District of

Lake Country, 2019). The expected increase in the intensity and frequency of climate-induced events such as drought, heat waves and wildfires will also put additional demands on available water in the DLC and other parts of the Okanagan Valley (Iglesias et al., 2022; Kruger et al., 2023). Due to the challenges imposed by climate change, an increasing urbanized population, and increased uncertainty around local DLC agriculture being able to adequately provide enough healthy food for the community, more actions must be taken to ensure that the agricultural character of the DLC can continue to be preserved while also ensuring that DLC residents in urban areas have affordable and more secure access to healthy food.

3.4 - Aging Population:

In addition to its population becoming larger and increasingly more urbanized, the population of the DLC is also getting older. As of 2016, 30.9% of the residents living in the municipality were between the ages of 40-59 (District of Lake Country, 2019). Using population Census data from 2021 (Government of Canada, 2022), around 31% of its population is between the ages of 50-69. To visually demonstrate its aging population, **Figure 4** shows the population distribution graph of the DLC from 2016 (District of Lake Country, 2019), while **Figure 5** shows that same graph using 2021 population Census data (Government of Canada, 2022).

Due to its aging population, more easily accessible, age-friendly features will be needed in the DLC to meet the physical and mental health needs of its older residents (District of Lake Country, 2019). Such features will be critical to have for the social sustainability and resilience of older DLC residents going forward. Having easily accessible opportunities for physical activity is crucial, as it is considered one of the most important things seniors can do for their health (CDC, 2023a). Additionally, engaging in physical activities can also help seniors improve their quality of life by helping them live more independently, maintain muscle mass and bone density (CDC, 2023b; Taylor et al., 2004), lower blood pressure (Kazemian et al., 2020), and lower their risk of developing health issues such as heart disease (Ciumărnean et al., 2021). Having easily accessible opportunities for seniors to socialize and engage with

their communities is also crucial for their social sustainability and resilience, considering that loneliness and social isolation tend to increase with age (Fakoya et al., 2020). One estimate has suggested that up to 50% of individuals over age 60 are at risk of social isolation and one third will experience some degree of loneliness later in life (Fakoya et al., 2020). Engaging in social activities can help alleviate these issues while also improving cognitive performance and reducing their risk of developing depression, anxiety, and Alzhiemers disease (United States Government, 2019). Additionally, engaging in social activities that help alleviate social isolation and loneliness can also contribute positively to the physical health of seniors by strengthening their immune system and reducing the risk of heart disease, high blood pressure, obesity, and even death (United States Government, 2019).

It is clear that participating in physical and social events can positively contribute to the social sustainability and resilience of older populations in the DLC. However, the ability of older residents to access those opportunities but do not have them nearby will become more difficult. While the DLC does provide opportunities for physical and social activities through the Lake Country Seniors Activity Centre (District of Lake Country, 2024b), it is located in the Town Centre neighbourhood, making it easily accessible only for older residents living there. A map that shows the location of the Lake Country Seniors Activity Centre is shown in **Figure 6** (Appendix A).

Consequently, the location of the Lake Country Seniors Activity Centre makes older residents living in other DLC neighbourhoods more reliant on driving or taking transit to get there, which can be inconvenient and in the case of driving, can pose risks to their safety (Government of British Columbia, n.d.). Driving and mobility in general tend to become more difficult with age (Grimmer et al., 2019; Lin and Cui, 2021), with people who are 70 and older being more likely to crash than any other age group besides 25 and under (Government of British Columbia, n.d.). Because older drivers also tend to be more frail, they are also more likely to be seriously injured or die in a crash than any other group (Government of British Columbia, n.d.). The DLC does have a Seniors Bus program that comes directly to the homes of older residents (District of Lake Country, 2024b). However, taking the bus back and forth between the

Seniors Activity Centre and DLC residences could be quite time consuming for seniors depending on how many stops the bus has to make in between, which could make taking and waiting for it inconvenient for seniors. Consequently, not having nearby opportunities to engage in age-friendly physical and social activities could discourage seniors living outside the Town Centre from making attempts to be physically and socially active, which could decrease their physical and mental health. As a result, it is crucial that seniors in neighborhoods throughout the DLC have opportunities to easily access nearby social and physical activities that do not discriminate against their age. Despite the importance of this, however, the municipality has acknowledged that providing easily accessible, age-friendly features for its older residents may be a challenge for it to meet going forward (District of Lake Country, 2019). Solutions to this issue that can easily be integrated into DLC neighbourhoods will be needed in order to help mitigate this challenge that the municipality is facing.

3.5 - Summary of Lake Country's Population Challenges:

It is clear that the changes occurring to the population of the DLC pose several changes that the municipality will need to address going forward in order for it to maintain social and economic sustainability and resilience in the community. However, the DLC is also limited in the financial and physical resources it has available for addressing each of the highlighted challenges previously described. To help overcome these limits while also simultaneously meeting the challenges of its aging, growing, and increasingly urbanized population, we propose the development of more community gardens throughout other DLC neighbourhoods, especially given that more are needed throughout the community. Specifically, we propose developing them in city parks located in The Lakes, Okanagan Centre, and Town Centre neighbourhoods managed by the DLC. The proposed park locations, the benefits more community gardens could have for the DLC and its changing population, and why more are needed for addressing the DLC's population challenges are described and justified in the following section.

Section 4 - Additional Community Gardens as a Solution to Lake Country's Sustainability and Resilience Challenges:

4.1 - Definition, Perceived Purpose, and Why People Join Them:

Community gardens are open spaces that are managed and maintained by local individuals or households in which members can cultivate flowers and crops for their own use (Guitart et al., 2012; Iaquina and Drescher, 2010). They are generally considered to be a form of urban agriculture and are well known for contributing to the environmental, social, and economic sustainability and resilience of communities (Koay and Dillon, 2020; Tharrey et al., 2020). In particular, they are well known for helping promote physical activity, community building, and alleviate food insecurity (Firth et al., 2011; Guitart et al., 2012; Iaquina and Drescher, 2010; Wieneke, 2017). Community gardens have been established in a wide variety of settings, including public parks, private land, schools, and prisons (Gottlieb, 2022; Harnik, 2012; Middle et al., 2014). As of 2019, it was estimated that there were over 18,000 community gardens throughout the United States and Canada (Ramos et al., 2019). Members use them for a variety of reasons, but they are often developed during periods of national crisis, recession, natural catastrophes, and food security (Mees, 2007; Wang et al., 2022; Wieneke, 2017). They are also often created during times of higher food prices (Poulsen et al., 2014), which may especially be relevant for now given that food prices continue to remain high as a result of inflation (Reilly-Larke and Campbell, 2024). They particularly became popular after World War 1 and World War 2, where they were established to help lower-income and unemployed residents access food, leisure, and work opportunities (Davidson and Krause, n.d.; Keshavarz et al., 2016).

Regardless of why they are developed, evidence from academic literature suggests that the main purposes people see in community gardens contrast from the main reasons why people join them (Ramos et al., 2019). In a recent case study in Omaha, NE that surveyed 113 residents on what they felt the purposes of

a community garden were (Ramos et al., 2019), the top five most answered choices were “donating food for community needs” (88), “building a feeling of community” (87), “teaching gardening skills” (78), “beautifying the neighbourhood” (75), and “environmental benefits” (73) (Ramos et al., 2019). Using community gardens to grow food for personal use came in 6th (68), indicating that people largely see the purpose of community gardens for the social benefits they can provide (Ramos et al., 2019). A graph that shows the number of responses to each provided answer in the survey can be seen in **Figure 7** (Appendix A). In contrast to the findings from that study (Ramos et al., 2019), however, another that examined why people join community gardens produced quite different results (Bussell et al., 2017). In a recent case study that surveyed 120 community gardeners living in the Greater San Diego Area (Bussell et al., 2017), being able to grow their own food was the top reason why participants joined community gardens (84%), followed by improving their health (60%), and meeting new friends (39%) (Bussell et al., 2017). The results of this study appear to suggest that while many people still join community gardens for their social benefits, the economic benefits of being able to grow their own food continues to be the main motivation for why most participants join community gardens (Bussell et al., 2017).

4.2 - How Community Gardens Can Help Address the Challenges Posed by Lake Country’s Changing Population:

Community gardens can provide several benefits to the residents in the DLC by providing an opportunity for developing a sense of community, allowing seniors to engage in a manageable physical and social activity, allowing residents living in multi-unit residences to have access to a personal greenspace, and by making residents more resilient against food insecurity and higher food prices. In the case of how they can contribute to an increased sense of community, the case study that surveyed 120 community gardens in the Greater San Diego area found that the top benefit participants received from being in a community garden was that it helped them enjoy spending time outdoors (79%) (Bussell et al., 2017). However, the next top four responses of what benefits participants received from being in a community garden included

that it helped them relax (65%), build new friendships (61%), improved their overall health (~58-59%), and helped them build community connections (50%) (Bussell et al., 2017). A graph that shows the percentage of responses to each provided benefit of community gardening can be seen in **Figure 8** (Appendix A) (Bussell et al., 2017). These top five responses which were reported by a minimum of half of the 120 people surveyed indicate that community gardens are not just beneficial to mental health, but also for developing connections, engaging in social activities, and promoting a sense of community amongst participants (Bussell et al., 2017). Such benefits could not only help increase the sense of community amongst urban residences in the DLC, but they could also be beneficial for seniors in the DLC by providing a social activity that could help prevent social isolation and loneliness (Bussell et al., 2017; Haslam et al., 2019; Scott et al., 2020). In support of the latter, a study conducted by Scott et al., (2020) found that seniors who were part of a community had a significantly higher average value for increased social connectedness compared to seniors who were not part of a community garden (Scott et al., 2020).

In addition to providing opportunities for DLC seniors to develop social connections, community gardens can also help increase their physical and mental health in other ways. In terms of physical activity, community gardens provide an opportunity for seniors to exercise (Poulsen et al., 2014). In one study examining the benefits of community gardens in Baltimore MD (Poulsen et al., 2014), the physical exercise from community gardening was found to be particularly important amongst older residents (Poulsen et al., 2014), with one explicitly mentioning that community gardening is something that “you can do at your own pace, whatever your age” (Poulsen et al., 2014). Additionally, another study found that moderate to heavy gardening activity for at least 4 hours per week significantly reduced the risk of morbidity and mortality rates in middle-aged and older men with cardiovascular disease (Scott et al., 2020; Wannamethee et al., 2000). The physical activity associated with community gardening may also additional physical health benefits of seniors in the DLC, as gardening can help reduce the risk of developing osteoporosis, Type 2 diabetes and certain types of cancer (Scott et al., 2020). In terms of how

community gardens can improve the mental health of seniors aside from decreasing social isolation and loneliness (Haslam et al., 2019; Scott et al., 2020), community gardens have also been found to provide relaxation and restoration for seniors (Scott et al., 2020), even though the former is a general benefit for most community gardeners (Bussell et al., 2017). Additionally, community gardens have also been found to also help improve cognitive performance by providing seniors the opportunity to learn about new plants and gardening projects (Scott et al., 2020).

Community gardens can also provide several benefits to DLC residents living in multi-unit residences (Lee et al., 2022; Nguyen et al., 2020; Pilflod Larsson and Giritli Nygren, 2024). For starters, they can provide an opportunity for residents living in units with little to greenspace of their own to access a space they can personalize with the produce and/or flowers they decide to grow (Pilflod Larsson and Giritli Nygren, 2024). Additionally, a recent study conducted on community gardens in Sweden mentioned that over the past 15 years, the waitlists for a community garden plot have continued to grow (Pilflod Larsson and Giritli Nygren, 2024), especially from residents in cities seeking the opportunity to grow their own produce (Pilflod Larsson and Giritli Nygren, 2024). Although the study does not directly indicate whether these residents live in multi-unit residences (Pilflod Larsson and Giritli Nygren, 2024), it is likely that many of them have limited access to a personal greenspace considering they want to join community gardens for the purpose of growing their own food (Pilflod Larsson and Giritli Nygren, 2024). Community gardens can also help reduce and resolve stress and conflicts between residents who live in the same multi-unit building such as an apartment (Lee et al., 2022), which is particularly important given that increased population density tends to lead to increased incidences of conflict and stress between residents, especially in apartment buildings (Lee et al., 2022; Nguyen et al., 2020). The community building aspects of community gardens can contribute positively to the mental health of residents living in multi-unit buildings by decreasing social isolation and improving social relations (Bussell et al., 2017; Haslam et al., 2019; Nguyen et al., 2020; Scott et al., 2020). These benefits are particularly important for

residents living in apartments, as social isolation tends to be a problem in apartments and residents living in the same building tend to have poorer social relations with each other (Nguyen et al., 2020).

In addition to the social benefits that community gardens can provide to the aging and increasingly urbanized population of the DLC, they can also help make DLC residents more resilient against the impacts of food insecurity and higher food prices (Carney et al., 2012; Wieneke, 2017). As an example of how community gardens can increase resilience against food insecurity, a case study in rural Oregon that surveyed 42 families participating in a community garden found that the percentage of participants who mentioned that they were sometimes or frequently worried about running out of food before their next payment was 31.2% before the gardening season began (Carney et al., 2012). However, after the gardening season was over, the percentage of participants who still mentioned that they sometimes or frequently worried about running out of food before being paid was just 3.1% (Carney et al., 2012). A graph that shows this difference can be seen in **Figure 9** (Appendix A). As an example of how community gardens can increase resilience against higher food prices, a case study in Lincoln, NE compared the price of vegetables grown in 50 square feet of community garden space and found that participants saved on average \$497 (USD) compared to buying those same vegetables at the grocery store (Wieneke, 2017). While the savings from a community garden can vary depending on the amount of space available, the types of produce grown, as well as the weight of the produce (Wieneke, 2017), the results from this study suggest that community gardens can provide an effective means for residents to have affordable access to healthy produce (Wieneke, 2017). On top of the potential benefits community gardens can help for making DLC residents more resilient against food insecurity and higher food prices, the cost of being a community garden member is also affordable (Central Okanagan Community Gardens, 2023). Under the Central Okanagan Community Gardens organization, membership costs only \$40 per year plus a one-time \$5 shed key fee (Central Okanagan Community Gardens, 2023).

4.3 - The Importance of Location and Why More Community Gardens are Needed in Lake Country:

It is clear that community gardens can provide several benefits to the social and economic sustainability and resilience of the DLC by simultaneously addressing the challenges posed by the aging, growing, and increasingly urbanized population of the municipality. However, if they are to be as effective at addressing these challenges as possible, where the community gardens are placed must be taken into account (Blaine et al., 2010; Wesener et al., 2020). The proximity of a community garden to residences is critical for enabling participation (Wesener et al., 2020). In a recent literature review that examined factors that enable and prevent participation in community gardens (Wesener et al., 2020), it was found that spatial distance and a general lack of accessibility were barriers to enabling residents to participate in community gardens (Wesener et al., 2020). In particular, the review found that community gardens which were farther away from its participants were at a disadvantage compared to those that were closer to its participants (Wesener et al., 2020). Additionally, the review also found that having community gardens within walking distance of participants represent the ideal case for spatial distance and accessibility (Wesener et al., 2020). Another example of the importance of having community gardens close to residents can be seen in a case study conducted by Blaine et al., (2010) on 124 surveyed community gardeners in Cleveland, OH (Blaine et al., 2010). Out of all the surveyed participants in the study, it was found that 53% of them travel to their community garden by walking, 43% travel by driving, and two-thirds of those surveyed can get to their garden in 10 minutes or less regardless of transportation method (Blaine et al., 2010). The exact results of this survey can be seen in **Table 1** (Appendix A).

The results of this survey along with the literature review that examined the enablers and barriers to community garden participation suggest two important factors that must be taken into account when determining where a community garden should be developed (Blaine et al., 2010; Wesener et al., 2020). The first is that the closer a community garden is to nearby residents, the more likely they will be willing

to participate (Blaine et al., 2010; Wesener et al., 2020). The second is that while many community gardeners appear to be alright with driving, having the gardens within a short walking distance represents the ideal case and is more important for encouraging participation (Blaine et al., 2010; Wesener et al., 2020). Having them within a short walking distance of residence will especially be important to encourage participation among seniors in the DLC given the challenges seniors face with mobility and driving as they age (Grimmer et al., 2019; Lin and Cui, 2021).

Currently in the DLC however, community gardens are lacking and more will be needed if they are going to be used to help address the challenges posed by the aging, growing, and increasingly urbanized population of the municipality. As of this time, there is only one functioning community garden in the DLC, which is located at 11187 Bottom Wood Lake Road in the Woodsdale neighbourhood (Central Okanagan Community Gardens, 2024a). A visual of what this garden looks like can be seen in **Figure 10** (Appendix A), and a map that shows the location of this community garden relative to the rest of the DLC can be seen in **Figure 11** (Appendix A). The location of this community garden makes it easily accessible to DLC residents living in the Woodsdale neighbourhood. However, for DLC residents living in other neighbourhoods throughout the DLC, accessing this garden either requires walking for a long period of time, taking public transit, or driving. As a result, having only one community available in the DLC discriminates against residents living in neighbourhoods outside of Woodsdale from participation, as getting to the garden for these residents is more time consuming. For residents who may decide to drive to the garden, frequently traveling there and back also represents an unnecessary fuel cost and unnecessary greenhouse gas emissions being emitted into the air. In addition to its lack of accessibility for most DLC residents outside of Woodsdale, the Winfield Community Garden also only has 40 plots to rent annually (Central Okanagan Community Gardens, 2024a). The number of plots available for participants to rent is already small compared to the 15,817 residents living in the DLC as of 2021 (Government of Canada, 2022), nevermind if the population of the DLC does increase to the estimated number of 32,566 by 2046 (Barnes, 2024). Additionally, as the general population of the DLC and the number of residents living in

multi-unit residences increases, it is likely that the demand for additional community garden plots will also increase based on increasing demand for community garden plots in other cities (Pifford Larsson and Giritli Nygren, 2024).

With these factors in mind, this report proposes the development of three additional community gardens in neighbourhoods outside of Woodsdale in order to help make them more accessible and available to residents throughout the DLC. The first proposed location is Apex Playground and Park in The Lakes neighbourhood (13165 Apex Dr) (District of Lake Country, 2018b). The second proposed location is Swalwell Park in the Town Centre neighbourhood (10050 Bottom Wood Lake Rd) (District of Lake Country, 2018c). Finally, the third proposed location is Okanagan Centre Park (11255 Okanagan Centre Rd W) adjacent to the Lake Country Museum and Archives building (District of Lake Country, 2018d). For this project to move forward, these proposed locations must be justified along with why additional community gardens should be placed in DLC parks in general. Additionally, the progression of this project also requires identifying the key actors, laws and regulations that must be considered, along with how developing additional community gardens in parks can help support current DLC policies. These important elements that will be required to explain and justify for this project to move forward are explained in the following section. A diagram that shows the location and picture of each proposed park relative to the community garden in Woodsdale can be seen in **Figure 12** (Appendix A).

Section 5 - Key Actors, Laws and Regulations, and Resources Needed:

5.1: Key Actors:

In order for this project to move forward, it is critical to identify the key actors who will need to be involved in the development of additional community gardens throughout the DLC. In other municipalities in British Columbia, such as the City of Victoria, developing a community garden on city-owned land requires the approval of its city council (City of Victoria, 2020). Since Apex, Swalwell,

and Okanagan Centre Park are all owned and managed by the DLC, developing community gardens in those parks will require the approval of its City Council, making it the most important key actor in moving this project forward. Additionally, the involvement of local governments in the development and support of community gardens is one of most often-mentioned enabling factors for encouraging residents to participate in community gardens (Wesener et al., 2020). The DLC city council will also continue to be relevant after the community gardens are developed in order for them to continue being productive. As an example, community gardens in the City of Victoria require city approval for garden materials that are delivered to them using vehicles, such as soil, wood chips, and garden containers (City of Victoria, 2020). The parks and facilities staff working for the DLC will also be important key actors for this project to move forward, as they often collaborate with interested community members and groups in the development of community gardens (Burkholder et al., 2007). Additionally, DLC city planners are also key actors that will need to be involved for this project to move forward, as they can help determine how large the community gardens should be, how many plots should be added into each proposed park location, and help determine the most optimal location within each park for the community garden plots to be situated.

Outside of DLC staff, other important key actors for moving this project forward are supporting organizations who could help fund, manage, and support the additional community gardens being proposed will also be crucial key actors for this project to move forward. In consultation with DLC Parks and Facilities staff, it was found that the DLC does not have the financial or physical resources to develop and manage additional community gardens on its own. However, there are examples throughout already established community gardens of groups who could be identified as key actors for funding, support, and management. Currently, the Winfield Community Garden in Woodsdale is managed by the Central Okanagan Community Gardens organization (Central Okanagan Community Gardens, 2024a). This organization collaborates with communities within the Regional District of Central Okanagan to help develop, manage, and support community gardens (Central Okanagan Community Gardens, 2024b).

Specifically, they provide support by handling waitlists for garden plots and by providing bylaws that community gardeners must follow if they want to participate (Central Okanagan Community Gardens, 2024b, 2023). Due to the significant organizational and management role that Central Okanagan Community Gardens has in existing community gardens throughout the RDCO, its involvement in the additional community gardens being proposed in the DLC could help its city staff save on its financial and physical resources. As a result, Central Okanagan Community Gardens will be a key actor to have involved in order to move this project forward.

Sponsorships from organizations such as local businesses, community clubs, and provincial organizations are also key actors in helping to provide funding and support for this project. As an example of this, the Winfield Community Garden located in Woodsdale is currently supported by the Lake Country Rotary Club, which seeks to focus on projects that contribute positively to the community (Rotary International, n.d.). Similar community-based clubs such as the Lake Country Lions Club could also be interested in assisting with funding and supporting the additional community gardens being proposed, as they also have a similar mission of contributing positively to the community (Lions Club, n.d.). Given the positive benefits additional community gardens could have to community building and the challenges posed by the DLC's changing population, local community-oriented clubs such as Lake Country Rotary and the Lake Country Lions Clubs will be key actors for providing funding, support, and management for this proposed project. Sponsors do not necessarily have to be solely community-oriented clubs either. For example, the community garden in the City of Armstrong not only receives support from its city staff, but also from a variety of organizations. Some of these organizations are local, including the local HomeHardware and Building Centre, Associate Ready Mix (A division of Okanagan Aggregates Ltd), and North Okanagan Fencing. Some organizations that support it are also at the provincial level, including BC Hydro and the Union of BC Municipalities. A picture that shows the current sponsors and supporters of the Armstrong Community Garden can be seen in **Figure 13** (Appendix A). Given that the majority of the sponsors and

supporting businesses are more local in nature, local businesses in and near the DLC that relate to community gardening will also be key actors for this project to be developed and maintained.

Lastly, another important group of key actors for developing and maintaining these community gardens are interested residents living in The Lakes, Town Centre, and Okanagan Centre neighbourhoods. Since community gardens are maintained by their participants (Guitart et al., 2012; Iaquina and Drescher, 2010), it is crucial that there are enough people living near the additional community gardens being proposed who are both interested in being part of the garden and are willing to commit to its long-term management. As a result, a sufficient number of residents in The Lakes, Town Centre, and Okanagan Centre neighbourhoods, respectively, will also be key actors for helping to develop and maintain the additional community gardens being proposed.

5.2: Key Laws and Regulations:

Because city parks are owned and managed at the municipal level, the key laws and regulations for developing additional community gardens are largely controlled and influenced by the DLC. One important law and regulation that must be considered is the zoning bylaws that regulate where community gardens are allowed to be developed (Barbolet, 2009). Although agricultural zoning under the ALR is provincially regulated (M. of A. and F. Government of British Columbia, 2024), the names and details of other zones throughout municipalities in British Columbia are determined at the local government level (Government of British Columbia, 2024). However, this is not a problem for the DLC, as community gardens are currently allowed on all types of zoning found within the municipality (District of Lake Country, 2024c). Another important regulation concerning the municipal level is the establishment of leases that are mutually agreed upon by the DLC and community garden participants (Barbolet, 2009). These leases are a crucial part for maintaining the security of community gardens, given that many tend to end due to lease expirations (Barbolet, 2009). Additionally, because community gardens take a considerable amount of time to develop, it is important that their leases have long-term tenure for

guaranteeing their security (Barbolet, 2009). Ideally, it is recommended that community gardens have a rental period of at least 10 years or more on the land they are occupying (Barbolet, 2009). A lease must also be developed in order to determine the rental amount a community garden must pay to use DLC park land, to define the roles of the DLC and community garden members in its management, as well as to set arrangements for alterations by gardeners, damage, and grants (Barbolet, 2009).

Another important regulation that will need to be considered is how the community gardens will be insured. In the DLC, it is required that all user groups in its parks have a minimum of \$2 million general liability insurance as stated by its Parks, Public Spaces and Recreation Facilities Regulations and Fees Bylaw (District of Lake Country, 2018e). Additionally, the bylaw also states in Schedule E that the insurance policy must list the DLC as an “Additional Insured” but explicitly not as an “Additional Named Insured” (District of Lake Country, 2018e). Under the Blanket Insurance Policy of the DLC (District of Lake Country, 2005), this insurance can be either private or covered under the DLC’s All Sport Policy (District of Lake Country, 2005). Regardless of which body the gardens are insured under, Schedule E in the Parks, Public Spaces, and Recreation Facilities Regulations and Fees bylaw states that the insurer must be authorized by law to do business in British Columbia and must guarantee that they will not change or cancel the insurance policy unless the DLC has been given 30 days notice (District of Lake Country, 2018e). Since insurance can either be under the DLC or private, the municipality and community gardeners will need to consult with each other in order to determine whether the DLC has the capacity or is the best option to ensure additional community gardens (District of Lake Country, 2005), or whether community gardeners will need to or be better off seeking private insurance.

It will also be important to establish bylaws that dictate what rules community gardeners must follow if they are going to participate (Barbolet, 2009). Given that these gardens will be on DLC park land, it is important that both community gardeners and the municipality establish mandatory guidelines such as when the gardens have to be prepared for winter, what plants are not allowed to be grown, and how gardeners must deal with garden waste. Given that the community garden in Woodsdale is currently

managed under Central Okanagan Community Gardens (Central Okanagan Community Gardens, 2024a), it is likely that their bylaws will be used to dictate what rules community gardeners must follow (Central Okanagan Community Gardens, 2023), so long as they decide to take the additional community gardens proposed in this report under their management. The DLC may also want to consult with Central Okanagan Community Gardens regarding whether they approve of their bylaws, given that the additional community gardens proposed will be located on park land owned by the municipality.

5.3 - Cost, Size, and Resources Needed:

One of the most critical pieces of information to have in order for any proposal to move forward in an estimate of how much it will cost to implement it. Having such information can help the DLC city council and city planners determine the minimum budget needed from the municipality and other supporting organizations for the development of community gardens in the Apex, Swalwell, and Okanagan Centre Parks (Ganesan, 2018). Estimates from the University of Minnesota and the City of Vancouver suggest that the cost of implementing a single community garden ranges from around \$5,000 - \$10,500 CAD (Burkholder et al., 2007; University of Minnesota, 2022). However, there are several factors that can affect the actual cost of developing a community garden (Burkholder et al., 2007; University of Minnesota, 2022). These factors include how large the garden will be (University of Minnesota, 2022), what materials and services the community garden would need, and how those materials and services are obtained (Burkholder et al., 2007). There are also additional costs associated with acquiring insurance as well as renting the land, of which the former can be a significantly large cost (University of Minnesota, 2022). There are examples, however, of community gardens that have been built on low budgets (Burkholder et al., 2007). One of these is the Tea Swamp Community Garden in the City of Vancouver, which was developed on a budget of only \$500 CAD (Burkholder et al., 2007).

There is also the matter of how large the community garden plots and area should be. While the exact size of the area for a community garden will be dependent on the amount of space available, estimates from

Washington State University and the University of Minnesota suggest that the area of a community garden can range from 30-600 square feet (University of Minnesota, 2022; Washington State University, 2014). Estimates from Washington State University specifically suggest that a community garden between 30-100 square feet is a good beginner size, an area between 100-300 square feet is sufficient for most households, and an area of 300-600 feet is largely for serious gardeners wanting to frequently use their produce for cooking and winter storage (Washington State University, 2014). Given the variations in the size and subsequent cost of developing larger community gardens, it is generally recommended to start with a smaller one first to initially gauge how satisfied participants are with its size (Washington State University, 2014). In terms of how large each community garden plot should be, dimensions that are generally recommended for community garden plots are a width of no more than 4 feet, a height of at least 12 inches, and a length between 8-12 feet (Washington State University, 2014). Additionally, it is recommended that the dimensions of paths between the plots are at least 2 feet in width, with at least one path being 3-4 feet in length in order to provide room for necessary equipment (Washington State University, 2014). It is also important to have a general idea of the resources that will be needed for a community garden to be developed and maintained. Aside from needing available land (University of Minnesota, 2022), community gardens also need adequate sunlight, water, electricity, soil, mulch, washrooms, equipment for gardeners to use, as well as a storage space for that equipment (Washington State University, 2014; Wesener et al., 2020). It is also recommended that some form of fencing is developed around the garden in order to help prevent damage caused by animals and vandalism (Washington State University, 2014; Wesener et al., 2020).

Section 6 - Proposed Locations and Justifications:

As previously mentioned, the locations this report proposes for developing additional community gardens in the DLC are Apex Playground and Park, Swalwell Park, and Okanagan Centre Park. In order for this project to move forward, it is critical that placing community gardens in these parks are appropriately

justified. Before these specific locations are justified, however, we have explained why it is beneficial to develop community gardens in city parks, generally.

6.1: Why Place Community Gardens in Parks?

Placing community gardens in city parks can provide several benefits for their long-term security and for improving their aesthetics and productivity. By developing the community gardens on land that is owned and managed by the DLC, the municipality would need to be involved in their development, meaning more formal planning and approval would be required (Harnik, 2012; Middle et al., 2014). While this may seem like a barrier to developing additional community gardens in the DLC, the involvement of the city in their development would subsequently provide the community gardens with more associated protections (Harnik, 2012; Middle et al., 2014). As a result, developing community gardens in parks would give them a more secure, spatial location and help guarantee their long-term security (Harnik, 2012; Middle et al., 2014), an element that is considered crucial for enabling participation (Wesener et al., 2020). In addition to helping provide long-term security, most city parks also tend to have underused or unused space that could be converted into community gardens (Harnik, 2012). Depending on the size of each plot in the community garden, an area the size of a tennis court could hold up to as many as 75 garden plots available for participants to use (Harnik, 2012). As a result of these factors, developing additional community gardens throughout DLC managed parks could help increase the productivity of the park while simultaneously maintaining it as an aesthetically pleasing greenspace (Harnik, 2012). In consultation with DLC Parks and Facilities staff, developing community gardens in DLC parks could also help reduce their development costs. Most city parks also tend to have fencing and nearby access to electricity and water resources (Barbolet, 2009), which are considered crucial to have reliably available for enabling participation (Wesener et al., 2020). Additionally, city parks also tend to have access to other facilities including washrooms and playgrounds (Barbolet, 2009).

In addition to improvements in long-term security, park aesthetics and productivity, developing additional community gardens in DLC parks could also help encourage DLC residents to become more involved in

city planning as well as alleviate concerns regarding the quality of the garden plots. Since they are managed by local residents (Guitart et al., 2012; Iaquina and Drescher, 2010; Middle et al., 2014), they could potentially increase citizen involvement in the planning and governance of the park (Middle et al., 2014). Subsequently, having citizens involved with respect to the planning and governance of city parks with community gardens could also help ensure their long-term security, given that the survival of community gardens is also dependent on the commitment and actions of its participants (Middle et al., 2014). Developing community gardens in DLC parks could also help alleviate concerns . In other cities, it is common for community gardens to be developed on vacant lots for greenspace conversion strategies . While this is beneficial for the increasing productivity and the environmental health of these areas, it has consequently led to participants raising concerns regarding soil quality and the potential for it to become contaminated with pollutants (Wesener et al., 2020). By developing community gardens in maintained greenspaces such as DLC parks, these concerns could potentially be alleviated (Wesener et al., 2020). Additionally, a case study on city parks in Helsinki also found city parks to be effective at retaining metals and nutrients in their soils (Setälä et al., 2017). As a result, developing community gardens in DLC parks could potentially lead to increased plant productivity and crop yields. Developing community gardens in DLC parks could also promote environmental benefits by providing additional ecosystem services (Cabral et al., 2017; Gittleman et al., 2017; Middle et al., 2014; Wang et al., 2022). Some examples of these services include heat mitigation, flood mitigation through increased interception, storage and infiltration, as well as increased habitat provision biodiversity for birds and insects (Cabral et al., 2017; Gittleman et al., 2017; Middle et al., 2014; Wang et al., 2022).

6.2 - Why Develop a Community Garden in Apex Playground and Park?

Developing a community garden in Apex Playground and Park could particularly be beneficial to residents living in The Lakes neighbourhood, given its population density and distance from the community garden in Woodsdale (**Figure 12**). A picture of this park is shown in **Figure 14** (Appendix A),

while a map of the park showing its location relative to the majority of The Lakes neighbourhood can be seen in **Figure 15** (Appendix A). As seen in **Figure 14**, Apex Park is quite flat and has a sufficient amount of area that can receive adequate sunlight throughout the day for flowers and produce in a community garden there to grow. Currently, Apex Park has a playground, picnic area, and a basketball court available for nearby residents to use (District of Lake Country, 2018b). As seen in **Figure 15**, the park is quite small, meaning that some of these services may have to be removed for a community garden to be developed. However, if this ends up being the case, residents in The Lakes could still easily access the current services Apex park provides in other nearby parks (District of Lake Country, 2018b). For example, Shoreline Park located east of Apex Park, also has a playground and basketball court that residents living in the neighbourhood could easily access (District of Lake Country, 2018f). Tretheway Park located south of Apex Park could also provide some of the same services as Apex Park, as it has a picnic area that nearby residents could use (District of Lake Country, 2018g). In addition to the services that Shoreline and Tretheway Park can provide in the place of Apex Park, The Lakes is also surrounded by the Spion Kop trail network that residents in the area could use for hiking and general leisure. As a result of these factors, a community garden could be developed in Apex Park without taking away the ability of nearby residents to easily access the services it currently provides.

Placing a community garden in Apex Park would also make it easily accessible within walking and quick driving distance to several residents living in The Lakes. As seen in **Figure 16** (Appendix A), a large number of residents living in The Lakes are able to walk to the park in 15 minutes or less. Additionally, it is likely that all of the residents living in The Lakes can drive there in that same time period. The Lakes also contains several multi-unit residences, including Winterra at the Lakes (2532 Shoreline Dr.) and Sitara On The Pond adjacent to Tretheway Park. Although residents living in these buildings cannot walk to the garden within 15 minutes, they could easily drive there or catch a ride from another nearby resident who is participating in the garden. Additionally, the close proximity of a community garden in Apex Park would still give these residents an opportunity to access a greenspace more easily relative to the community garden in Woodsdale. In addition to all of these factors, Apex Park is also adjacent to several

water mains and contains a water fitting nearby (District of Lake Country, 2024a). As a result, accessing water for a community garden in this location would be less difficult and may potentially help reduce initial development costs. A map that shows the location of these water mains relative to Apex Park can be seen in **Figure 17** (Appendix A).

6.3 - Why Develop a Community Garden in Swalwell Park?

Although it is much closer to the community garden in Woodsdale relative to the other proposed locations (**Figure 12**), developing a community garden in Swalwell Park could make the activity more accessible to residents living in the Town Centre neighbourhood while still providing its current services (District of Lake Country, 2018c). A picture of this park is shown in **Figure 18** (Appendix A), while a map that shows its location relative to the rest of the Town Centre can be seen in **Figure 19** (Appendix A). As seen in **Figure 18**, Swalwell Park is also flat and has a large area that can receive adequate sunlight throughout the day. The park is also quite large in size, meaning that a community garden could be developed there without having to potentially remove the current services it provides (District of Lake Country, 2018c). In addition to these features, a large number of residents and businesses in the Town Centre neighbourhood can walk to the park within a 12-minute period, which can be seen in **Figure 20** (Appendix A). As seen in **Figure 19** and **Figure 20**, there are also several mobile homes south of Beaver Lake Road whose residents could either walk a little longer than 12 minutes or quickly drive to Swalwell Park. As seen in **Figure 18**, there is also a new apartment building being developed adjacent to Swalwell Park. Subsequently, developing a community garden in Swalwell Park would allow residents living in this building to quickly walk to and have the opportunity to access a personal greenspace in comparison to the community garden in Woodsdale.

In addition to it being more accessible to residents living in the Town Centre, Swalwell Park is also across the street from H.S. Grenda Middle School (10168 Korschuh Rd) and within a 12 minute walking distance from George Elliot Secondary School (12041 Bottom Wood Lake Rd). As a result of its close

proximity to these schools, a community garden in Swalwell Park could potentially be integrated into their education programs, potentially bringing more younger participants to the garden and encouraging intergenerational interactions. Swalwell Park also has other existing services that could be beneficial to community gardeners and help reduce initial development costs (District of Lake Country, 2018c). These services include available public washrooms, adequate parking space, as well as a water park that confirms Swalwell park has guaranteed access to water (District of Lake Country, 2018c). Like Apex Park, Swalwell Park is also surrounded by several water mains, a map of which can be seen in **Figure 21** (Appendix A).

6.4 - Why Develop a Community Garden in Okanagan Centre Park?

Although the Okanagan Centre neighbourhood is not as densely populated compared to The Lakes and the Town Centre, developing a community garden in Okanagan Centre Park could still be easily accessed within a short walking and driving distance by several residents in the area, especially compared to having to drive across the municipality to the community garden in Woodsdale. A picture of this park can be seen in **Figure 22** (Appendix A), while a map that shows its location relative to the residences surrounding the park can be seen in **Figure 23** (Appendix A). As seen in **Figure 22**, Okanagan Centre Park is also flat, has a large area available for a community garden to be developed, as well as little shade throughout the park, resulting in the park receiving lots sunlight throughout the day. As seen in **Figure 23**, many of the residences surrounding the park have smaller and highly shaded properties. As a result, some of these residents may not have enough sunlight and/or space to grow their own produce depending on what else they use their yards for. Developing a community garden in Okanagan Centre Park would allow these residents the opportunity to grow their own produce in an area where adequate space and sunlight is available, while also allowing them to be able to quickly walk to the garden for managing and cultivating that produce. Other residents not living directly adjacent to Okanagan Centre Park can also easily access it within a 15 minute walking period, a map of which can be seen in **Figure 24** (Appendix A).

Even if a larger number of residents living in Okanagan Centre in the neighbourhood who have to drive in order to get to a community garden in the park, it would likely still amount to less time and fuel spent for participants driving back and forth between their residences and the garden, especially compared to having to drive to the other side of the municipality in order to access the community garden in Woodsdale. In addition to it being more accessible to residents living in the Okanagan Centre neighbourhood, a community garden in Okanagan Centre Park may also help bring in additional business to and involvement from the adjacent Lake Country Museum and Archives. Like Swalwell Park, Okanagan Centre Park also has other existing services that could cater to the needs of community gardeners, including parking space available for participants who decide to drive, as well as public washrooms available if needed (District of Lake Country, 2018d). The eastern side of Okanagan Centre Park is also adjacent to a water main, which could make it easier to access water for the community garden and subsequently help reduce the development costs of making water available. A map that shows the location of this water main relative to Okanagan Centre park can be seen in **Figure 25** (Appendix A) (District of Lake Country, 2024a).

6.5 - How Placing Community Gardens in Parks Could Help Support DLC Policies:

The development of additional community gardens in DLC parks could also help the municipality meet several of its policy goals and objectives outlined in its Official Community Plan (OCP) (District of Lake Country, 2019). A set of policy goals that developing community gardens in DLC parks could help meet the majority of are those outlined in Section 15.11 concerning Parks and Recreation (District of Lake Country, 2019). These goals are to “foster active living through physical recreation,” “increase inclusion and access to recreation for populations that face constraints to participation,” “help people connect to nature through recreation,” “ensure the provision of supportive physical and social environments that encourage participation in recreation and build strong, caring communities,” and “ensure the continued growth and sustainability of the recreation field” (District of Lake Country, 2019). As seen in the case

study of surveyed community gardeners in the Greater San Diego Area (Bussell et al., 2017), many reported that community gardening helped them enjoy spending time outdoors (Bussell et al., 2017), meaning that community gardens could be used to “help people connect to nature through recreation” (District of Lake Country, 2019). As seen on how they can provide senior populations the opportunity to engage in a manageable physical activity (Poulsen et al., 2014), community gardens could also help “foster active living through physical recreation” (District of Lake Country, 2019). Having more community gardens throughout the DLC would also help the municipality meet the goal of using parks to “increase inclusion and access to recreation for populations that face constraints to participation” (District of Lake Country, 2019). Finally, the long-term security that would potentially come from developing community gardens in DLC parks, along with the benefits community gardens have been found to have for physical activity and community building (Bussell et al., 2017; Poulsen et al., 2014), could “ensure the provision of supportive physical and social environments that encourage participation in recreation and build strong, caring communities” (District of Lake Country, 2019). Despite the benefits that community gardens could have to helping the DLC achieve these goals, however, promoting the development of community gardens is not currently listed as an objective or policy for meeting those goals (District of Lake Country, 2019).

In addition to helping meet the DLC’s goals for its parks and recreation, the development of additional community gardens could help the municipality meet its goal in Section 14.1 of its OCP, concerning the existing conditions of its agricultural sector (District of Lake Country, 2019). The goal in which the municipality has outlined for this section is to “protect and enhance the agricultural sector within the District of Lake Country” (District of Lake Country, 2019). An objective that the DLC has set out for achieving this goal is to “enhance local food production opportunities and support the purchase of locally produced agricultural products” (District of Lake Country, 2019), which specifically contains a policy that seeks to “encourage community gardens and identify suitable properties for a garden to be planted” (District of Lake Country, 2019). Given the benefits community gardens provide for local food production

and decreasing food insecurity (Carney et al., 2012), additional community gardens throughout the DLC could help enhance the agricultural sector of the municipality (District of Lake Country, 2019). Additionally, the previously discussed justifications for why additional community gardens should be developed in the locations proposed in this report, along with why they should generally be developed in parks, could assist the DLC in identifying suitable properties for additional community gardens to be developed (District of Lake Country, 2019).

Specifically developing a community garden in Okanagan Centre Park could also help the DLC achieve some of its policy goals in Section 5.5 of the OCP, related to the future development of the Okanagan Centre neighbourhood (District of Lake Country, 2019). The outlined goal for this neighbourhood is to “maintain Okanagan Centre as a rural residential community with natural and visual amenities” (District of Lake Country, 2019). One of the objectives the DLC has outlined for achieving this goal is to “ensure that park and public lands within Okanagan Centre are maintained and enhanced” (District of Lake Country, 2019). While this OCP does not explicitly include using community gardens as a policy for achieving this objective, the development of a community garden in Okanagan Centre Park and its management by local participants could help ensure that the park is adequately maintained and enhanced without the DLC having to use as much of their financial and physical resources to do so (District of Lake Country, 2019; Guitart et al., 2012; Iaquinta and Drescher, 2010; Middle et al., 2014).

Although it does not relate to the proposed locations for additional community gardens throughout the DLC, developing more community gardens could help the municipality partially achieve its policy goals in Section 5.4 of the OCP, related to the future development of the Woodsdale neighbourhood (District of Lake Country, 2019). The goal the municipality has outlined in this section is to “develop a mixed use and walkable Woodsdale neighbourhood with higher densities to preserve the surrounding rural and agricultural areas” (District of Lake Country, 2019). Specifically, one of the objectives for achieving this goal is to “establish Woodsdale as a mixed-use growth area that encourages urban agriculture” (District of Lake Country, 2019), which also has a specific policy to “consider urban agriculture as a form of infill

development on small and/or underutilized parcels (i.e. community gardens)” (District of Lake Country, 2019). Although the locations for additional community gardens proposed in this report are not located within Woodsdale, establishing them all the same could be used to help encourage DLC residents to participate in urban agriculture (District of Lake Country, 2019). Additionally, developing additional community gardens in DLC parks could help the DLC use urban agriculture to develop underutilized lands (District of Lake Country, 2019), given that as previously mentioned, most city parks tend to have unused or underused space available (Harnik, 2012).

Section 7 - Additional Benefits of More Community Gardens for Sustainability and Resilience:

7.1. Community Building and Social Benefits

Introduction to Community Cohesion

Community gardens act as a central hub for fostering strong community bonds. They provide a space where individuals from different backgrounds can come together, promoting diversity and inclusiveness. These gardens encourage community involvement and a shared sense of responsibility.

Facilitating Social Interaction

By bringing together neighbors in a collaborative environment, community gardens enhance social networks and encourage new friendships. The informal setting allows people to interact without the pressures often found in more structured community settings.

Cultural Exchange and Education

Gardens are a stage for the exchange of cultural knowledge, particularly through diverse planting techniques and crops that reflect the varied ethnic backgrounds of the participants. This exchange enriches community members' understanding and appreciation of different cultures.

Community Empowerment and Transformation

Participation in community gardening can lead to empowered communities. As individuals come together to make decisions about garden management and produce distribution, they develop leadership and organizational skills. This empowerment can extend to broader community action, influencing local policies and urban development.

7.2 - Health and Wellness Improvements:

Physical Health Benefits

Gardening is a physical activity that can improve cardiovascular health, muscle strength, and flexibility. Regular participation in gardening activities can lead to improved physical health outcomes, including weight management and reduced risk of obesity.

Mental Health and Wellbeing

The therapeutic nature of gardening helps reduce stress, anxiety, and depression. Being in a green space has been shown to lower blood pressure and improve mental health, providing a calming and restorative environment away from urban stressors.

Nutritional Benefits

Access to fresh fruits and vegetables can significantly improve dietary habits. Gardening encourages a diet rich in fresh produce, which is crucial for preventing chronic diseases and promoting health, especially in urban areas where access to fresh produce can be limited.

7.3 - Environmental Impact

Biodiversity and Ecosystem Services

Community gardens increase local biodiversity by providing habitats for various species. They contribute to ecosystem services such as pollination and pest control by fostering a variety of plants and wildlife.

Climate Change Mitigation

Through the process of photosynthesis, plants in community gardens help sequester carbon dioxide, mitigating climate change. Gardens also reduce the urban heat island effect by replacing heat-absorbing surfaces like concrete with vegetation.

Sustainable Urban Management

Gardens use sustainable practices such as rainwater harvesting and composting, reducing reliance on limited natural resources and decreasing urban waste. This promotes a more sustainable management of urban environments.

7.4 - Educational Opportunities

Hands-on Learning Experiences

Community gardens serve as living laboratories for individuals of all ages, offering hands-on learning about botany, ecology, and environmental sustainability. This practical experience can reinforce scientific principles and environmental awareness.

Workshops and Training

Many gardens host educational workshops on topics like composting, plant care, and sustainable gardening practices. These programs provide valuable skills to community members, enhancing their ability to engage in sustainable behaviors at home and in the community.

Youth Engagement and Education

Gardens are particularly beneficial for youth education. They provide a platform for experiential learning and a safe space for youths to engage with their community. Gardening can also teach responsibility and the importance of hard work and patience.

7.5 - Economic Advantages:

Reducing Grocery Bills

By producing their own food, community gardeners can significantly reduce their grocery bills. This is particularly beneficial for low-income families, providing both financial relief and access to fresh produce.

Local Economic Development

Community gardens can stimulate local economies. Markets for selling surplus produce can become a source of income for local residents and attract visitors from outside the community, increasing local business visibility and profitability.

Entrepreneurial Opportunities

The skills and knowledge gained from community gardening can lead to entrepreneurial opportunities in gardening and related areas, such as food preservation, herbal products, or organic produce sales, further supporting the local economy.

Section 8 - Examples of Similar Solutions from Other Communities:

8.1 - Stanley Park Community Garden, Vancouver

The Stanley Park Community Garden, set against the backdrop of Vancouver's iconic Stanley Park and the bustling West End neighborhood, stands as a vivid symbol of community effort and passion for green spaces. Initiated through a collaboration between the Stanley Park Ecology Society, the Vancouver Parks Board, and the West End Residents Association in 2003, this garden diverges from traditional community gardens by focusing on flowering plants and edible flowers, a decision made to coexist with the park's wildlife including squirrels, skunks, and coyotes.

This unique garden thrives on the engagement of local residents, showcasing an astounding array of floral diversity. With pollinator and bird houses interspersed throughout, the garden not only serves as a haven for a variety of bees and birds but also enhances its ecological value and biodiversity. The garden's design, featuring a multitude of colors and strategically placed benches, invites visitors to immerse themselves in its tranquility and beauty, offering a peaceful respite within the urban landscape.

Located conveniently off Lagoon Drive, near the tennis courts, the community garden is a serene stop for those exploring Stanley Park's expansive trails and attractions. Open and vibrant from May to September, it provides a free, accessible space for visitors to enjoy nature's splendor. Proximity to other attractions like the Lost Lagoon Lookout enriches the experience, positioning the garden as an ideal point of relaxation or exploration within the park.

The Stanley Park Community Garden exemplifies the fusion of community collaboration, environmental stewardship, and urban biodiversity. It underscores the vital role that such green spaces play in urban environments, offering a blueprint for integrating natural beauty and biodiversity into city parks. As a living testament to the power of community and nature in harmony, the garden invites everyone seeking

peace or a deeper connection with nature to witness its beauty and the collective spirit that nurtures it (Figure 26).

8.2 - Example 2 - Common Roots Woodside in Dartmouth

Common Roots Woodside, situated within the premises of the Nova Scotia Hospital in Dartmouth, is more than just a garden—it's a sanctuary for healing and community. Established in 2015, this urban farm harnesses the therapeutic benefits of gardening to promote physical, mental, and environmental well-being. With its inclusive and welcoming atmosphere, Common Roots Woodside offers a variety of gardening opportunities, including a community garden where individuals and groups can grow food for personal consumption and community sharing. Additionally, the farm features a bustling market garden, cultivating a diverse array of vegetables, herbs, greens, and flowers for sale and donation.

Amidst the greenery, Common Roots Woodside serves as a hub for learning and connection throughout the growing season. It hosts workshops, skill-building sessions, and community events that provide opportunities for individuals to deepen their gardening knowledge, acquire new skills, and forge meaningful connections with others. These activities not only foster a sense of community but also empower individuals to develop a deeper connection with nature and promote sustainable living practices. Moreover, the farm offers a serene and picturesque setting where visitors can unwind, reflect, and appreciate the beauty of their surroundings, further enhancing the therapeutic benefits of spending time outdoors.

At the heart of Common Roots Woodside's mission is its commitment to ecological farming practices in its market garden. By prioritizing sustainability and environmental stewardship, the farm sets a shining example of responsible agriculture. From cultivating fresh greens, vegetables, herbs, and flowers to selling produce and bouquets at its pop-up market stand, Common Roots Woodside ensures that the community has access to locally grown, organic produce that nourishes both body and soul.

For those inspired to get their hands dirty and contribute to the farm's mission, Common Roots Woodside warmly welcomes volunteers of all skill levels to lend a hand in the garden. Whether it's planting, weeding, or harvesting, there are ample opportunities for individuals to make a meaningful impact during daytime hours throughout the week. Interested individuals are encouraged to reach out to Farm Coordinator Hillary Lindsay for more information on how to get involved. With its dedication to fostering health, community, and sustainability, Common Roots Woodside stands as a shining example of the transformative power of gardening in enriching lives and strengthening communities (**Figure 27**).

8.3 - Example 3 - Common Roots Woodside in Dartmouth

Rowcliffe Community Garden, a verdant sanctuary nestled along Rowcliffe Avenue in Kelowna, took root in the spring of 2019, flourishing within the embrace of the park adjacent to the Central Green development on Richter. This thriving oasis owes its existence to the benevolence of the City of Kelowna, generously donating the land and installing a protective fence to nurture its burgeoning growth. Complementing this support, the Flower Power Kelowna Garden Tour Association infused vital funding, illuminating the path for this communal sanctuary. Under the expert guidance of COCG Project Manager, Steven Lance, the garden's blueprint unfolded into reality, each plot a testament to meticulous planning and dedicated craftsmanship.

Today, Rowcliffe Community Garden stands adorned with 35 plots, each a canvas for green-fingered enthusiasts to weave their botanical dreams. Nestled amidst the greenery, a sturdy shed stands sentinel, housing tools and supplies for the garden's caretakers. Notably, this garden bears distinction as the pioneer in its domain, boasting a large collection area with a robust concrete base, engineered to contain the Glengrow and wood chip essentials for nurturing the garden's vitality.

Despite its pristine beauty and vital role as a haven for nature enthusiasts, Rowcliffe Community Garden hasn't been immune to challenges. Recurring incidents of theft, where residents pilfer vegetables not their own, have cast shadows on its tranquil ambiance. Yet, the community remains resilient, fortifying

defenses with increased signage and fostering a culture of inclusivity and education amongst gardeners. Georgiann Kasdorf, a devoted board member of the Central Okanagan Community Garden Society (COCG), plays an instrumental role in managing the garden, alongside other volunteers, who work tirelessly to maintain the gardens and foster a sense of community.

In essence, Rowcliffe Community Garden stands as a testament to the collaborative efforts of the City of Kelowna, the Flower Power Kelowna Garden Tour Association, and the visionary guidance of Steven Lance. Its vibrant presence not only serves as a sanctuary for nature enthusiasts but also as a symbol of unity and shared purpose within the community. Through its lush foliage and thriving community, the garden embodies the essence of growth, resilience, and communal harmony, enriching the lives of residents and visitors alike in the heart of Kelowna (**Figure 28**).

8.4 - Example 4: Butler Community Garden

Incorporating unique features to encourage social interaction, Butler Community Garden goes beyond traditional gardening spaces. Established in 2009, this haven in Brighton stands as a testament to community-driven governance, where residents actively design, build, and manage the gardens to reflect their diverse needs and aspirations.

Central to the community's ethos is the wood-fired pizza oven, serving as a focal point for both formal gatherings and impromptu social encounters. This addition transforms the garden into more than just a place for cultivation; it becomes a vibrant hub for connection and camaraderie.

With its civic-driven governance model, Butler Community Garden epitomizes relevance and inclusivity. Residents actively shape the space to suit their preferences, ensuring that it meets the diverse needs of its users. From designated plots for various gardening styles to communal areas for relaxation and interaction, every aspect is meticulously crafted to foster a sense of belonging and fulfillment.

By embracing this model, Butler Community Garden transcends the traditional concept of public green spaces. It becomes a dynamic reflection of the community's collective spirit and aspirations, where individuals come together not only to nurture plants but also to cultivate lasting bonds and shared experiences (Figure 29).

8.5 - Example 5 - Rossland Community Garden

Rossland, a town known for its scenic beauty and tight-knit community, has embraced the concept of community gardening with remarkable results. Despite its modest size, Rossland's single community garden has become a hub of activity, fostering connections among residents, promoting sustainable living practices, and providing access to fresh, locally-grown produce.

While Rossland's community garden serves as a beacon of community engagement, Lake Country's population, approximately three times larger (Rossland Population is 4,254), presents unique opportunities and challenges that call for a more expansive approach. The demand for accessible green spaces, opportunities for social interaction, and initiatives promoting food security is evident, underscoring the need for multiple community gardens across Lake Country (Figure 30).

Section 9: Additional Examples of Supporting Academic Literature:

9.1 - Example 1 - Integrating community gardens into public parks: An innovative approach for providing ecosystem services in urban areas

The integration of community gardens into urban parks serves as a multifaceted strategy to enrich urban ecosystems, providing both environmental sustainability and social benefits. This approach fosters biodiversity, supports local food security, and enhances community well-being through physical activity and stress reduction. Moreover, it contributes to social cohesion by facilitating interactions among diverse groups and encouraging active participation in green space planning.

Community gardens embedded within parks offer educational opportunities, promoting environmental stewardship and sustainability practices. They serve as restorative spaces that mitigate the effects of urban stress, offering a sanctuary of tranquility and a sense of connection to nature for city dwellers. By transforming under-utilized park areas into vibrant community gardens, cities can leverage these green spaces to achieve broader ecological and community objectives.

Challenges to integration, such as potential land use conflicts and governance issues, necessitate strategic planning and community engagement to ensure successful implementation. Despite these hurdles, the potential benefits of community gardens in enhancing urban green spaces, fostering biodiversity, and promoting community health and well-being highlight their value as a critical component of urban planning and sustainable development.

In conclusion, integrating community gardens into public parks represents a holistic urban planning strategy that balances ecological sustainability with community engagement and individual health. This innovative approach not only enriches urban biodiversity and functionality but also fosters a connected, healthier, and more sustainable urban community.

9.2 - Example 2 - Integrating community gardens into urban parks: Lessons in planning, design and partnership from Seattle

The integration of community gardens into Seattle's urban parks showcases an effective model for enhancing urban green spaces through collaborative efforts and participatory planning. This approach has facilitated the transformation of community gardens from temporary land use to permanent fixtures within the urban landscape, contributing to the city's food production and fostering a sense of community.

Key to Seattle's success has been the establishment of clear roles and responsibilities among different agencies, which has fostered collaboration and partnership. Formal agreements between the P-Patch Community Gardening program and the Parks department have been instrumental in defining operational

frameworks for community gardens within parks. Moreover, the participatory design process has ensured that these gardens are accessible and engaging to both gardeners and the wider community.

However, the perception of community gardens as private use of public land remains a challenge, along with balancing gardening with other park uses. Efforts to demystify this perception include demonstrating the public value of community gardens and designing them to be more inviting to non-gardeners. Addressing spatial and programming limitations also requires innovative planning and design to achieve optimal compatibility between community gardens and urban parks.

Seattle's experience underlines the potential of community gardens to redefine urban green spaces. By integrating community gardens into urban parks, cities can not only enhance biodiversity and promote sustainable urban agriculture but also strengthen community ties. Continued innovation in planning, design, and governance is essential for overcoming existing challenges and maximizing the benefits of community gardens in urban environments.

9.3 - Example 3 - Role of Gardening in Mental Health, Food Security, and Economic Well-Being in Resettled Refugees: A Mixed Methods Study

The research conducted by Gangamma et al. (2023) delves into the multifaceted benefits of home and community gardening for resettled refugees, focusing on mental health, food security, and economic well-being through a mixed-methods study. The quantitative findings illustrate a notable decrease in anxiety, depression, and trauma symptoms among refugees engaged in gardening, highlighting its therapeutic potential. Moreover, gardening emerges as a critical factor in enhancing food security, providing access to fresh, nutritious, and culturally appropriate produce. This aspect is especially crucial for resettled populations grappling with new food environments, ensuring their dietary needs are met while fostering physical health.

In addition to the individual benefits, the qualitative data from the study emphasize the broader community and social advantages of gardening. Participants reported that community gardening, in particular, played a pivotal role in improving mental well-being, strengthening family and community bonds, and reaffirming cultural identity. These community gardens become spaces for social interaction, support, and cultural exchange among refugees, significantly aiding their integration into new societies. The communal aspect of gardening not only bolsters psychological health but also cultivates a sense of belonging and community, critical for the successful adaptation and integration of resettled refugees into their new environments.

This study by Gangamma et al. unequivocally highlights the dual role of gardening—both home and community-based—in providing immediate and long-term benefits. Beyond its therapeutic and nutritional advantages, gardening, especially within community settings, fosters social cohesion, cultural continuity, and economic resilience among resettled refugees. The integration of gardening into refugee resettlement and health promotion strategies offers a holistic approach to addressing the complex needs of this vulnerable population. Hence, the researchers advocate for the incorporation of culturally appropriate, community-based gardening programs in services provided to refugees, recognizing the multifunctional role of gardening in enhancing the well-being and integration of resettled refugees. This approach not only supports the individual needs of refugees but also enriches the broader community, fostering a more inclusive and supportive environment for all (**Figure 31**).

9.4 - Example 4 - In defense of urban community gardens:

Urban community gardens stand as crucial ecosystems within cities, offering a wide range of benefits that enhance urban life and ecological health. Egerer et al. (2024) emphasize these gardens' role in biodiversity conservation, human-nature connections, social cohesion, health and well-being, and educational opportunities.

Biodiversity Conservation: These gardens are biodiversity hotspots, vital for urban wildlife. They provide habitats for various species, including pollinators and rare plants, contributing to urban ecological balance and supporting wider biodiversity goals.

Human-Nature Connections: Community gardens offer a direct link to nature in urban environments, promoting mental health and well-being. They allow individuals to engage with the natural world, fostering appreciation and understanding of nature's value.

Social and Community Benefits: Acting as communal spaces, community gardens enhance social cohesion and community engagement. They serve as platforms for knowledge exchange, collective action, and community empowerment, strengthening local bonds.

Health and Well-being: Gardening activities within these urban oases offer therapeutic benefits, reducing stress and improving mental health. Moreover, they provide access to fresh, nutritious produce, contributing to urban food security and promoting healthy lifestyles.

Educational Opportunities: Community gardens are dynamic educational spaces, offering hands-on experiences with gardening, biodiversity, and sustainability. They serve as invaluable resources for learning about environmental stewardship and ecological practices in urban settings.

9.5 - Example 5: Multicultural gardeners and park users benefit from and attach diverse values to urban nature spaces

The study by Egerer et al. investigates the diverse values and well-being benefits attached to urban nature spaces by multicultural gardeners and park users in Melbourne, Australia. Recognizing the ethno-cultural diversity in urban settings, the research explores how individuals from different backgrounds perceive and interact with community gardens, parks, and trees. Through intercept questionnaires, the study unveils

that motivations, importance, and well-being benefits associated with these green spaces vary significantly among individuals with different ethno-cultural identities.

Community gardens emerge as spaces providing food and fostering a sense of community and security, especially for English as a Second Language (ESL) speakers. These gardens are not only essential for their contribution to urban biodiversity but also as venues for sociocultural gatherings and psychological well-being. Parks, like community gardens, are valued for their sociocultural, psychological, and aesthetic importance, with urban trees specifically appreciated for their aesthetic, naturalness, and biodiversity significance.

The findings highlight the importance of considering multicultural values in the planning and design of urban nature spaces. By acknowledging the varied motivations and derived benefits from these spaces, urban planners and policymakers can enhance the inclusivity and effectiveness of urban greening efforts. This research underscores the necessity for an inclusive and culturally sensitive urban greening agenda that accommodates the diverse needs and values of a multicultural city's residents, contributing to the overall well-being and social cohesion of urban communities (**Table 2**).

Section 10 - Potential Challenges and Next Steps:

Developing community gardens in the Apex, Swalwell, and Okanagan Centre Parks can clearly have a wide variety of benefits for the sustainability and resilience of the DLC. Based on examples from the DLC's OCP, as well as from community gardens in the parks of other municipalities, it is also clear that developing them in parks is feasible and beneficial for achieving DLC policies. Despite the benefits additional community gardens could have for the DLC however, there are some challenges that could threaten their integrity and will need to be addressed.

10.1 - Maintaining Commitment and the Number of Community Gardens:

One of these challenges concerns maintaining commitment amongst participants and the number of community gardens over the long-term. As previously discussed in **Section 4.1**, community gardens are often developed during periods of economic strife such as national crises, recessions, and periods of increased food insecurity (Mees, 2007; Wang et al., 2022; Wieneke, 2017). However, as economic conditions become more prosperous for residents, the number of community gardens often tends to decrease (Mees, 2007; Wang et al., 2022). In order to help prevent this, it is critical to have proper community organization between participants and other parties involved in the management and support of community gardens (Mees, 2007). It is also important to promote community gardens aside from economic benefits in order to maintain participation when economic conditions become more prosperous. As previously discussed in **Section 4.2**, the top reason why residents join community gardens is to grow their own food (Bussell et al., 2017). However, most people appear to see the purpose of community gardens for their social benefits (Ramos et al., 2019). Additionally, as seen in the case study of surveyed community gardeners in the San Diego Area (Bussell et al., 2017), the social benefits from participating in a community garden appear to be shared across a majority of participants (Bussell et al., 2017). It has also been suggested that promoting community gardens based on the passion of its participants could be an effective means to increase interest (Poulsen et al., 2014). As a result, an important next step that needs to be taken for encouraging and maintaining participation in the community gardens being proposed is to educate people on the social benefits they can provide (Bussell et al., 2017), both on an individual and community level. We especially recommend promoting education on the social benefits of community gardens to seniors and residents living in multi-unit residences. For the former, we recommended promoting the social benefits of community gardens based on it being an age-friendly physical activity and an effective tool to help prevent social isolation (Haslam et al., 2019; Poulsen et al., 2014; Scott et al., 2020). For the latter, we recommend promoting the social benefits of community gardens based on them providing an opportunity to access a personal greenspace, helping people connect to nature (Bussell et al.,

2017), and helping to improve social relations with other residents living in the same building (Nguyen et al., 2020).

10.2 - Pests and General Knowledge:

Community gardens also face potential challenges associated with pests damaging crops. Most community gardens tend to be based on organic practices (Wang et al., 2022; Wieneke, 2017), including those under the management of the Central Okanagan Community Gardens organization (Central Okanagan Community Gardens, 2023). As a result, non-organic herbicides and pesticides are not allowed (Central Okanagan Community Gardens, 2023), which can consequently make produce being grown more vulnerable to disease and pests. Such pest issues have been identified as a barrier to encouraging participation in community gardens (Wesener et al., 2020). However, part of the issue with pests was also found to be due to gardeners lacking knowledge on the relationships between specific plants and animals (Wesener et al., 2020). Additionally, a lack of general gardening knowledge, appropriate training, and gardening skills were also found to negatively impact community gardens (Wesener et al., 2020). In order to help combat against the impacts of pests as well as to improve the integrity of community gardens, an important next step will be to provide education around general garden knowledge, training, skills, and organic pest management strategies.

10.3 - The Capacity of Central Okanagan Community Gardens:

A particular challenge for the DLC that will need to be addressed is the capacity for the Central Okanagan Community Gardens organization to manage the additional community gardens being proposed. After consulting with the DLC's Parks and Facilities Staff, it was determined that Central Okanagan Community Gardens is already at their limit for the number of community gardens the organization can manage. Since the DLC does not have the financial and physical resources to manage and support the gardens on its own, a lack of support from the Central Okanagan Community Gardens organization could be detrimental to the development and sustenance of the additional community gardens being proposed.

As a result, a crucial next step for this project to move forward will be to consult with the organization and identify what resources they need to take on and manage more community gardens in the DLC. Potential sponsors and supporters for community gardens should also be involved in this consultation, as they may be able to provide additional resources and funding to help Central Okanagan Community Gardens expand its capacity.

10.4 - Long-term Funding and Support:

Maintaining long-term funding and support are also challenges that would need to be addressed for this project to move forward and sustain itself (Wesener et al., 2020). While having funding has been to be a significant enabler for encouraging community garden participation (Wesener et al., 2020), a lack of permanent funding or a dependence on public funding were found to act as barriers to participation (Wesener et al., 2020). While evidence from the community gardens in Woodsdale and the City of Armstrong suggest that a variety of local businesses and community-oriented clubs could help provide funding for the additional community gardens being proposed, there is no guarantee that these organizations will always help fund and support them. A potential solution to this issue is to integrate the community gardens into public programs (Wesener et al., 2020). Specifically, integrating community gardens into programs involved with community engagement, education, and public health have been found as common methods for maintaining the long-term support of community gardens (Wesener et al., 2020). As previously mentioned in **Section 6.3**, due to the close proximity of Swalwell Park to the H.S. Grenda and George Elliot schools, developing a community garden there could increase the potential for it to be integrated into the education programs of both schools. Subsequently, the schools may be able to help provide funding and support for the community garden if they are involved with it. A community garden in Okanagan Centre Park also has the potential to be integrated into public programs in the DLC, as the adjacent Lake Country Museum and Archives runs several public and community-based events throughout the year (Lake Country Museum and Archives, 2024).

Another potential solution to help maintain funding and support for additional community gardens is to reach out to as many local businesses, community clubs, and other organizations as possible. Having a large number of sponsors and supporters for community gardens could help weigh down how much funding each has to provide in order for the annual needs of the garden to be met. It is clear that a large number of sponsors can help fund and support community gardens, given the number of businesses, organizations, and individuals currently involved with supporting the community garden in the City of Armstrong (**Figure 13**). As a result of these factors, two important next steps for maintaining long-term funding and support for the additional community gardens being proposed. The first is to have the DLC city hall reach out to a large number of institutions including DLC schools, local businesses, community-oriented clubs, and other community gardens to identify potential funders and opportunities for collaboration. The second is to identify opportunities to integrate community gardens into public programs run by the DLC and other local organizations, particularly around community engagement, education, and public health (Wesener et al., 2020).

10.5 - Concerns of Residents Living Near Proposed Park Locations:

Although the reasons for why additional community gardens in the DLC should be developed in the Apex, Swalwell, and Okanagan Centre Parks have been explained, there are still some general challenges that will need to be considered for the suitability of these parks as community garden sites. For starters, developing community gardens in these parks would result in the activity being easier to access for nearby residents (**Figure 16, Figure 20, Figure 24**). However, these residents may not generally be interested in community gardening, regardless of whether they have the opportunity to participate in a nearby location or not. As a result, there may end up being a lack of people in The Lakes, Town Centre, and Okanagan Centre neighbourhoods, respectively, who could help manage their closest community garden. Residents living near the Apex, Swalwell, and Okanagan Centre Parks may also be directly opposed to having a community garden developed nearby due to concerns about noise, odour, rats, and wanting to use the parks for other purposes (Poulsen et al., 2014; Wesener et al., 2020). While this report

has attempted to show that developing community gardens in the Apex, Swalwell, and Okanagan Centre Park locations would not take away the ability of residents to easily access the services they provide (District of Lake Country, 2018b, 2018c, 2018d, 2018g, 2018f), it is still important to take the opinions of the residents themselves into consideration. As such, an important next step will be to directly survey residents living in The Lakes, Town Centre, and Okanagan Centre neighbourhoods in order to identify and help address concerns residents may have from a community garden being developed nearby. It will also be important to survey residents in these neighbourhoods in order to determine whether there is enough interest in each for a nearby community garden to be developed and managed.

10.6 - Additional Needs of Proposed Park Locations:

The Apex, Swalwell, and Okanagan Centre Parks also have drawbacks that may affect their suitability as locations for additional community gardens. For starters, even though all of the parks are adjacent to water mains (**Figure 17, Figure 21, Figure 25**), there may not be a direct access to a water fitting such as a spigot to attach a hose for watering plants. Even if there are such fittings in each of these parks, they may not be in a suitable location relative to where the community garden plots would be best suited. As a result of both these factors, additional water infrastructure may have to be developed, which could significantly increase development costs. Additionally, each of these parks will also need storage sheds to be developed for storing equipment, as well as additional fencing to keep out wild animals and vandals. Consequently, both of which could add onto the costs of developing community gardens in these parks. Apex Park in particular faces challenges regarding its suitability. Unlike Swalwell and Okanagan Centre Park (District of Lake Country, 2018d, 2018c), it does not have a nearby parking lot or public washrooms available for community gardeners (District of Lake Country, 2018b). While the former could be mitigated due to the high population density of The Lakes neighbourhood, the latter could pose challenges for community gardeners. Although nearby Shoreline park has public washrooms available (District of Lake Country, 2018f), it would be time consuming for community garden participants to walk back and forth between Apex Park and Shoreline Park. Additionally, accessing the washrooms in Shoreline Park

from Apex Park could be more difficult for seniors with mobility and driving issues. As a result of all these challenges, an important next step will be to have DLC city planners as well as parks and facilities staff go to each of these parks and survey them to determine whether they are suitable locations for a community garden and have adequate access to the utilities that a community garden would need.

Section 11 - Conclusion:

The population of the District of Lake Country (DLC) is rapidly changing, becoming older, larger, and increasingly more urbanized. Such changes to its population poses challenges to the social and economic sustainability and resilience of the DLC going forward. As its population ages, more easily accessible, age-friendly features will be needed to help maintain the physical and mental health of DLC seniors. As its population becomes more urbanized, it is likely that the sense of community amongst DLC residents will decrease. Additionally, it will also cause more DLC residents to have less access to a personal greenspace, become more vulnerable to higher food prices, and become more vulnerable to the impacts of food insecurity.

Based on evidence from academic literature, community gardens could provide a simple and cost-effective means to simultaneously address the challenges posed by the changing population in the DLC. While they offer several environmental, social, and economic benefits that could help increase the sustainability and resilience of the municipality, they could particularly help contribute to these goals by promoting positive community building, providing an age-friendly physical and social activity to seniors, providing the opportunity for residents living in multi-unit residences to access a personal greenspace, and by making the population of the DLC more resilient against food insecurity and higher food prices. If community gardens are to be as effective at addressing these challenges as possible, it is critical that they can be easily accessed by their participants. In particular, having them within a short walking distance of residents provides the most effective means to help make them easily accessible and encourage participation.

Currently, the DLC only has one community garden located in Woodsdale, making it easily accessible to residents living in that neighbourhood but less so to those living in other DLC neighbourhoods. To help make this beneficial activity available to other DLC residents, we propose developing additional community gardens in Apex Playground and Park, Swalwell Park, and Okanagan Centre Park. For these projects to move forward, the support of the DLC's City Council, city planners, and its parks and facilities staff will be critical. Additionally, support will also be required from external organizations to help manage, fund, and support these community gardens. These organizations include Central Okanagan Community Gardens, local DLC businesses, as well as community-oriented clubs such as the Lake Country Rotary Club and the Lake Country Lions Club. While community gardens are allowed in any type of zoning in the DLC, key laws and regulations that must be considered for developing additional community gardens in the proposed parks are the development of a formal and long-term lease agreement, acquiring sufficient insurance coverage in requirements with DLC bylaws, as well as an agreement between the DLC and other managing organizations around the bylaws community gardeners must follow in order to participate.

Developing community gardens in DLC parks is clearly feasible given their flexible zoning rules and the examples from other municipalities inside and outside of British Columbia. Specifically, developing community gardens in city parks can also help provide long-term protection, make the parks more productive, and improve access to water and electricity. Developing community gardens in city parks could also help the DLC meet several of the outlined policy goals in its OCP, especially concerning its goals regarding Parks and Recreation. However, the development of additional community gardens is not explicitly mentioned as an objective or policy for meeting the DLC's Parks and Recreation Goals. We specifically promote the development of additional community gardens in the Apex, Swalwell, and Okanagan Centre parks due to their close proximity to several residences in their respective neighbourhoods, having adequate sunlight exposure, all being flat, and for their close proximity to nearby water mains. Several of these parks also have parking and washrooms available, are close to facilities that

could integrate them into public programs, and either have enough space or other parks nearby that could provide the same services each park is providing now.

While additional community gardens can provide several benefits to the sustainability and resilience of the DLC, there are some challenges that will need to be addressed in order for this proposed project to move forward. These challenges include maintaining long-term commitment, long-term funding and support, challenges posed by pests and a lack of general knowledge amongst participants, the capacity of the Central Okanagan Community Gardens organization being at its limit to take on more community gardens and the concerns of the residents living near the proposed park locations. How well each proposed park location can access essential utilities is also a challenge, including how easily water can be accessed from nearby mains, the need for additional storage sheds and fencing, as well as park-specific challenges such as Apex not having space or public washrooms available. With all of this information in mind, we recommend the following as next steps for helping to move this project forward:

- 1.) Consult DLC schools, community clubs, and local businesses to identify collaboration opportunities for funding, supplies, and support.
- 2.) Consult Central Okanagan Community Gardens to identify what resources they need to support and manage additional gardens in Lake Country.
- 3.) Identify opportunities to integrate community gardens into public programs and community engagement.
- 4.) Update Lake Country's OCP policy to include proposing community gardens as a method to help meet the city's outlined parks and recreation goals.⁴
- 5.) Promote education around training, gardening skills, and the benefits of community gardens to individuals and the community.

- 6.) Prioritize the social benefits of community gardens, with a specific focus toward seniors and residents living in multi-unit residences.
- 7.) Survey residents in the Lakes, Town Centre, and Okanagan Centre neighbourhoods to determine how interested residents are in participating in a nearby community garden.
- 8.) Survey the Apex, Swalwell, and Okanagan Centre Parks to determine whether they are suitable locations and have adequate access to utilities needed for community gardens to function.

We believe that these recommendations will help the DLC determine whether it should move forward or not with this proposed project. Regardless of the uncertainty associated with its future, we believe that developing additional community gardens in the Apex, Swalwell, and Okanagan Centre parks would have several benefits for the goals of the municipality as well as its residents. As a result, community gardens could provide an effective means to help the DLC cultivate a more sustainable and resilient community.

Appendix A: Tables and Figures:

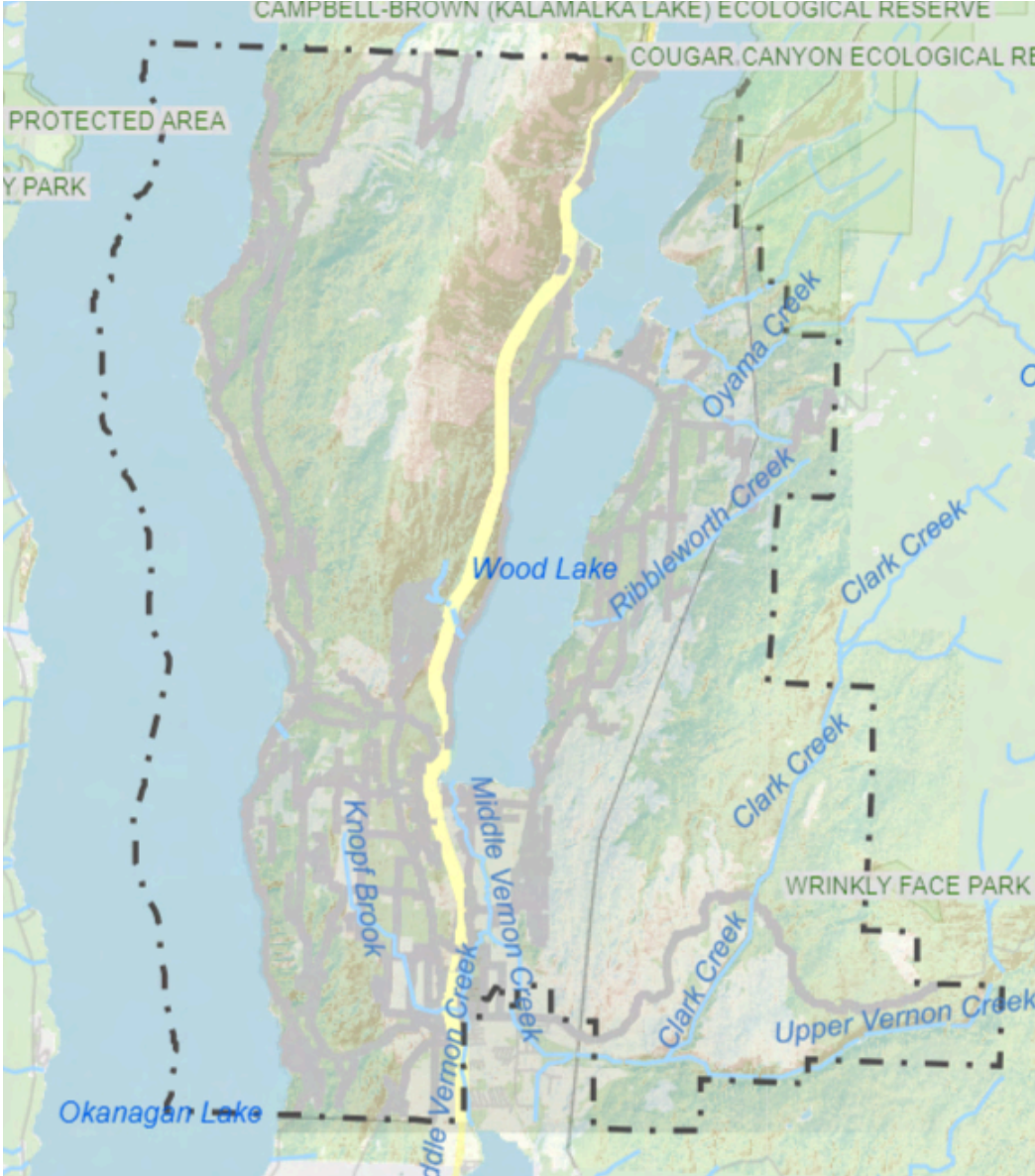


Figure 1: The municipal boundaries of the District of Lake Country (District of Lake Country, 2024a).



Figure 2: This map shows the land under ALR zoning (dark green) within the District of Lake Country (District of Lake Country, 2024a).

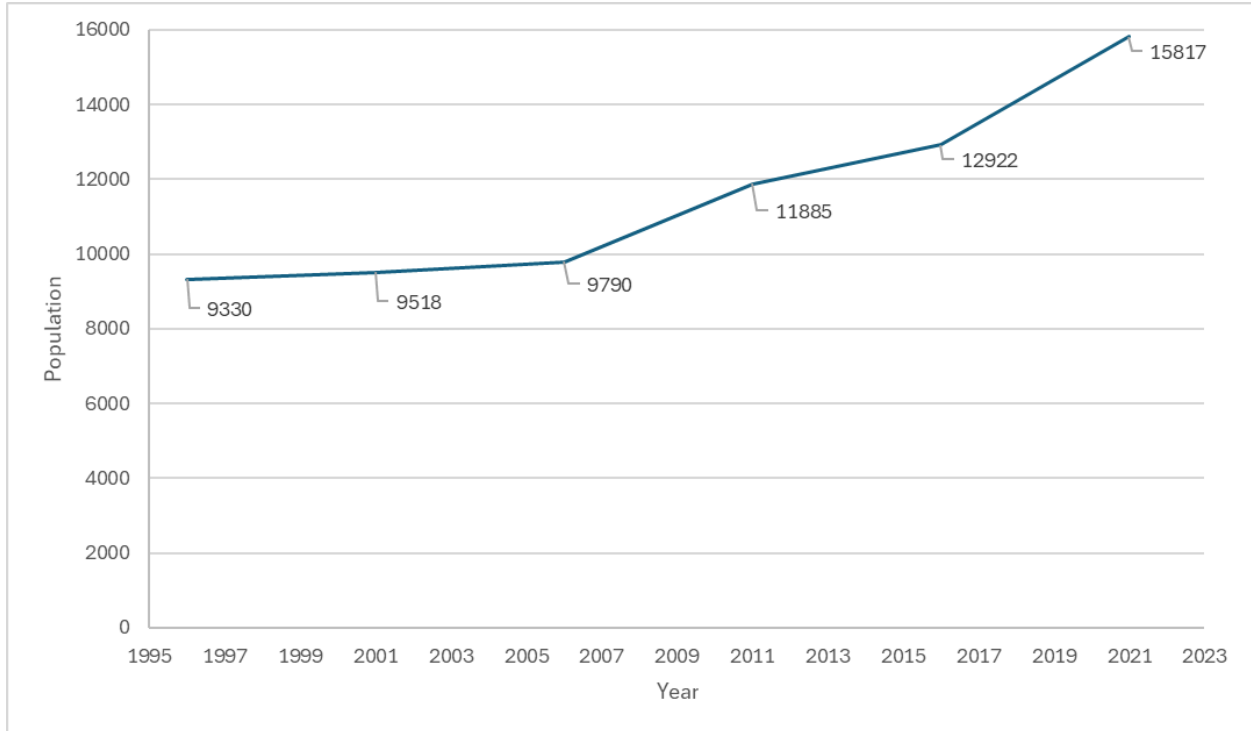


Figure 3: The population growth of the District of Lake Country from 1996-2021, with exact numbers shown every five years starting from 1996 (District of Lake Country, 2019; Government of Canada, 2022).

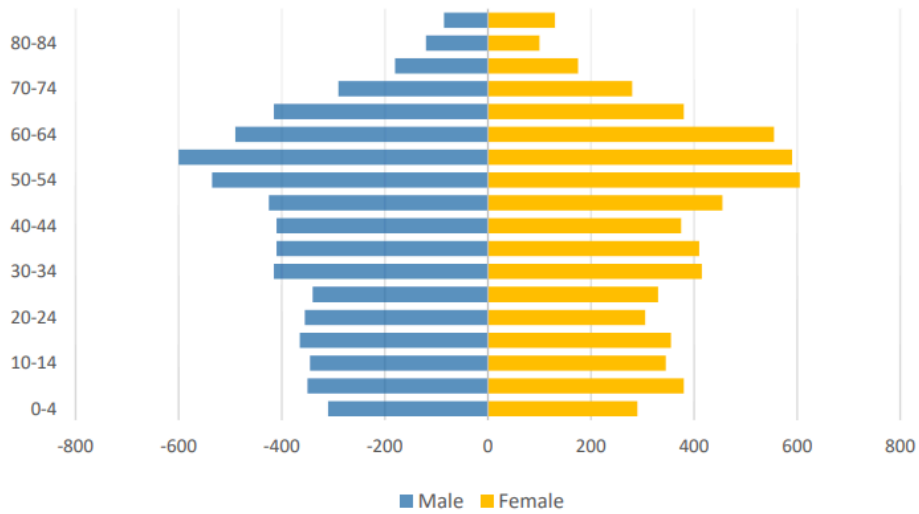


Figure 4: The age distribution graph for the 2016 population of the District of Lake Country, sourced from its Official Community Plan (District of Lake Country, 2019).

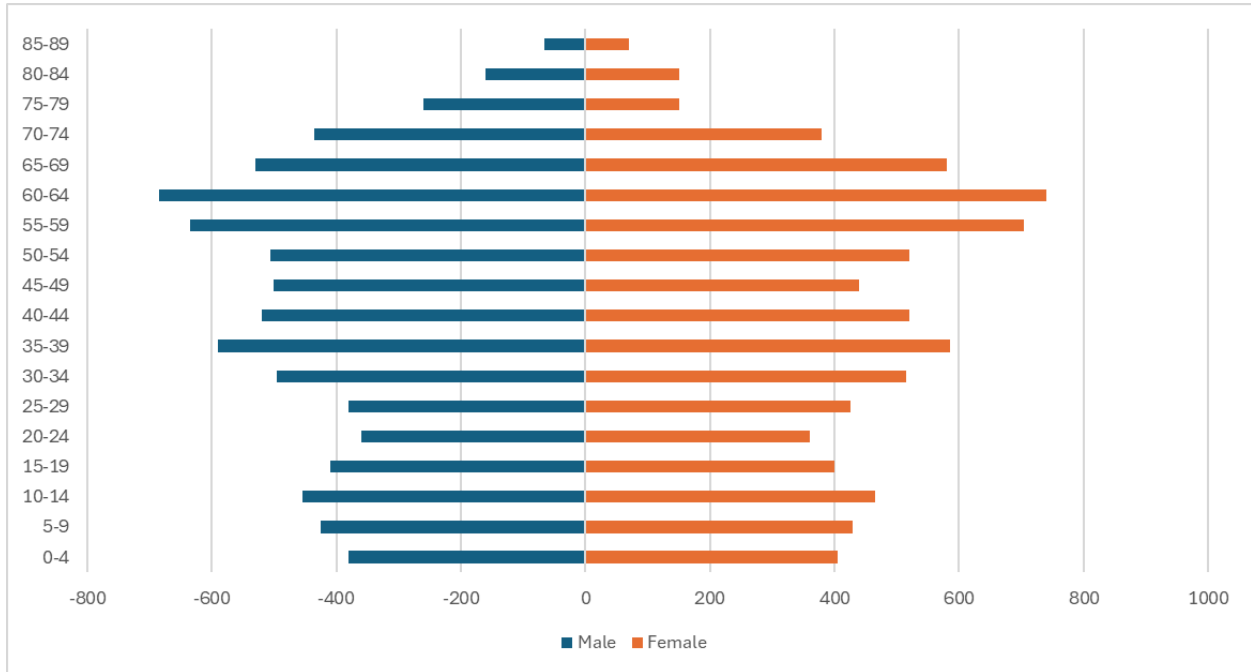


Figure 5: The age distribution graph for the 2021 population of the District of Lake Country, generated using 2021 Census data provided by Statistics Canada (Government of Canada, 2022).

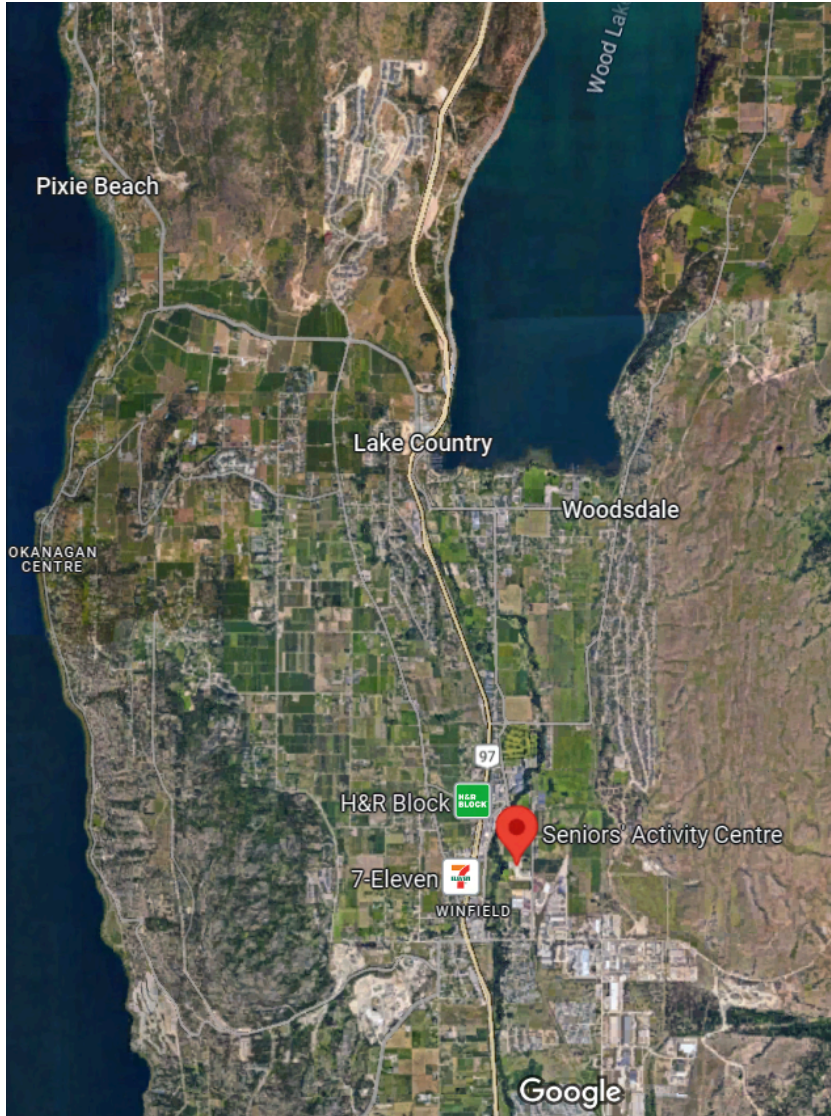


Figure 6: The location of the Lake Country Seniors Activity Centre relative to the rest of the municipality, excluding the northern part of Oyama on the northern end of Wood Lake.

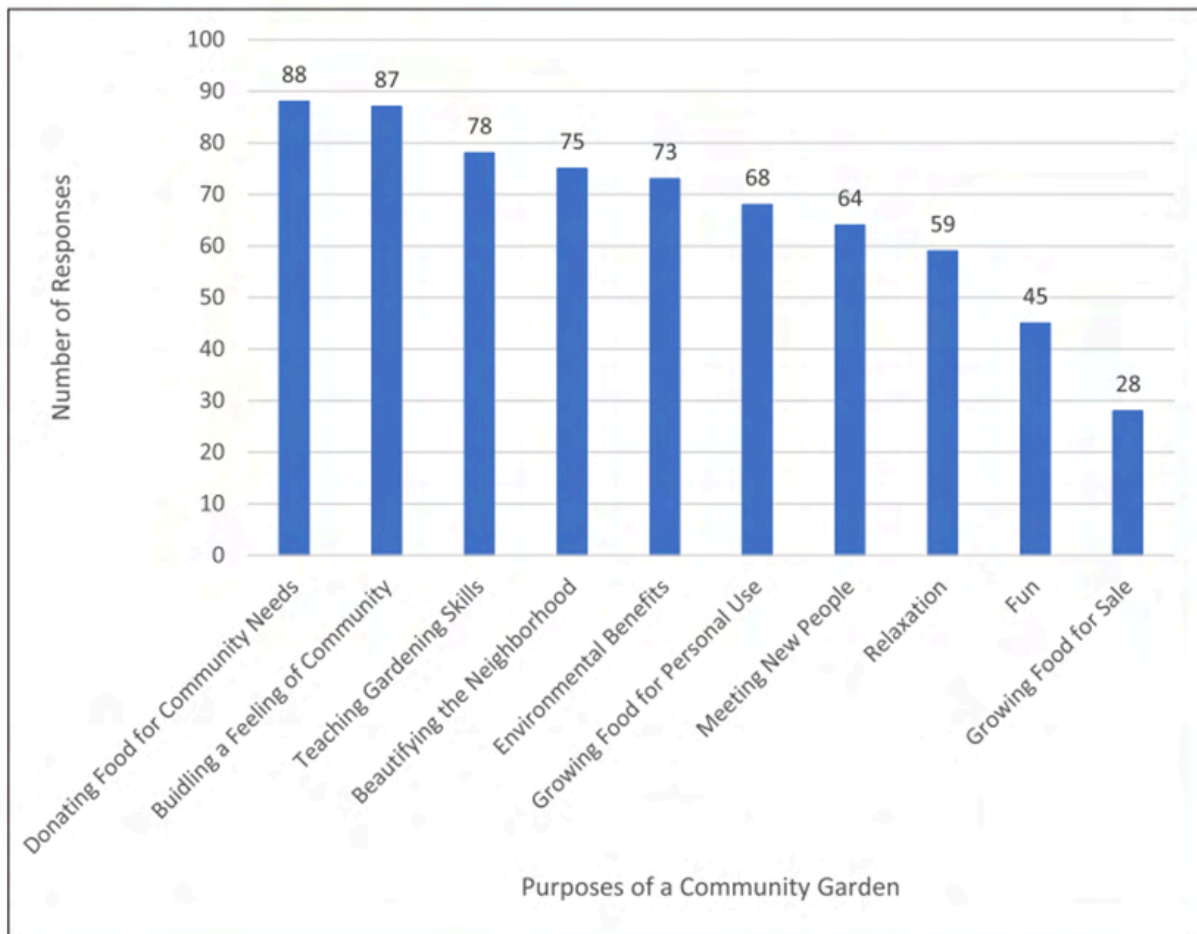


Figure 7: The number responses to each provided purpose of a community garden out of 113 surveyed residents living in Omaha, NE (Ramos et al., 2019).

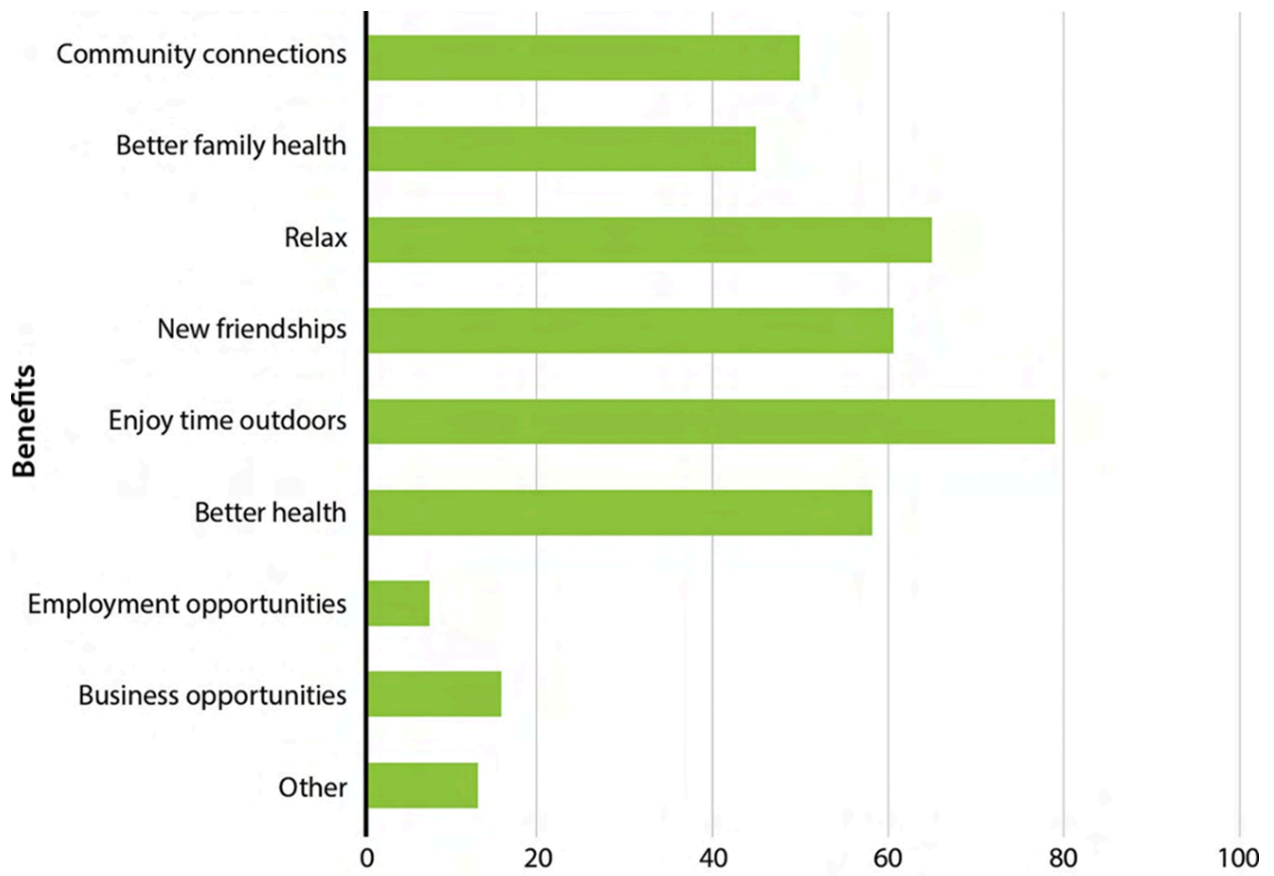


Figure 8: The percentage of 120 surveyed community gardeners in the Greater San Diego area who reported each provided benefit they received from participating in a community garden (Bussell et al., 2017).

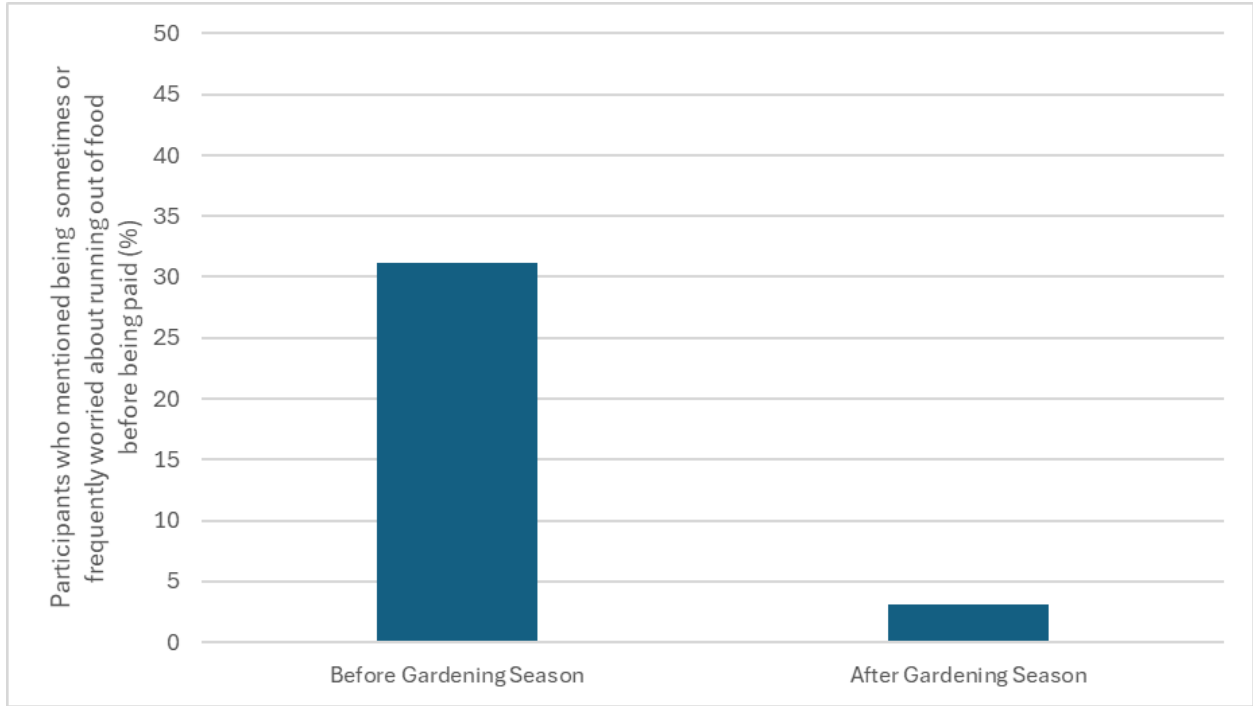


Figure 9: The percentage of 42 families who participated in a community garden in rural Oregon before and after the gardening season that mentioned they were sometimes or frequently worried about running out of food before being paid (Carney et al., 2012).



Figure 10: The Winfield Community Garden.

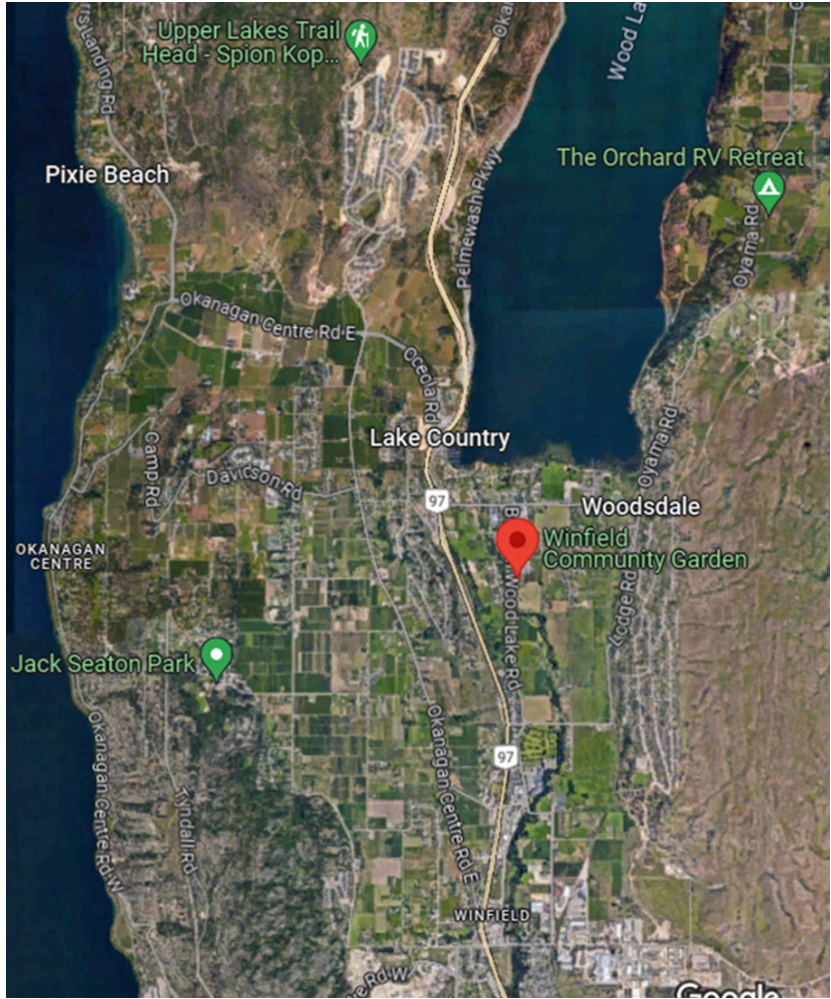


Figure 11: The location of the Winfield Community Garden relative to the rest of the DLC, excluding the northern part of Oyama on the northern end of Wood Lake.

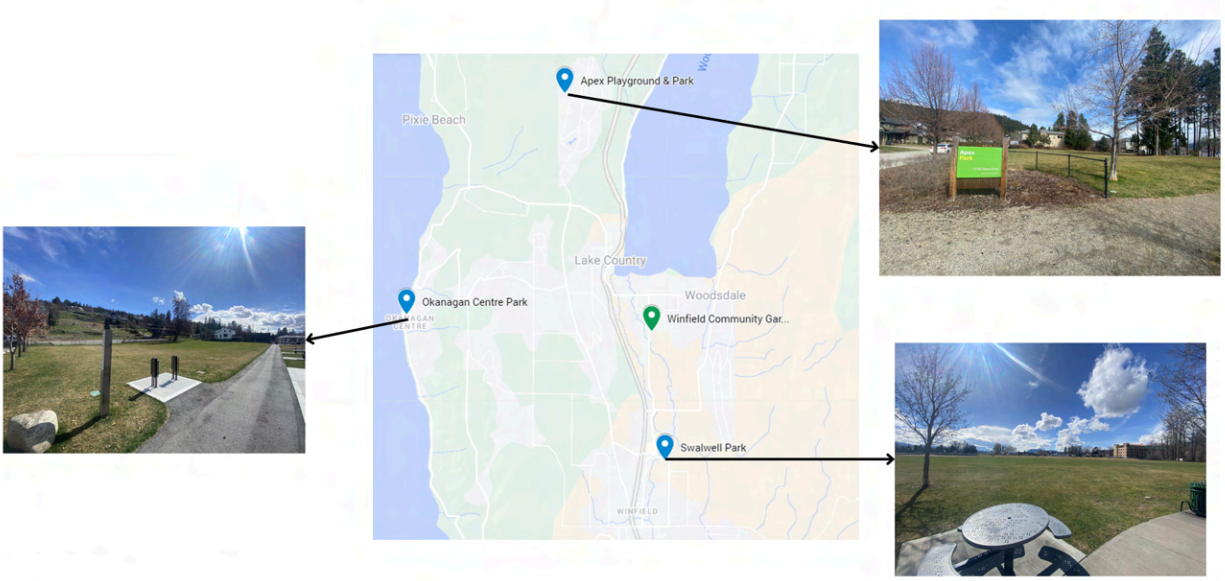


Figure 12: The location and pictures of Apex Playground and Park, Swahwell Park, and Okanagan Centre Park, relative to the Winfield Community Garden in Woodsdale.



Figure 13: The current sponsors and supporters to the community garden in the City of Armstrong.



Figure 14: Apex Playground and Park.

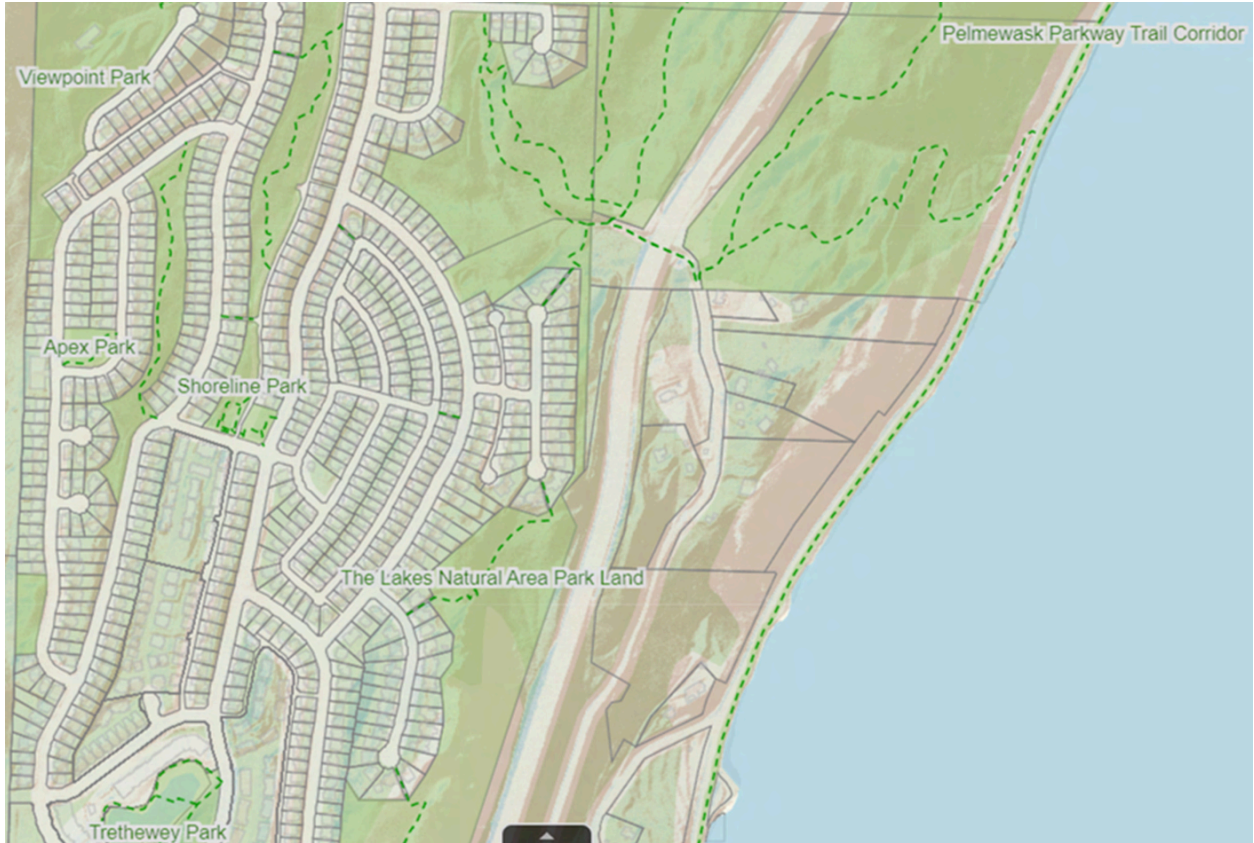


Figure 15: The location of Apex Playground and Park (left) relative to the majority of The Lakes neighbourhood (District of Lake Country, 2024a).



Figure 16: This map shows the residences in The Lakes neighbourhood whose occupants can walk to Apex Playground and Park within a 15 minute time period.



Figure 17: This map shows the water mains surrounding Apex Park (dark blue lines), along with the location of the water fitting (green dot) in the park (District of Lake Country, 2024a).



Figure 18: Swalwell Park.

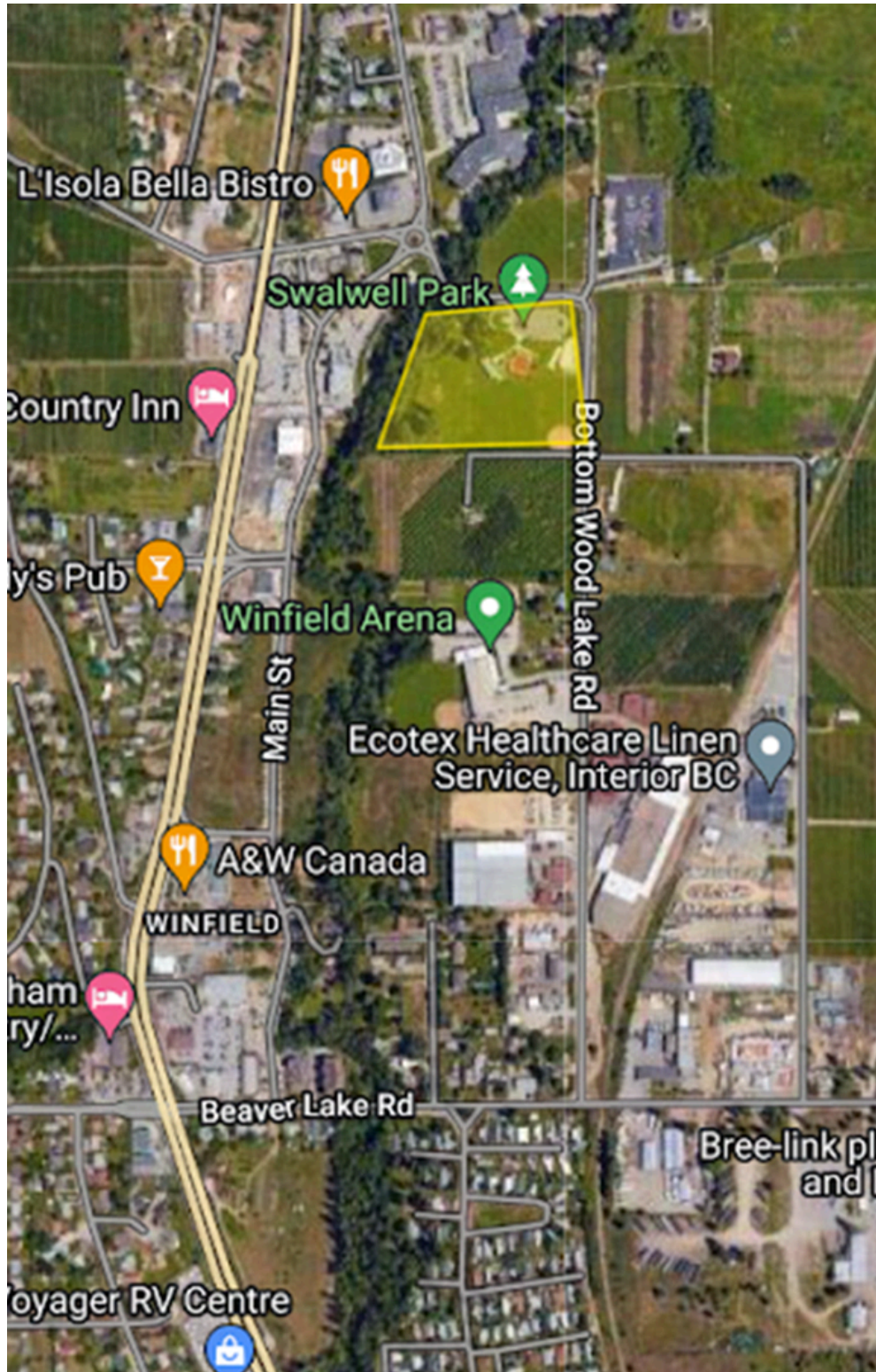


Figure 19: The location of Swalwell Park relative to the Town Centre neighbourhood in the District of Lake Country.

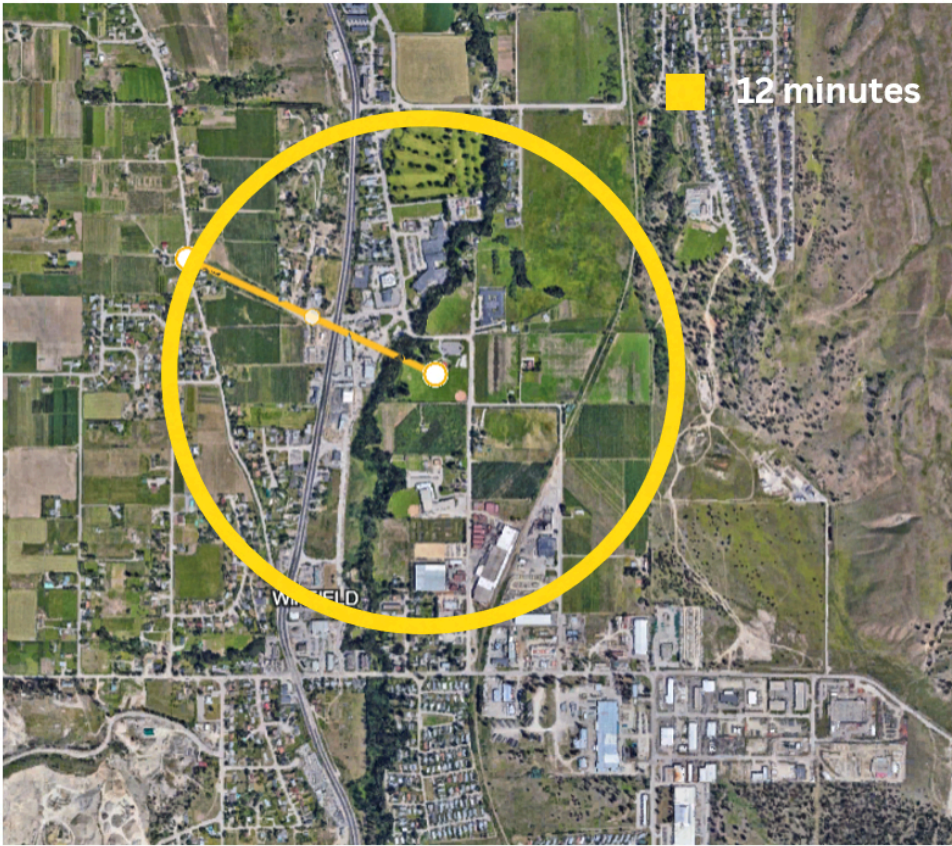


Figure 20: This map shows the area within the Town Centre neighbourhood whose occupants living within it can walk to Swalwell Park within a 12 minute time period.

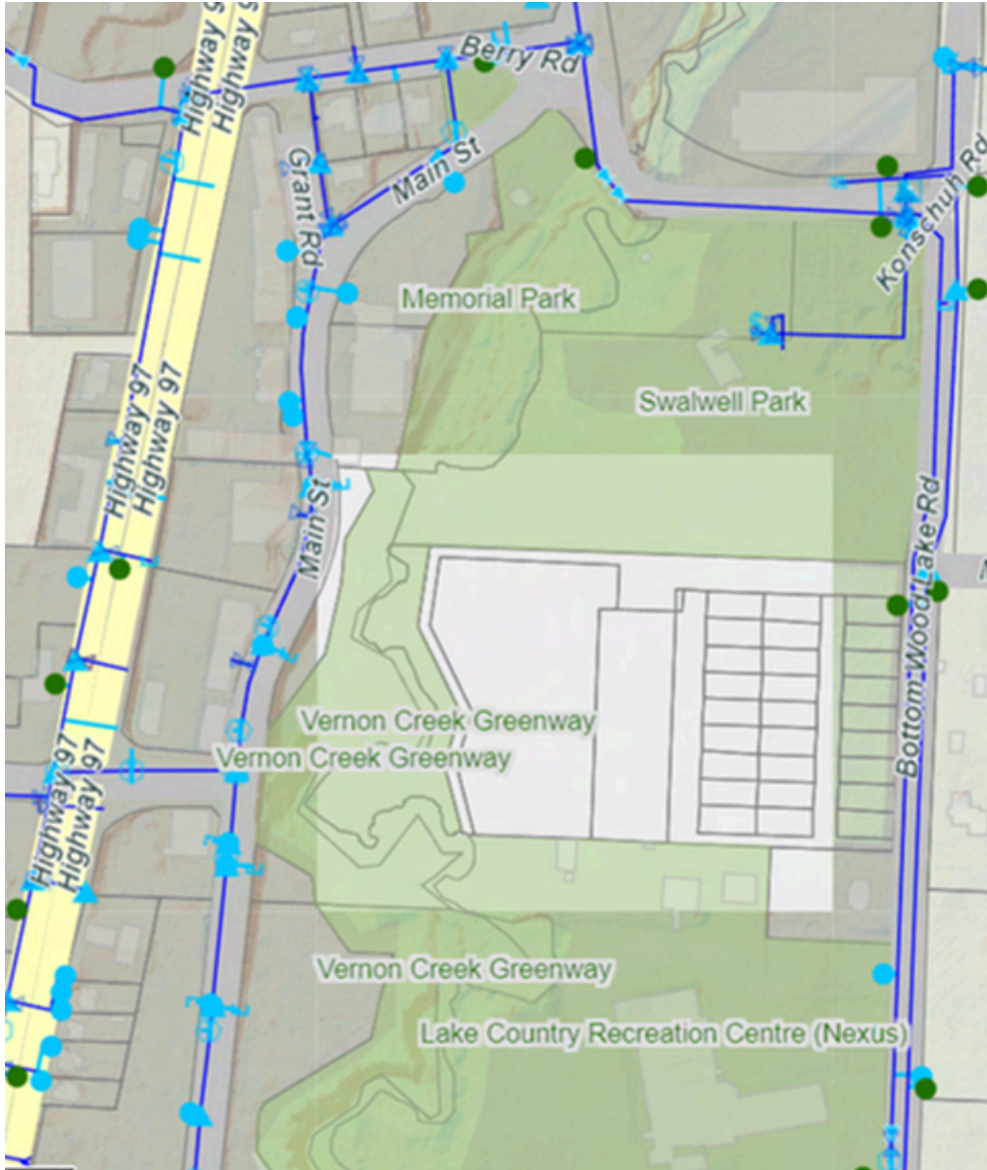


Figure 21: This map shows the water mains surrounding Swalwell Park (dark blue lines) (District of Lake Country, 2024a).



Figure 22: Okanagan Centre Park.



Figure 23: The location of Okanagan Centre Park relative to nearby residences in the area.



Figure 24: This map shows the area within the Town Centre neighbourhood whose occupants living within it can walk to Okanagan Centre Park within a 15 minute time period.

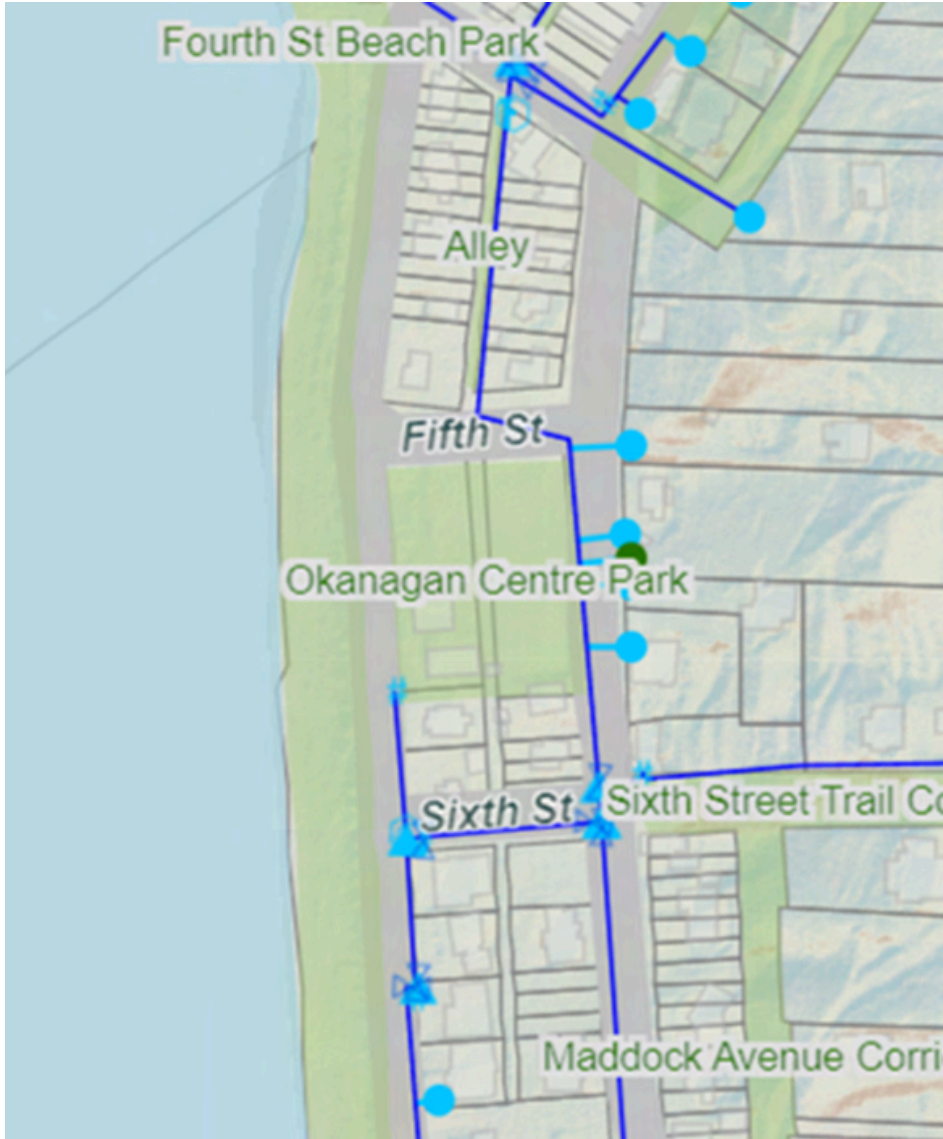


Figure 25: This map shows the water main on the eastern side of Okanagan Centre Park (dark blue line) (District of Lake Country, 2024a).



Figure 26. Bird nest and tennis playground in stanley park community garden



Figure 27. Woodside has used gardening as a way to promote physical, mental, and environmental health.

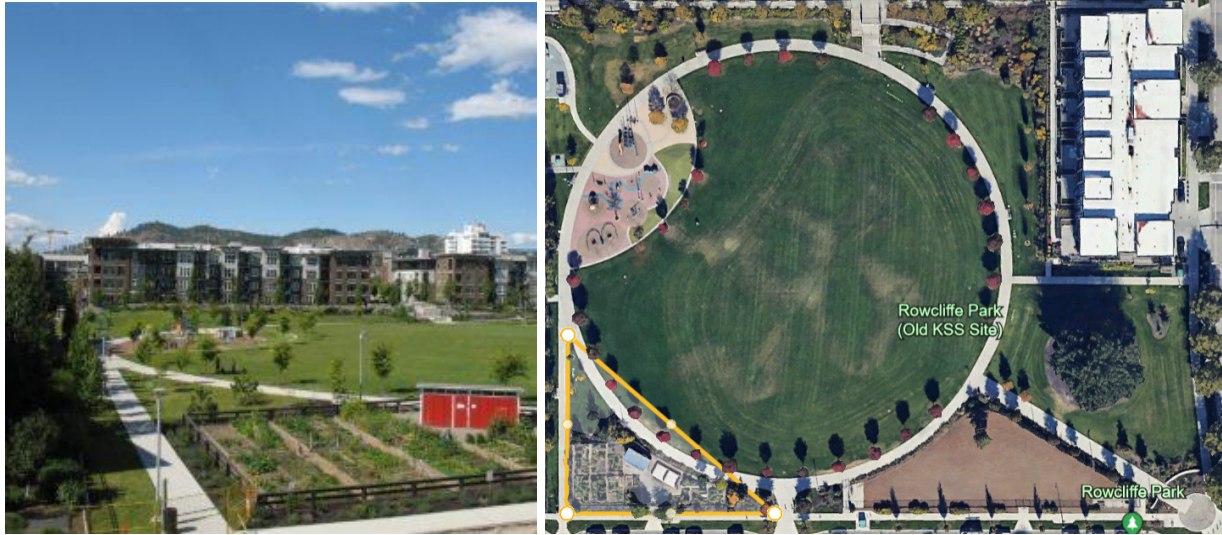


Figure 28. Rowcliffs park community Garden



Figure 29. Butler Community Garden contains a wood fired pizza oven and fence.



Figure 30. Russland community garden is a place for learning.

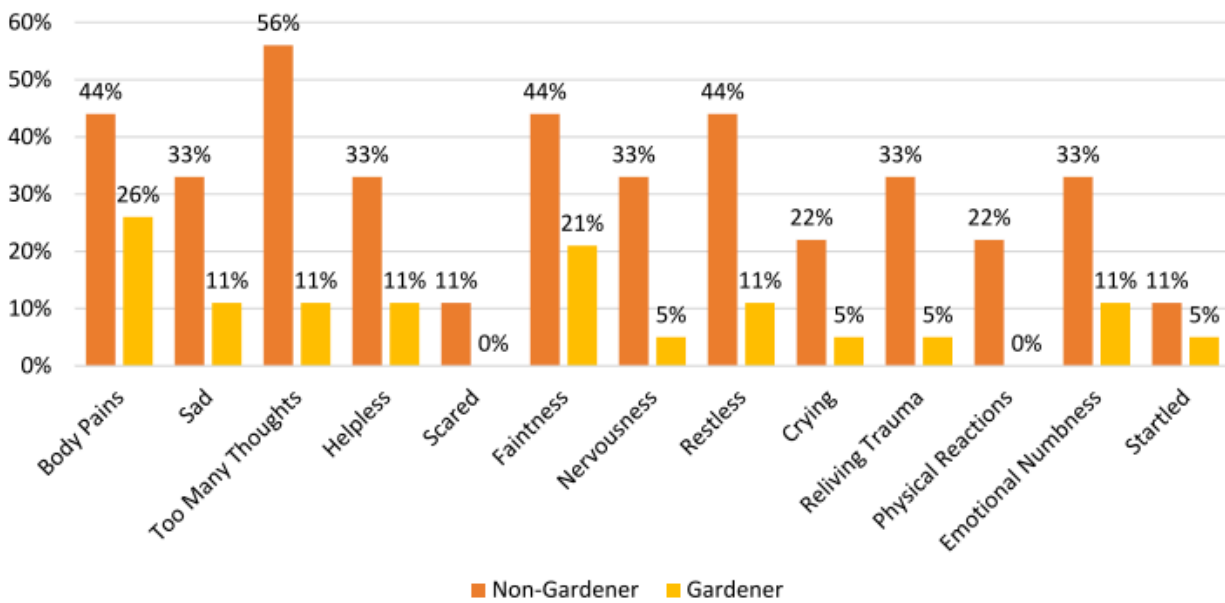


Figure 31. Differences in Symptoms of Mental Health Between Gardeners and Non-Gardeners

Table 1: The method and time of travel for 124 community gardeners surveyed in Cleveland, Ohio (Blaine et al., 2010).

Method of Travel to Garden	Respondents (%)
Walk	53
Car	41
Bike	4
Public Transportation	2
Travel Time to Garden (minutes)	Respondents (%)
Less Than 5	41
5 to 9	25
10 to 14	16
15-19	8
20 and more	10

Table 2: The number (N) and percentage (%) of all gardeners or park users that assigned a motivation or importance (coded into a cluster) to each form of 1141 urban nature.

Motivations or importance assigned to urban nature space (clusters of coded responses)	Community gardens (N and % gardeners)	Parks (N and % park users)	Trees (N and % park users)
Aesthetic	5; 3%	222; 36.4%	258; 40.7%
Environmental	29; 16%	21; 3.4%	210; 33.2%
Food provision*	129; 68%	NA	NA
Health	44; 23%	5; 0.8%	2; 0.3%
Naturalness and biodiversity	18; 10%	23; 3.7%	85; 13.4%
Psychological	88; 48%	108; 17.7%	47; 7.4%
Sociocultural	129; 68%	230; 37.6%	30; 4.7%
Other	4; 2%	3; 0.5%	1; 0.2%

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