



Delta Community-Based Farm District

Planning Southlands as a Regionally Significant Model for Metro Vancouver

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LAYOUT
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about the authors

TARA MOREAU, PHD

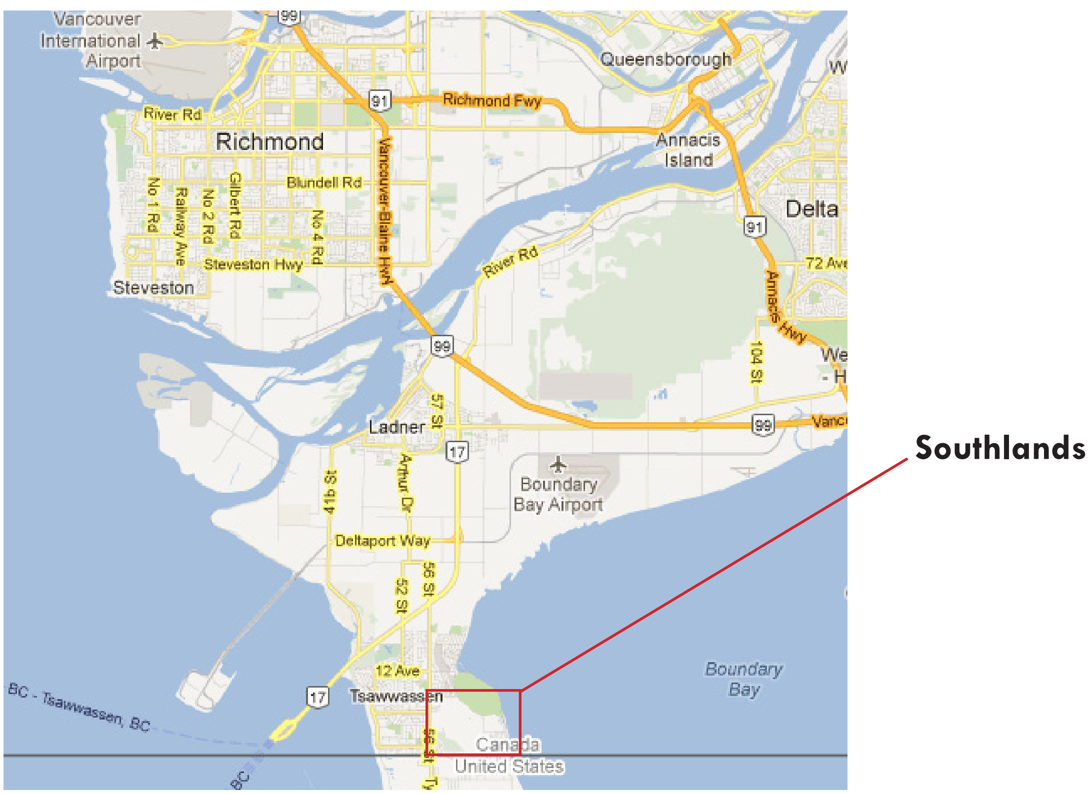
Dr. Moreau is a sustainable agriculture scientist. Over the past decade, her research has focused on the science, planning, and policy of sustainable food systems. As the sole proprietor of Grow Moreau, her expertise around climate change, urban agriculture and integrated pest management give her a diverse background into the implementation of sustainable agriculture and food systems. Dr. Moreau recently completed a Post-Doctoral Fellowship with the Pacific Institute for Climate Solutions where she developed a guide to address climate change for urban and peri-urban agriculture, led instructional workshops for small-scale producers, and published scientific papers on greenhouse gas mitigation within British Columbia's agriculture sector. Dr. Moreau currently sits on the Vancouver Food Policy Council and works as a consultant with the United Nations – Food and Agriculture Organization. She completed a PhD in the Faculty of Land and Food Systems at the University of British Columbia where she evaluated alternative pest controls for whiteflies in collaboration with the BC Greenhouse Growers' Association. She obtained a Master of Science from Dalhousie University and the Organic Agriculture Centre of Canada.

KIMBERLEY HODGSON, MURP, MS, AICP, RD

Hodgson is the founder of Cultivating Healthy Places, an international consulting business specializing in community health, social equity, and sustainable food systems planning. As a certified planner and health professional, her work focuses on conducting policy-relevant research and providing technical assistance to the public and private sectors related to the design and development of healthy, sustainable places. She has taught graduate courses on the connections between health, food systems, and planning; established national food system coalitions and partnerships; given numerous presentations on food systems planning across the United States; and authored a variety of research and policy reports, promotional and educational materials, and newspaper articles. As the former Senior Research Associate and Manager of the Planning and Community Health Research Center at the American Planning Association, Ms. Hodgson managed several national research projects and engaged in multiple outreach and education activities, which focused on the integration of community health issues into contemporary urban and regional planning practice. Ms. Hodgson is co-author of *Urban Agriculture: Growing Healthy Sustainable Places*, and a member of the American Planning Association and Canadian Institute of Planners. She also sits on the Vancouver Food Policy Council and the American Planning Association's Food Interest Group, and is the vice-chair of the United States STAR Community Index's Health and Safety Technical Advisory Committee. She holds Master of Science in food policy and applied nutrition from Tufts University, and a Master of Urban and Regional Planning with a specialization in community health and sustainability from Virginia Tech.

executive summary

The Delta Community-Based Farm District Plan provides an example of a planning framework for how the Corporation of Delta, British Columbia could manage community-based farming enterprises on the Southlands in a socially, economically, and ecologically sound way. The 3-phased plan illustrates how the District could be transformed to support community-based farming activities over 30 years by describing a diversity of community farm types with a proposed governance and management structure. An exploration of this specific scenario reveals significant economic benefits for Delta and its residents. These estimated annual benefits include over $2.39 million per year in net revenue for farmers, approximately 26 full-time jobs per year created, and $281,645 per year in net revenue for the proposed governing non-profit organization. Total net revenue for the 30-year time period would be approximately approximately $2.8 million for the proposed governing non-profit organization. Startup costs for this scenario would be $1.9 million for farmers and $1.6 million for the governing entity. This scenario successfully illustrates how such a community-based farming endeavor could be economically self-sufficient after only ten years of operation and serve as an innovative model for community-based farming in Metro Vancouver and beyond.



introduction

The Southlands, a tract of land on the southeast quadrant of Tsawwassen in Delta, British Columbia (BC), provides an opportunity to create an economically viable and thriving community-based farming district. The District would offer land to farmers who have various levels of experience and abilities to undertake a future in farming.

COMMUNITY-BASED FARMING

Community-based farming is the production, processing, distribution, and marketing of food and other products that cultivate direct connections between farmers and the adjacent community. Community-based farming:

- Builds community through the interaction of people with the land;
- Promotes small-scale, sustainable agriculture;
- Protects and enhances natural habitat for wildlife;
- Creates aesthetically pleasing landscapes, and;
- Embraces the local and regional context.

Important considerations of community-based farming for Southlands include:

- Farming generally occurs at a smaller-scale, allowing for a greater diversity of farm types;
- Governance and cooperative systems, such as shared facilities and equipment, are important for economic short-term feasibility and long-term viability;
- Interaction between farmers and residents and economic activity is provided through direct market sales at the Southlands' Neighbourhood Centre and Market Square and other supportive economic infrastructure.

COMMUNITY-BASED FARMS IN NORTH AMERICA

Many farms and organizations throughout North America are interested in the social, economic, and environmental benefits of community-based farming. Innovative programs and food system enterprises aimed at enabling community-based farming include examples such as Intervale (Burlington, Vermont) , Serenbe (Atlanta,Georgia) , 21 Acres (Woodinville, Washington) , Zenger Farm (Portland, Seattle) , Fairview Gardens (Golita, California) and Prairie Crossing (Grayslake, Illinois) . More recently, new community-based farms such as the Black Creek Community Farm in Toronto have been planned and are currently being launched.

PURPOSE

The purpose of this plan is to make a compelling case for how the Delta Community-Based Farm District (the District) could be a valuable economic asset for the Corporation of Delta and a regionally significant model for connecting people (both residents and consumers) to farming.

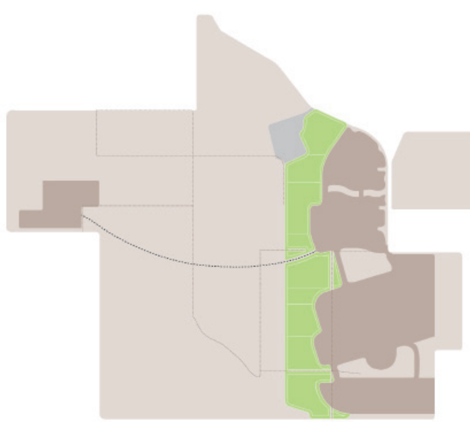
The plan outlines a potential framework for undertaking and managing a diversity of forms and scales of community-based farming and related food system activities on the Southlands, in a manner that is economically feasible, ecologically sound and provides lasting social value to residents. This District would embrace the unique context of the Southlands, while complementing and supporting the rich agricultural history of Delta, as well as the variety of agricultural activity currently taking place in Metro Vancouver.

OVERVIEW

The plan details how the District (a total of 279.2 acres) could be transformed to support community-based farming activities over the course of three phases, each lasting approximately 10 years for a total of 30 years. The initial phase, Phase 1 (years 1 to 10), could focus on proving the economic feasibility of community-based farming on the 49.3 acres located in the eastern portion of the District (see the green area in the map below).

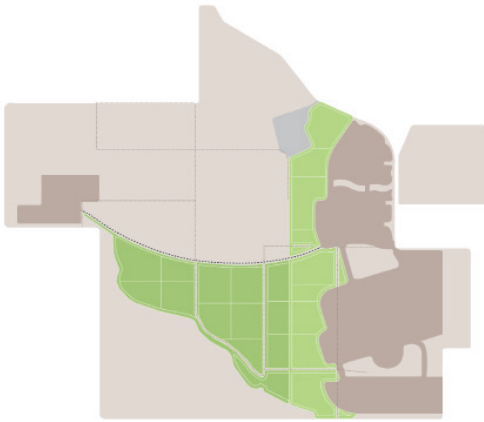
Subsequent phases, Phase 2 (years 11-20) and Phase 3 (years 21-30), could focus on expanding the community-based farming activities to the 60 acres in the south-western and 169.8 acres in northwestern portions of the District, respectively (see the green areas in the maps below and the full-sized maps in Appendix A).

PHASE 1

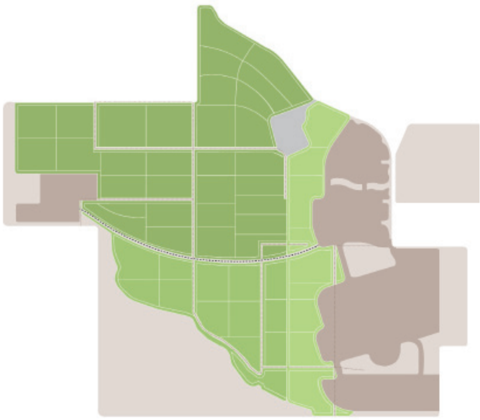


Given the 20-year time frame needed to establish community-based farming in Phase 1 and Phase 2 on the eastern and southern portions of the District, Delta has the opportunity to maintain a strong conventional agricultural operation on the northern portion of the land. This phased approach represents a realistic way to expand community-based farming across the District. The length of each phase and the total duration of expansion could be altered to accommodate a number of social, economic, and ecological factors.

PHASE 2



PHASE 3



SOUTHLANDS: RECENT HISTORY

The Southlands property is currently owned by Century Group Lands Corporation. In October 2006, Century Group outlined a broad land use vision to the community of Delta with multi-use development on one-third of the site, and agriculture, natural habitat, and recreation uses on the remaining two-thirds. The vision is aimed at achieving a more complete community of Tsawwassen, while providing a valuable asset to the wider Delta community. To achieve this vision, Century Group proposes transferring the agriculture, natural, habitat, and recreation area of the land (approximately 279.2 acres or 80%) to the Corporation of Delta, and developing the remaining area into a mixed-use urban community. This plan provides a framework for how the Corporation of Delta can activate community-based farming activities.

SOUTHLANDS: AGRICULTURAL CAPABILITY

The capacity of the Southlands agriculture area for food production is ultimately dependent on the physical and ecological features of the land: soil, drainage, and climate. This land presents various challenges and opportunities to community-based farming as outlined below.

Soil & Drainage

A 2008 agronomic study, conducted by MasseLink Environmental Design, of the Southlands property was conducted to provide basic information on the viability of a range of agricultural practices and crop types based on soils, microclimates, and habitat enhancement. The current agricultural capability of the property's soils was rated as Class 3 to 5 (low to moderate). The two major limitations to agriculture capability on some areas of the property were identified as high water tables and saline conditions. Both of these limitations can be addressed through infrastructure upgrades and sound management practices. For example, cleaning and upgrading the established drainage systems followed by the judicious incorporation of organic matter to improve soil structure would improve poorly drained soils. Likewise, soil salinity can be addressed and/or mitigated by appropriate irrigation strategies, and the use of raised beds. Improvements to the agricultural capability through sound management can increase the soil ratings to Class 1 to 3 (moderate to very high) on some areas. Local farmer knowledge around effective drainage techniques should be explored further. Detailed assessment of the soils on the property identified 11 soil management units that categorize the land based on the soil characteristics, the ability of the land to support various agricultural approaches and possible best management practices or infrastructure upgrades that could improve agriculture capability.

Climate

Set within the Corporation of Delta, in BC, Canada, the property is located on the west shore of Boundary Bay in an area that is typically characterized by cool wet winters and mild, dry summers. The relatively long frost-free period (approximately 160 to 200 frost-free days between May and October), mild winter and summer temperatures provides a very favorable climate for cultivation of a wide range of agricultural crops.

The Corporation of Delta is largely located on the floodplain of the Fraser River. Considering that much of the property lies between 2 and 15 m above sea level, rising sea levels are expected to significantly increase onsite saline conditions and therefore longer-term engineering solutions are needed. Furthermore, approximately 78% of the mean annual precipitation (approximately 950 mm of precipitation per year) falls between October and April, which results in high water tables that are near surface level during the wet winter months. Potential flooding of the Southlands property could possibly occur either through coastal flooding or through internal drainage issues.

A perimeter dyke system extends from the Surrey municipal border on the Fraser River to the Tsawwassen peninsula, and from the US border at Boundary Bay to the Surrey municipal border near the intersection of Highway 91 and 99. While the perimeter dyke is almost continuous, there are some discontinuities particularly near Boundary Bay Village. For the Southlands, the primary flood protection system consists of floodwalls and some bank protections. However, these walls do not meet the current flood protection standards and overtopping has occurred in recent storm surge events. While the Corporation of Delta annually erects a sand berm to limit wave action at vulnerable areas of the seawall, floodwaters could pass through. Therefore, improvements to the flood protection systems (such as perimeter dyke improvements and increased land elevation) are necessary to reduce the risks associated with storm surges. However this requires construction of works off the Southlands property.

Climate change predictions for the surrounding area suggest increased moisture in winter months and reduced water availability in summer months. While climate change presents a significant challenge in the long-term planning of this property, the community-based farming model provides a unique opportunity and effective means to explore innovative farming techniques that can be matched to the site-specific soils and features while implementing agriculture types that are designed to be resilient and adaptable to climate changes.

Other Considerations

While outside the scope of this plan, there are specific steps that need to be taken to prepare the land for community-based farming. For example, additional information is needed on the quantity and quality of the groundwater that is potentially available from the one groundwater well located on the property. Monitoring site-specific characteristics such as precipitation, evaporation, soil moisture, offsite surface water flows, water quality and winds would provide valuable information for agricultural system and enterprise planning. And, a water drainage capability assessment and determination of water storage capacities would need to be completed.

PLAN CONTENT

The proposed plan for the Delta Community-Based Farm District (the District):

1. identifies a 30 year vision and goals for community-based farming and related food system activities on the land;
2. identifies and describes a diversity of community farm types that could be used to achieve the long-range vision and goals;
3. proposes a potential governance and management structure for how to connect, coordinate, and manage the various farm types;
4. explores potential steps and estimated costs required for implementing the farm types; and
5. explores the potential economic, ecological and social benefits of the farm types to the immediate and surrounding communities.

vision & goals

The following vision statement and goals provide a potential 30-year framework for achieving socially beneficial, economically viable, and ecologically sound farming in the Corporation of Delta. The vision and goals outlined provide the underlying foundation for this plan.

VISION

The Delta Community-Based Farm District is vibrant, thriving, and beautiful with a diversity of community-based farming enterprises and activities that are sustainably integrated with the surrounding neighborhoods and natural habitat areas, where people can connect, learn, and engage with others and the land.

GOALS

The Delta Community-Based Farm District will:

Social Goals

- Foster a sense of collaboration and cooperation among people involved in the food system
- Facilitate direct connections between food producers and consumers
- Provide public access and educational experiences for residents, visitors, and other food system stakeholders to learn about community agriculture and its connection to the land
- Serve as a best-practice and model for community-based farming in the Metro Vancouver region
- Improve the health and wellness of farmers and the people they serve
- Provide increased availability and access to fresh, healthy foods to the local community

Economic Goals

- Activate, sustain, and connect a diversity of economically viable community agricultural activities and ancillary businesses
- Create new food system jobs and income that circulates within the local economy
- Support farming as a profitable occupation
- Provide a livable wage for community agricultural workers
- Attract a diversity of current and new farmers
- Offer access to affordable land and new direct-sale opportunities

- Encourage and reward diversity and innovation in the variety of food products grown, different agricultural practices, successful business models, and increased consumer choices

Ecological Goals

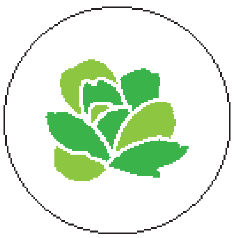
- Conserve, protect, and regenerate natural resources, landscapes and bio-diversity
- Thrive in the face of challenges, such as unpredictable climate, increased pest incidence, and declining water and energy supplies
- Provide natural habitat areas for wildlife in general and refugia for organisms (e.g. insect, raptor and reptile bio-control agents) beneficial to agriculture.
- Facilitate environmental stewardship

community farm types

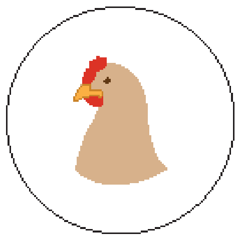
OVERVIEW

The unique characteristics of the District provide opportunities and challenges for farming and related food system activities. This plan proposes a diversity of community farm types that represent a variety of potential small-scale enterprises appropriate to the land. These farm types can be mixed and matched in different combinations and sizes to maximize social, economic, and ecological benefits, and minimize startup, production, and operation costs.

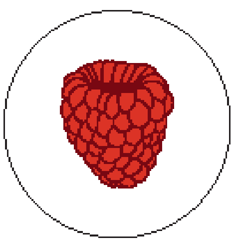
The six proposed community farm types include:



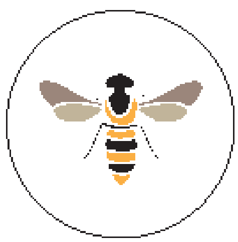
Mixed Vegetables



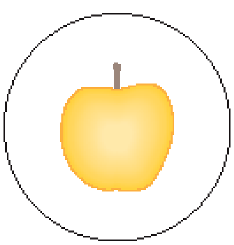
Small Animals



Small Fruits



Bees



Tree Fruits

Compost

The following pages explore and illustrate the potential production activities, size, scale, location, end products, and benefits associated with each farm type. In addition, potential startup costs, operation costs (variable and fixed), and revenue are explored. Data for these economic summaries were primarily based on the Planning for Profit series, produced by the B.C. Ministry of Agriculture and Lands. Due to the limitations and variability of available data, the economic summaries for each farm type were calculated to illustrate the potential economic feasibility and long-term viability of community-based farming. Estimations, while data based, should not be construed as definitive enterprise budgets, due to a multitude of variables, including specific production practices. The proposed farm types would need to adhere to specific standards of practice (see Appendix B) that minimize inputs and maximize ecological integrity through integrated farm management strategies such as the use of composts and integrated pest management. Therefore, the economic summaries could vary.

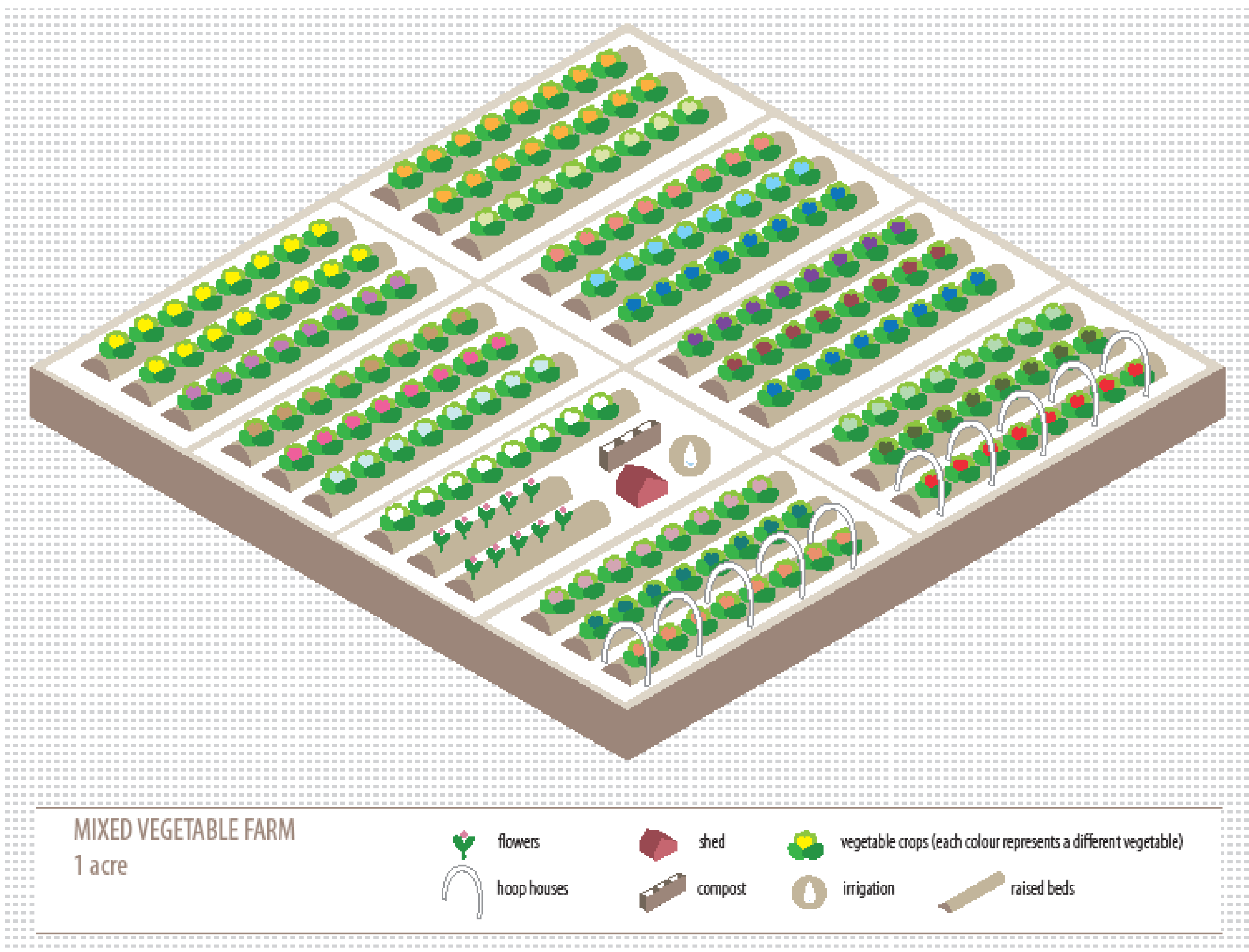
For each farm type, specific terms are used to describe startup and operation costs, and revenue. These include:

- **Startup costs** are the costs associated with capital investments in irrigation, soil, equipment, plant materials, and specialized infrastructure.
- **Operating costs** include both variable and fixed costs. Variable operating costs are those costs that can readily be identified with items produced by the business. Examples are labor, fertilizer, irrigation, fuel, and machinery repair costs. Fixed operating costs include those items that are required for operation but are not easily allocated to a specific product. Examples include land rent, insurance, taxes, utilities, office supplies, etc.
- **Revenue** is the revenue generated from wholesale and direct market sales of a business product.
- **Gross margin** is the revenue minus direct costs.
- **Net revenue** equals revenue less all operating costs (variable and fixed), or the farmers take-home pay. This amount does not account for startup costs.

mixed vegetables

DESCRIPTION AND SIZE

This 1-acre, mixed vegetable farm type includes the commercial production of 20 vegetable annual crops, grown on raised beds. Eventual crop selections should be tailored to fit the supply and demand of local consumers. This farm type also includes land area allocated to cut flower production, shed space, and pathways between raised beds. Noncommercial products produced by this farm type include organic material, waste, and ecosystems services (such as pollination, carbon sequestration, recreation, microclimate modification, etc.). This 1-acre farm unit is not necessarily the ideal size, but is presented for computational purposes.



LOCATION

This farm type would be possible in most areas of the District. However, upgrading of the drainage system must be made to adequately reduce the water tables.

ASSUMPTIONS

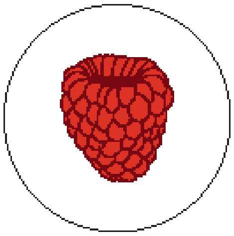
Crop Layout: On this 1-acre farm type, 55% of the area is in vegetable production, 37% is allocated to pathways, 4% is in services (shed, irrigation, etc.). and the remaining 4% of the acre is in flower production. The assumption is that 20 annual vegetable crops are planted using 2,000 square feet each. Crops are cultivated in raised beds that are 3 ft. x 100 ft. long, with 1 ft paths surrounding them. Therefore, the total area of a raised bed (300) plus path (210), equals 510 square feet.

Economic Data: The production costs, yields, required capital, wholesale market price and fixed costs were primarily obtained from the Five Acres Mixed Vegetables Operation: Full Production, 2008. Direct production costs for flowers were based on the production costs of herbs however no market value for herbs was available therefore it was assumed that they were not sold for revenue. The direct-market price data was obtained from Understanding the Agricultural Potential in Surrey's Underutilized ALR, 2012. Specific crop production and market data for Kale and Pak Choi was taken from Maryland Vegetable Enterprise Budgets, 2008. Based on available information, the variable and direct costs of 20 vegetable crops accounts for seed, fertilizer, pest control, machinery, irrigation, sampling IPM, transport, packing, labor, other. Used for illustrative purposes only, it is assumed that this farm type would be managed to minimize inputs through integrated farm management strategies such as the use of compost and integrated pest management.

ECONOMIC SUMMARY

The estimated start-up costs of this farm type are $7,007, which includes irrigation capital, raised beds, tools, supplies, storage shed and fencing (see Appendix C for details). The annual net revenue based on production of 20 crops per year sold at direct-market prices is $17,408.

Annual Net Revenue		
	Whole Sale Market Price	**Direct-Market Price**
Revenue	$9,688.9	$23,722.2
Operating Costs (Variable)	$4,353.9	$4,353.9
Gross Margin	$5,335.0	$19,368.3
Operating Costs (Fixed)	$1,960.0	$1,960.0
Net Revenue	$3,375.0	$17,408.3



small fruits

DESCRIPTION AND SIZE

This ½-acre, small fruit farm type includes the commercial production of 4 perennial crops: blackberries, raspberries, table grapes, and strawberries. Eventual crop selections should be tailored to fit the regional supply and consumer demand for local products. Noncommercial products produced by this farm type include organic material, waste, and ecosystems services (such as pollination, carbon sequestration, recreation, microclimate modification, etc.). This ½ acre farm unit is not necessarily the ideal size, but is presented for computational purposes.

LOCATION

This farm type would require reasonably or better well-drained soils and/or modified growing systems such as elevated surface mounded planting rows or raised beds to keep plant roots away from high winter water tables.

ASSUMPTIONS

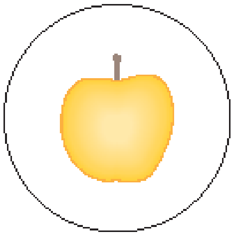
Crop Layout: The production unit is ½ acre with each of the four perennial fruit crops grown on 1/8 of an acre. Crop layouts are based on recommended plant spacing for blackberries, raspberries and strawberries from Five Acre Mixed Berry Operation: Strawberry, Blueberry, Raspberry and Blackberry: Full Production, 2008. Information for Table Grape production was obtained from Mixed Tree Fruit and Table Grape Small Scale Operation – 5 Acres, 2008.

Economic Data: The production costs, yields, revenue, and required capital for blackberries, raspberries and strawberries were primarily obtained from Five Acre Mixed Berry Operation: Strawberry, Blueberry, Raspberry and Blackberry: Full Production, 2008. The fixed costs were primarily obtained from the Five Acres Mixed Vegetables Operation: Full Production, 2008. The direct production costs per acre included fertilizer, weed control, insect control, disease control, machinery, other, transport, and labor. This data was used for illustrative purposes only and we assume that this farm type would be managed to minimize inputs through integrated farm management strategies such as the use of compost and integrated pest management. All small fruit crop economic estimates are based on mature plantings at full production. Production and economic data for Table Grapes was taken from Mixed Tree Fruit and Table Grape Small Scale Operation – 5 Acres, 2008. The direct production costs include fertilizers, pesticides, packaging, fuel and other.

ECONOMIC SUMMARY

The estimated start-up costs of this farm type are $6,640 dollars which includes irrigation capital, tools, supplies, storage shed, fencing and trellising (see Appendix C for details). The annual net revenue per year for a ½ acre small fruit farm sold at direct-market prices is $7,256 dollars.

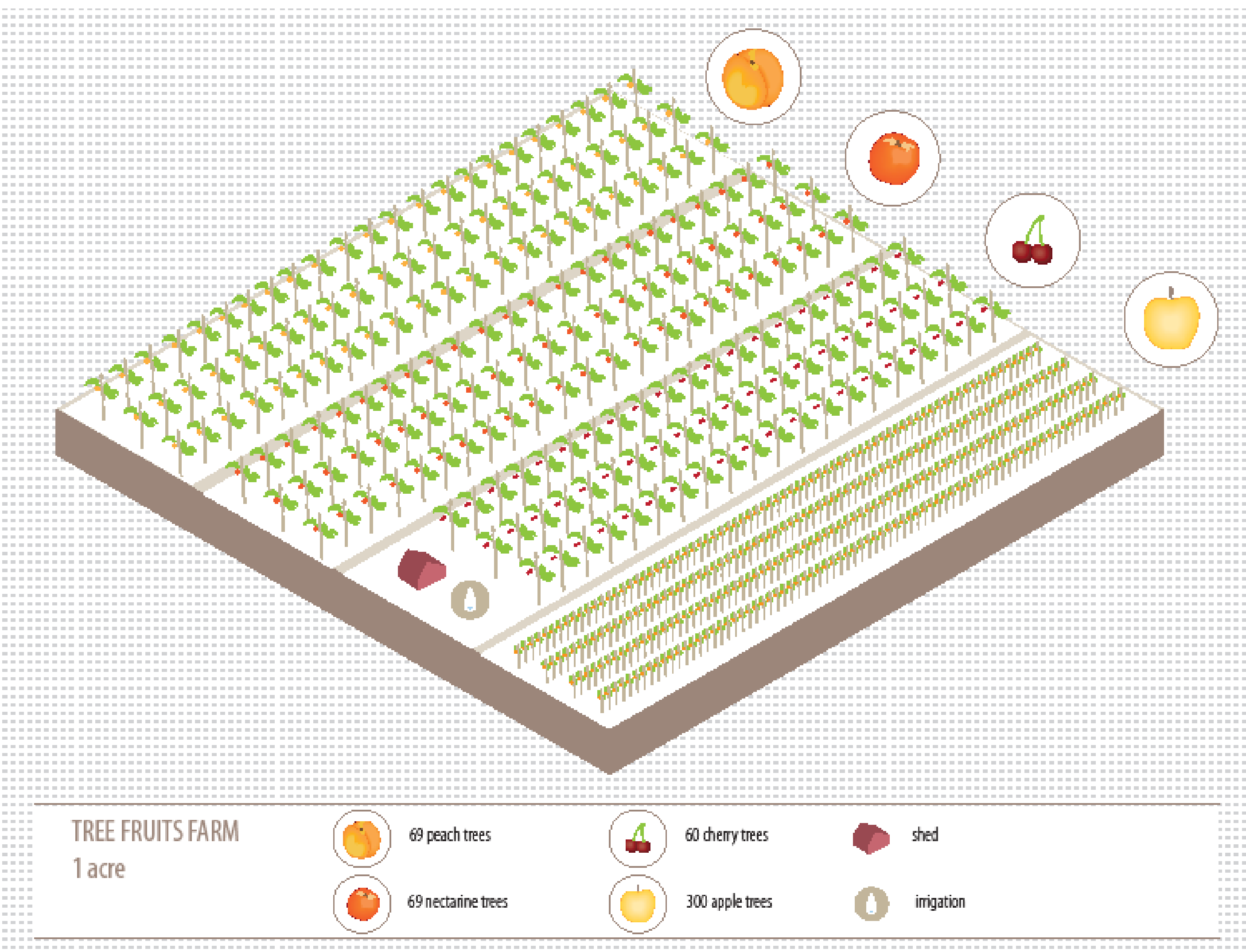
Annual Net Revenue		
	Whole Sale Market Price	**Direct-Market Price**
Revenue	$11,447.6	$13,842.0
Operating Costs (Variable)	$5,605.9	$5,605.9
Gross Margin	$5,841.7	$8,236.1
Operating Costs (Fixed)	$980.0	$980.0
Net Revenue	$4,861.7	$7,256.1



tree fruits

DESCRIPTION AND SIZE

This 1-acre, tree fruit farm type includes the commercial production of 4 perennial tree crops: apples, sweet cherries, nectarines, and peaches. Crop selections should be tailored to fit the regional supply and consumer demand for local products although for tree fruits it should be recognized that these farm types can take anywhere from 3-10 years to reach full production maturity. Noncommercial products produced by this farm type include organic material, waste and ecosystems services (such as pollination, carbon sequestration, recreation, microclimate modification, etc.). This 1-acre farm unit is not necessarily the ideal size, but is presented for computational purposes.



LOCATION

This farm type would require well-drained soils and/or modified growing systems such as elevated surfaces or raised planting rows to keep plant roots away from saturated conditions.

ASSUMPTIONS

Crop Layout: Tree fruit layout and planting densities were obtained from Mixed Tree Fruit and Table Grape Small Scale Operation 5 Acres, 2002.

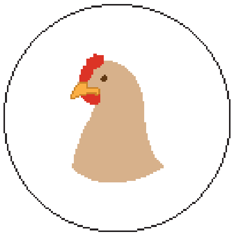
Economic Data: The production cost, yield data, market price analysis for the tree fruits was obtained from the Mixed Tree Fruit and Table Grape Small Scale Operation 5 Acres, 2002. The fixed costs were primarily obtained from the Five Acres Mixed Vegetables Operation: Full Production, 2008.

While the production data presented is based on conventional direct expenses (including fertilizer and pesticides) for illustrative purposes only, sustainable production practices would be followed therefore costs will vary. Based on the data available, all tree fruit crops are established plantings at full production. However, a full mature bearing orchard will take on average 4-5 years for apples, and 8-10 years for cherries, nectarines and peaches. Furthermore, yields noted are marketable yields and not total yields.

ECONOMIC ANALYSIS

The estimated start-up costs of this farm type are $12,829 dollars which includes irrigation capital, trees, tree supports, tools and supplies and a storage shed (see Appendix C for details). The annual net revenue per year for a 1 acre tree fruit farm with product sold at direct-market prices is $6,543 dollars.

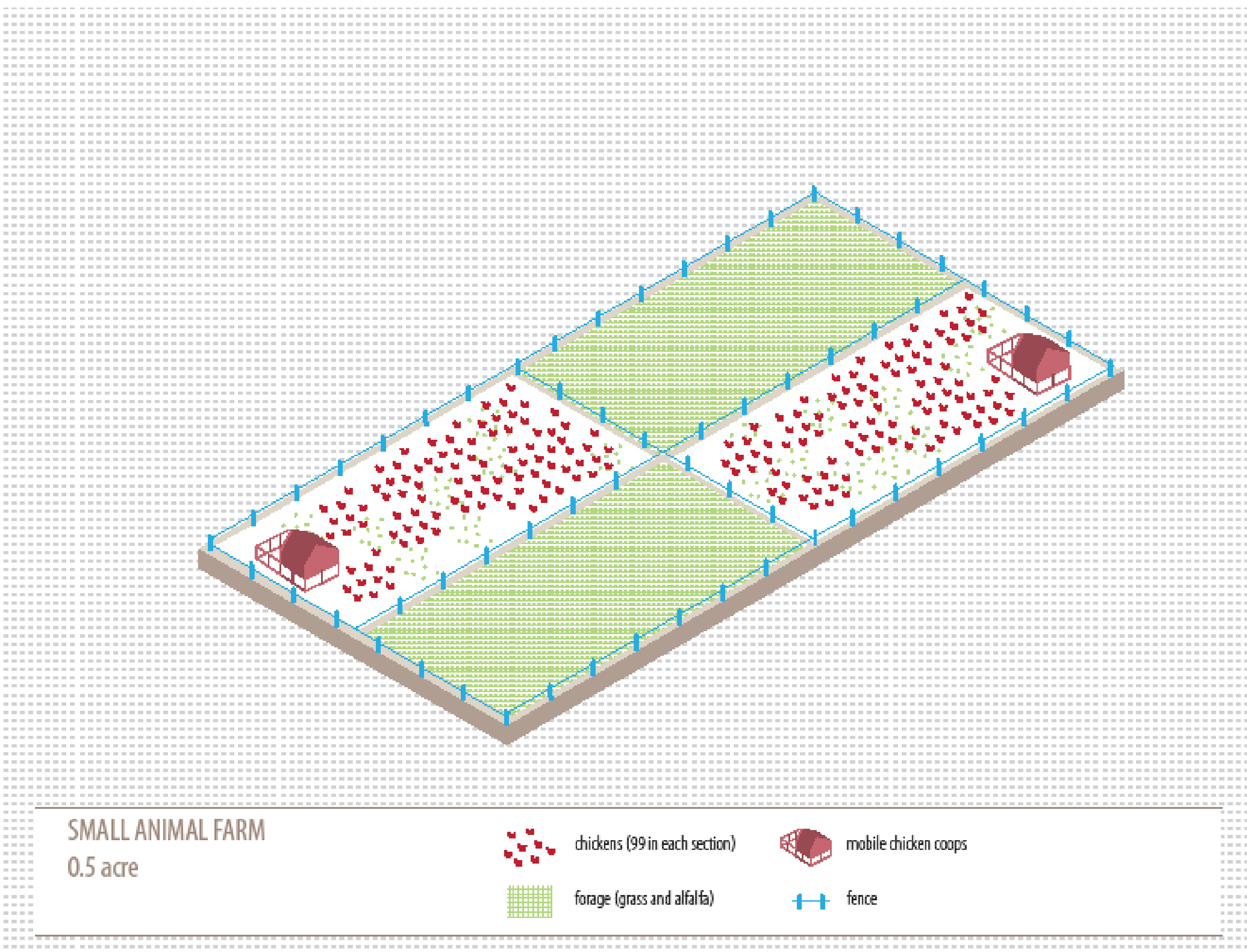
Annual Net Revenue		
	Whole Sale Market Price	**Direct-Market Price**
Revenue	$6,739.3	$11,567.0
Operating Costs (Variable)	$3,063.4	$3,063.4
Gross Margin	$3,675.9	$8,503.6
Operating Costs (Fixed)	$1,960.0	$1,960.0
Net Revenue	$1,715.9	$6,543.6



small animals

DESCRIPTION & SIZE

This ½ acre small animal farm type includes the commercial production of both chicken eggs and chicken meat. Two chicken flocks of 99 birds (99 birds for eggs plus 99 birds for meat, for a total of 198 birds) are rotated throughout the forage pastures. Noncommercial products produced from this farm include manure, and blood and bone for composting. Chickens can also be used as a pest management service. For example, chickens introduced to apple orchards at appropriate times can target codling moth larvae, which significantly reduce apple yields. This ½ -acre farm unit is not necessarily the ideal size, but is presented for computational purposes.



LOCATION

This farm type would be possible on most areas of the District assuming that the necessary drainage updates were made.

ASSUMPTIONS

Crop Layout: The production unit is a ½ farm with four production bays. The operation raises and sells 99 broilers and 99 layers for eggs. The broilers and layers are maintained in different bays but are rotated through the pasture bays. By keeping only 99 birds for each product, it is assumed that this small production unit is not regulated and control by quota.

Economic Data: The production costs, annual yields, labor hours and market prices (wholesale and direct-market) were obtained from the Twenty Acre Mixed Livestock Operation: Broilers, Layers/Eggs, Sheep, Beef: Full Production 2008. We assumed that we had 99 chickens for broiler (meat) production and 99 chickens for egg production. The production costs includes chicks, feed, vet and medicine, catching and moving, barn cleaning and sawdust, buildings equipment repair and maintenance, spent hen disposal, labor and free range maintenance. To allow for comparison of annual operating fixed costs across all farm types, fixed cost data was taken from the Required Capital Section of the Five Acres Mixed Vegetables Operation: Full Production, 2008. Required capital costs were calculated for ½ acre.

ECONOMIC ANALYSIS

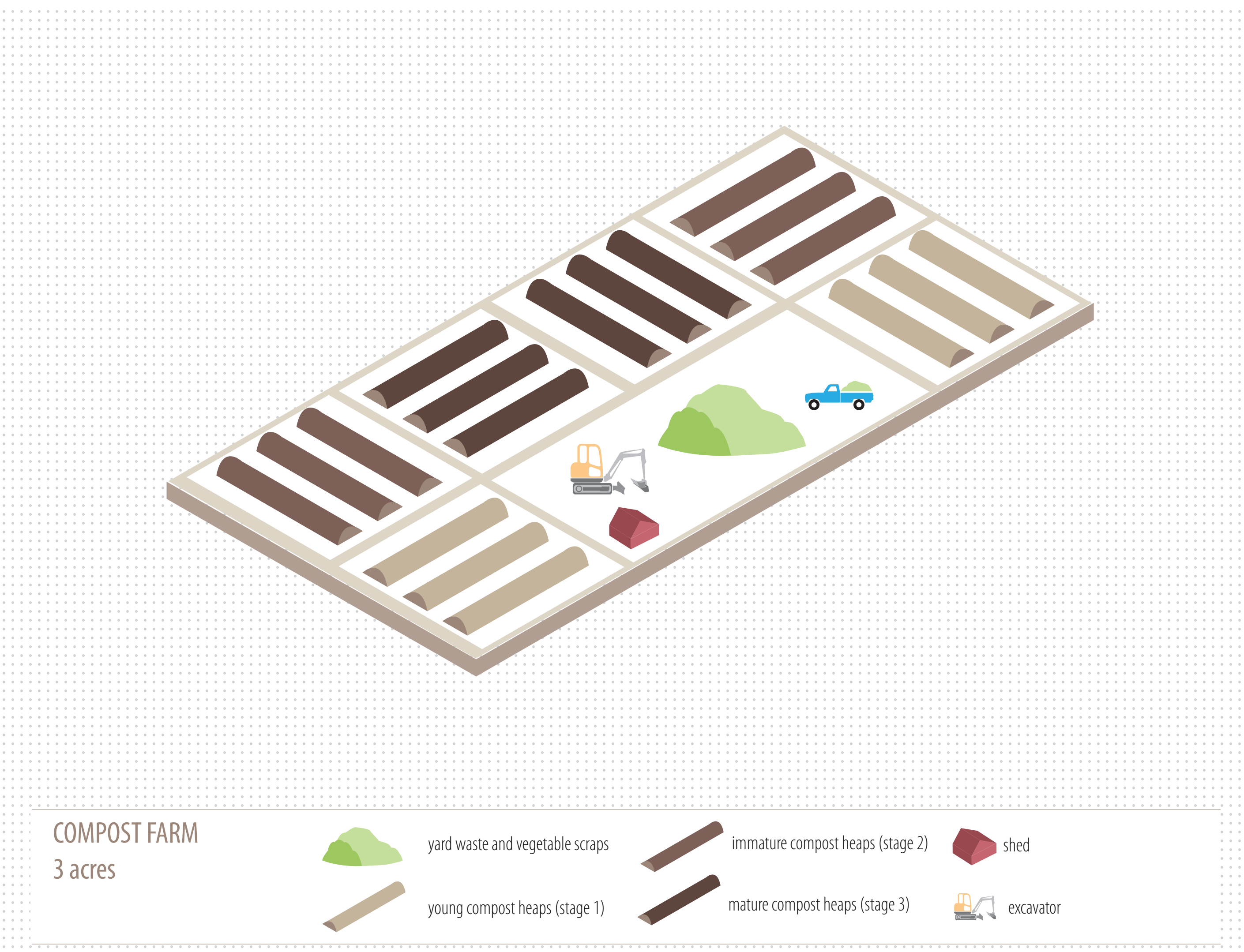
The start-up costs for a small animal farm type are estimated to be $7,800 which includes the cost of coops, sheds, tools and supplies and fencing (see Appendix C for details). The net revenue of this farm type based on direct-market prices is $292.2 per year. The low net revenue of this farm type highlights the importance of diversification through other ventures such as mixed vegetable operations, other small animals (such as goals, rabbits or turkey), small fruits or small-scale processing operations.

Annual Net Revenue		
	Whole Sale Market Price	**Direct-Market Price**
Revenue	$6,591.0	$8,206.1
Operating Costs (Variable)	$6,933.9	$6,933.9
Gross Margin	-$342.8	$1,272.2
Operating Costs (Fixed)	$980.0	$980.0
Net Revenue	-$1,322.8	$292.2

compost

DESCRIPTION & SIZE

This 3-acre composting facility functions to collect organic waste from community-based farming operations and from the mixed-use urban community. Organic waste could also be collected from outside of the Southlands. Organic waste is processed through the compost facility and mature compost is then sold back to the farmers and the surrounding community. The commercial production of onsite compost provides the essential organic material necessary for the District to improve soil quality.



LOCATION

Composting facilities require specific drainage and site considerations. This 3-acre compost facility could be implemented in Phase 1 but located within the Phase 2 area in order to manage odours and increase the distance to residential development.

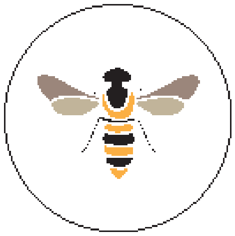
ASSUMPTIONS

The information used to develop this farm type was obtained from BC Agricultural Composting Handbook, 1998. Based on the information within this handbook, a turned windrow facility was selected for this example. This facility processes 3,450 tonnes of organic material and produces 1,806 tonnes of mature compost per year. To allow for comparison of annual operating fixed costs across all farm types, fixed cost data was taken from the Required Capital Section of the Five Acres Mixed Vegetables Operation: Full Production, 2008. Required capital costs were calculated for 3 acres. For planning purposes, only one facility will be used throughout the three phases of the project. However, depending upon the production output and farming needs, expansion of the operation may be necessary.

ECONOMIC ANALYSIS

The estimated start-up costs of this facility are $109,447, which includes equipment costs and buildings for curing and storing compost (see Appendix C for details). The annual net revenue based on production of 1806 tonnes/year for retail prices is $132,124.

Annual Net Revenue		
	Bulk Market Costs	**Retail Market Costs**
Revenue	$172,462.0	$205,002.0
Operating Costs (Variable)	$68,918.0	$68,918.0
Gross Margin	$103,544.0	$136,084.0
Operating Costs (Fixed)	$5,880.0	$5,880.0
Net Revenue	$97,664.0	$130,204.0



bees

DESCRIPTION
The keeping of bees provides the essential service of crop pollination, but also provides a number of products that can be sold to wholesalers and consumers, including honey, floral and flavoured honey, and wax products. Because pollination is essential to other community farm types in this plan, honey producers could receive access to land free of charge in exchange for their pollination services.

SIZE
Five acres of land or less is considered adequate space for beekeeping equipment: honey house and extracting and storage equipment. Approximately 250 beehives are considered necessary for a commercially viable apiary.

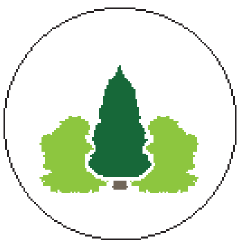
LOCATION
Due to the pollination services they provide, hives are often placed in many different locations across agriculturally productive land.

ECONOMIC SUMMARY
The start-up and annual costs used to estimate the projected annual net revenue per bee hive are based on data obtained from Planning for Profit: Honey Production Start-Up (per bee hive), BC Ministry of Agriculture, Food and Fisheries, Summer 2001. Start-up costs include the amount needed to purchase a beehive and the costs associated with honey extraction and storage equipment. Annual costs expenses include feed, supplies, hive repair and maintenance, as well as costs associated with purchasing containers and labels for honey sales. A summary of these expenses is listed below. For greater detail, see Appendix C.

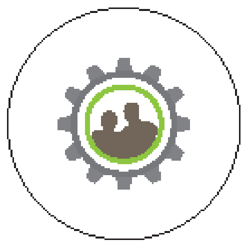
Annual Costs & Net Revenue		
	$/hive	**$/250 hives**
Start-Up Costs	$325.20	$81,299.50
Operating Costs	$115.27	$28,818.25
Revenue	$233.08	$58,270.00
Net Revenue	$117.81	$117.81

community farming services

In addition to the six community farm types, supportive infrastructure and equipment are necessary for farming. This plan focuses on providing shared access to things that would otherwise be cost prohibitive to individual farmers. While there are a variety of community farming services, such as environmental amenities, physical infrastructure, and farming equipment that could be considered, this plan focuses on a select few. These include hedgerows and shared equipment (both basic and specialized).



Hedgerows



Shared Equipment

The economic estimates included in this section should not be construed as definitive costs, due to limitations and variability in the available data for these services.

hedgerows

DESCRIPTION

Hedgerows are linear or curvilinear barriers of trees, shrubs, perennial forbs and/or grasses usually associated with field boundaries. The Delta Community-Based Farm District hedgerows could include a mixture of coniferous and deciduous native trees and shrubs, such as the examples below:

Coniferous

Plant	Height (m)
Western red cedar	>20
Western hemlock	>20
Shore pine	7 to 10
Douglas fir	>20
Sitka spruce	>20

Deciduous

Plant	Height (m)	Edible
Black hawthorn	6	x
Douglas maple	5 to 10	
Stink currant	2 to 3	x
Red elderberry	2 to 5	x
Saskatoon berry	2 to 5	x
Nootka rose	1 to 2	
Salmonberry	2 to 4	x
Hardhack	3 to 4	
Bitter cherry	10 to 12	
Beaked hazelnut	2 to 6	

SIZE

To maximize the ecological and economic benefit of hedgerows, hedgerows should be a minimum of 4–5 meters (approximately 13.1 to 16.4 ft) in width, and a minimum of 1,000 linear feet in length. To maximize the ecological benefits of hedgerows, Delta could select a diverse mix of native trees and shrubs to plant (from the list above) along the perimeter of the entire District, as well as along the road that bisects the property, along ditches, and along the western edge of the Phase 1 community-based farming area:

Phase	Perimeter Length (ft)	Ditch Length (ft)	Total Hederow Length (ft)	Total Hedgerow Area (sq ft)	Total Hedgerow Area (acres)
1	11,410.2	1,273.1	12,683.4	208,007.3	4.8
2	7,316.3	4,318.2	11,634.4	190,804.7	4.4
3	12,960.3	7,694.3	20,654.5	338,734.5	7.8
Total	31,686.8	13,285.6	44,972.3	737,546.5	16.9

LOCATION

Hedgerows could be installed along the perimeter of the Phase 1 community farming area, and along one side of each ditch in the Phase 1. Hedgerows could be installed along the northern and southern edges of the Phase 2 community farming area, along the road and natural habitat areas, respectively. In addition, hedgerows could be installed on at least one side of each ditch in the community farming area. Hedgerows could be installed along the western, northern, and southern edges of the Phase 3 community farming area, as well as along at lease one side of all ditches contained in this area.

BENEFITS

Hedgerows comprised of a diverse mixture of native coniferous and deciduous trees, shrubs and grasses, offer many benefits, including improvements wildlife habitat diversity, provision of windbreaks, refuges for beneficial insects and drainage control. When hedgerows connect existing natural habitat areas, they can provide travel corridors for animals to move safely between natural habitat areas.

ECONOMIC SUMMARY

The start-up and labor costs used to estimate the installation and maintenance cost of hedgerows throughout the District were obtained from the University of California's Cooperative Extension's 2003 publication: Estimated Costs And Potential Benefits For A Perennial Hedgerow Planting. The summary table below estimates the total costs for installing hedgerows and estimates the annual costs for maintaining them. Installation costs include fees associated with compost; water; perennial plant seedlings; drip irrigation; mulch; fuel, lube and repair for installation machinery; and labor (machine labor required for land preparation, and non-machine labor required for compost application, planting of perennial seedlings, mulching, and initial irrigation). Annual operating and maintenance costs include fees associated with watering, replanting, setting rodent traps (as necessary), and labor required for maintaining irrigation, replanting, hand weeding, and rodent control. An economic summary of these costs is outlined below. For more details, refer to Appendix C. The Hedgerow areas correspond to the three community-based farming areas of Phase 1, 2 and 3.

	Total Hedgerow Length	Total Start-Up Costs	Total Annual Operating Costs
Community-Based Farming Area	linear ft	$2.36/linear ft	$0.52/linear ft
Phase 1	12,683.4	$29,932.75	$6,595.35
Phase 2	11,634.4	$27,457.26	$6,049.90
Phase 3	20,654.5	$48,744.72	$10,740.36
Total	**44,972.3**	**$106,134.74**	**$23,385.62**

shared equipment

Basic Shared Equipment

DESCRIPTION

Community-based farmers will require access to *basic* equipment, such as a tractor, implements for the tractor, a pick-up truck with trailer, and basic tools (e.g. shovels, hoes, wheelbarrow, rakes, etc.). This equipment, particularly the heavier machinery like a tractor, can be cost prohibitive for individual farmers, but can be affordable when offered to a number of farmers as shared equipment. Basic shared equipment could be stored in a centralized location in the District, to allow easy access to any farmer.

ECONOMIC SUMMARY

The estimated costs for this basic equipment are based on data from Planning for Profit, BC Ministry of Agriculture. Approximately 1 tractor (plus implements) and 1 pick-up truck (with trailer) would be needed per 50 acres of land. Annual maintenance and repair costs are estimated at 5% of the facility or equipment purchase cost in Phase 1, 10% in Phase 2, and 15% in Phase 3.

START-UP COSTS	Cost/Unit	Unit	Phase 1		Phase 2		Phase 3	
			Quantity	*Cost*	*Quantity*	*Cost*	*Quantity*	*Cost*
Used tractor	$15,000.00	one unit/50 acres	1.0	$15,000.00	1.0	$15,000.00	2.0	$30,000.00
Tractor implements, equipment and machinery	$22,000.00	one set/50 acres	1.0	$22,000.00	1.0	$22,000.00	2.0	$44,000.00
Pick-up truck with trailer	$18,000.00	one unit/50 acres	1.0	$18,000.00	1.0	$18,000.00	2.0	$36,000.00
START-UP COSTS SUBTOTAL				**$55,000.00**		**$55,000.00**		**$110,000.00**

ANNUAL OPERATING COSTS	Cost/Unit	Unit	Phase 1		Phase 2		Phase 3	
			Quantity	*Cost*	*Quantity*	*Cost*	*Quantity*	*Cost*
Maintenance, used tractor	% of purchase price	-	5%	$750.00	10%	$1,500.00	15%	$4,500.00
Maintenance, Tractor implements, equipment and machinery	% of purchase price	-	5%	$1,100.00	10%	$2,200.00	15%	$6,600.00
Maintenance, Pick-up truck with trailer	% of purchase price	-	5%	$900.00	10%	$1,800.00	15%	$5,400.00
ANNUAL OPERATING COSTS SUBTOTAL				**$2,750.00**		**$5,500.00**		**$16,500.00**

The annual operating costs would be partially covered by the farmers' sub-lease and farmers market access fees (explained in more detail in the governance, management and implementation section). Offering specialized equipment and facilities to District farmers, as well as farmers in other parts of the region, could also support these costs. For more information, see Appendix E.

Specialized Shared Equipment

DESCRIPTION

As farmers begin to explore ways to maximize and diversity their generation of revenue, they may require access to specialized shared equipment. This could include a shared-use food processing facility (such as a commercial kitchen or kitchen incubator used for food preparation, preservation, and packaging), cold and dry storage (for the keeping of fruit and vegetable crops as well as value-added food), and other specialized equipment such as a poultry incubator, a small animal slaughter facility, and honey extraction machinery. Often, such equipment are not readily available or accessible to farmers wishing to add value to their products or preserve their products for sale later in the season. These specialized equipment would provide an important amenity to District farmers, but also farmers in other parts of the region. They could provide needed revenue-generating opportunities for farmers, but also allow for increased revenue to cover start-up and operational costs of the District. For example, the small-scale food processing facility could provide opportunities for canning, freezing, drying, baking, curing, labeling, and packaging. And a mobile small animal slaughter facility could enable on-site animal processing for individual farmers. Because not all farmers would require the use of these specialized equipment, the District governing entity could establish a user fee for each.

The size and features of these shared equipment is largely dependent on the mixture and size of farm types, and the need for such facilities by individual farmers. Some equipment (such as the small-scale food processing facility, cold and dry storage) could be co-located in a centrally located building in the District or in the nearby development, such as in the Southlands Market Square. Other equipment, such as farm stands could be located along major roads through the District, in areas easily accessible by farmers, as well as consumers exploring the site.

ECONOMIC SUMMARY

The estimated start-up costs required for specialized shared equipment range considerably, depending on size, age of equipment (e.g. new versus used), and other factors. In addition, data is not readily available for a number of these specialized facilities and equipment.

The following scenario illustrates the potential revenue generating abilities of a small-scale food processing facility. Other shared amenities not included in these cost estimates include break areas with eating space, kitchenettes, changing rooms, and washrooms to accommodate the needs of staff, employees, and customers.

In this scenario, farmers would be charged an hourly user rate of $48, based on the hourly rate of the Vermont Food Venture Center. Assuming that the average farmer would use the facility 8.6 hours per month over the course of the year, the user fee would generate $4,953.60 in revenue per farmer. In the 3-phased scenario, the small-scale food processing is added to the district in Phase 2. It is assumed that there is one farm per 5 acres of land in Phase 2 and Phase 3, which would equate to approximately 15.8 farms in Phase 2 and 41.3 in Phase 3. While this would provide about $78,266 and $204,484 in annual revenue in Phase 2 and 3 respectively, revenue generated would not be enough to cover operating costs in Phase 2. Therefore, in order to recoup these costs, and help offset the costs of essential equipment and other operating costs (like staff salaries), the District would need to open the doors of the facility to farmers in other areas of the region. If an additional 30 farmers were able to use the facility in Phase 2 and Phase 3, then the District would be able to cover the operating costs of the facility and provide an additional $148,608 in annual net revenue to offset other District costs.

START-UP COSTS*	**Cost/Unit**	**Unit**	**Phase 1**		**Phase 2**		**Phase 3**	
			Quantity	*Cost*	*Quantity*	*Cost*	*Quantity*	*Cost*
Small-scale food processing facility	$242,500.00	one unit	0.0	$-	1.0	$242,500.00	0.0	$-

ANNUAL OPERATING COSTS**	**Cost/Unit**	**Unit**	**Phase 1**		**Phase 2**		**Phase 3**	
			Quantity	*Cost*	*Quantity*	*Cost*	*Quantity*	*Cost*
Small-scale food processing facility maintenance	$131,666.67	2,000 sq ft space	0.0	$-	1.00	$131,666.67	1.00	$131,666.67

ANNUAL REVENUE ($4,953.60/ farmer/year)	**Cost/Unit**	**Unit**	**Phase 1**		**Phase 2**		**Phase 3**	
			Quantity	*Revenue*	*Quantity*	*Revenue*	*Quantity*	*Revenue*
15.8 District farmers	$4,953.60	5 acre farm/year	0.0	$-	15.8	$78,266.88	41.3	$204,484.61
30 external farmer	$4,953.60	5 acre farm/year	0.0	$-	30.0	$148,608.00	30.0	$148,608.00
ANNUAL REVENUE SUBTOTAL				**$-**		**$226,874.88**		**$353,092.61**
ANNUAL NET REVENUE				$-		$95,208.21		$221,425.94

** A small-scale food processing facility could cost from $285,000 for a 2,000 square feet commercial kitchen to up to $7 million for a multi-use building with commercial kitchen, storage, and classroom space. For example, the Toronto Food Business Incubator is a non-profit organization that provides food processing facilities and food business development education to small-scale food entrepreneurs. The 2,000 square foot facility was established in existing space with a $285,000 grant from Agri-Food Canada's Adaptation Programming. 21 Acres, a community-based farm in King County, Washington (near Seattle) recently constructed the Center for Local Food and Sustainable Living, a Platinum LEED certified facility that provides underground food storage areas for cellared products, roof gardens, edible landscaping, education classrooms, retail space for a year-round farmers market, a commercial grade kitchen, and other space for shared use. This 9,000 square feet building cost approximately $7 million, funded primarily through a donation form the Human Links Foundation and with contributions from King County and other foundations. The Vermont Food Venture Center, a 15,000 square feet kitchen incubator and food processing center in Hardwick, VT cost approximately $3 million. A 2008 study prepared for the Fraser Basin Council, British Columbia, estimates that a new small-scale food processing facility of 6,000 square feet would cost $500,000 for equipment, and $100,000 for improvements or retrofits to an existing building.*

***Annual operating costs would include maintenance and repair of the existing building and equipment, as well as labor costs related to a facility manager, food technologist, and administrative assistant positions. Based on figures from the Fraser Basin Council report, referenced above, this would be approximately $65.83/sq ft or $131,666.67 for a 2,000 sq ft facility.*

This scenario provides one example of how specialized equipment could provide an important amenity to farmers, as well as an important revenue-generating activity for the District. In the same way, user fees could be calculated for other specialized equipment and facilities, such as the small-animal processing slaughter facility, to provide additional revenue for the District, and an additional amenity for District farmers and others in the region. (For more information about the cost and revenue estimates for a small-scale food processing facility, see Appendix C).

Other specialized equipment, such as refrigerated storage and dry storage, could be provided at the following per acre, annual fees:

Facility/Equipment	Annual Fee	Unit
Cold storage	$350.00	1200 sq ft/farmable acre/yr
Building, dry storage and handling	$350.00	1200 sq ft/farmable acre/yr

Planning for Profit, BC Ministry of Agriculture suggests that approximately 1,200 sq ft of cold storage space, and 1,200 sq ft of dry storage space would be needed per acre, at a cost of $2,600/acre and $3,600/acre, respectively. While the annual fees per acre would not fully cover the start-up and operating costs associated with these amenities, these costs could be subsidized by revenue generated from other specialized facilities, such as the small-scale food processing facility.

Agricultural and technological innovations provide exciting education and demonstration possibilities for the District and for regional food system enterprises. Additional facilities or programs that could be integrated at the District include provincial renewable agri-energy programs, biological control rearing facilities, plant propagation facilities, native plant nurseries, aquaponics for fish breeding, agritourism opportunities, public laboratories and more.

Future Opportunities

Agriculture is a pillar in every country economy. However, in order to provide for long-term sustainable food production and healthy food for people, agriculture needs to operate in a healthy environment. Payment for ecosystem services (PES) offers a potential to protect and restore ecosystem services used by agriculture and potential untapped revenue for people working in the agriculture sector. Important ecosystem services are carbon sequestration, local climate stabilization, improved water management, soil conservation, pollination, and biodiversity conservation, which are affected by agriculture and land management. PES is an agreement through which buyers pay to reward farmers using good practices to protect and enhance ecosystem services. PES is innovative economic instrument as it can be applied at different scales (at the community level, province level, national and international levels), and according to the situation can involve different stakeholders such as individual farmers, corporations, communities as sellers/beneficiaries and consumers, public sector and private sectors as different kind of buyers.

In Canada, examples of PES would include BC farmers being compensated for fuel-switching or Alberta farmers being remunerated for removing carbon from the atmosphere through tillage management. Through Alberta's agriculture offset trading program from 2007 – 2010, a total of 5.1 metric tonne carbon dioxide equivalent was removed from the atmosphere by tillage management, which generated close to $61 million dollars.

PES and carbon offsetting certification programs can be difficult to design for agriculture given variability in farming operations and challenges in market pricing. However, payment for ecosystem services continues to improve and evolve as an economic instrument to support sustainable ecosystem services and may be an interesting revenue model for the District.

governance, management & implementation

Significant challenges to realizing the vision and goals of community-based farming include: (1) ensuring the land is permanently used for community-based farming activities; (2) determining an appropriate structure for the ownership, governance, and operation of farming on the land; (3) securing capital to cover start-up and operating costs; and (4) achieving economic viability.

In order to address these challenges, the following governance, management, and implementation strategies are proposed. These strategies represent one potential option for activating the various proposed community farm types and achieving the long-term vision and goals set forth in this plan.

PREPARATORY PHASE: PREPARING THE LAND

Before farming activities can begin to take place in the District, certain steps could be followed to prepare the land. For example:

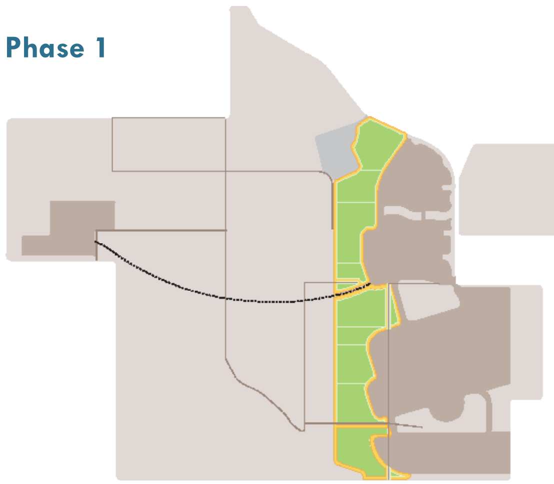
- **Register a Conservation Covenant.** As a first step, a conservation covenant (or voluntary legal agreement between the land owner and a designated agency or qualified organization, such as a land trust) could be registered on the land title to: (1) ensure the land is permanently used for community-based farming purposes; and (2) regulate or control activities on the land that are detrimental to current or future farm use, natural amenities, and ecosystem health.
- **Provide essential infrastructure.** Certain essential infrastructure could be provided, such as water, roads, sewer, and electricity. While outside the scope of this plan, this infrastructure is essential for future farming activities.
- **Install environmental features.** Before farming activities begin, hedgerows along the edges and ditches of the District could be installed.
- **Transfer title of the land to Delta.** Century Group could transfer ownership of the agricultural land (279.2 acres) to the Corporation of Delta.

PHASE 1: PROOF OF CONCEPT

The first 10 years, or Phase 1, could allow Century Group the time to ready the land for community-based farming activities by: (1) establishing a governance structure to oversee and manage the community-based farms and associated activities, (2) delineating individual farming areas; and (3) providing essential shared equipment.

- **Lease land to establish proof of concept.** Century Group could lease back from the Corporation of Delta 49.3 acres (the area highlighted in green in the map below) for 10 years. Of the 49.3 acres in Phase 1, approximately 37 acres would be farmable. The rest would be set aside for hedgerows and shared facilities. The leased land would enable Century Group to establish community-based farming on the land and prove its operational and economic feasibility.

Phase 1



- **Establish a non-profit organization.** Century Group, in coordination with Delta, could establish a non-profit organization (NPO) to:
  a. govern the farmland and related assets;
  b. manage and coordinate farmers and their activities;
  c. ensure long-term, affordable land access to farmers;
  d. preserve farmland for active community agriculture use;
  e. ensure community agriculture and related food system activities adhere to specific standards (Appendix B);
  f. ensure community access to farmland and related benefits; and
  g. facilitate educational opportunities and training to farmers and the public.

- **Select a board of directors and hire staff.** The NPO could achieve the above objectives by establishing and selecting members for a Delta Community-Based Farm District Board of Directors (BoD), hiring and overseeing the function of a full-time Community Farm Manager, and a part-time Administrative Assistant (for more information and a description of each, see Appendix D).

- **Identify and select farmers.** The NPO could identify and select new and seasoned farmers to engage in community-based farming activities, as outlined in the community farm type examples. The BoD and Manager could develop a solicitation and selection process, with specific criteria to ensure diversity in farmers and farm types.

- **Establish farmland access agreements.** All eligible farmers wishing to farm in the District could be required to sign a Farmland Access Agreement (an annual sub-lease with Century Group). The sub-leases could be held by Century Group, but administered and managed by the Community Farm Manager and Administrative Assistant. Requirements of the sub-lease could include the following terms and conditions:

Term	10 year renewable lease with an annual termination provision for the farmer and the NPO
Fee	$550/acre/year to provide access to the land and use of basic infrastructure and facilities (note: specialized equipment and facilities could be provided for an additional fee, see below)
Use	community-based farming activities in accordance with specific ecological, health and safety standards of performance (see Appendix B)

  The first time the farming operation fails to comply with the requirements of the sub-lease, the Community Farm Manager could provide the sub-leaser with written notice of noncompliance. The sub-leaser could have 30 days to provide evidence of compliance with the requirements. If a sub-leaser does not adhere to the standards of performance, he/she could submit a remediation plan to the Manager, detailing steps on how he/she could bring his/her farming operation into compliance with the "standards of performance." Failure to comply could result in termination of the sub-lease.

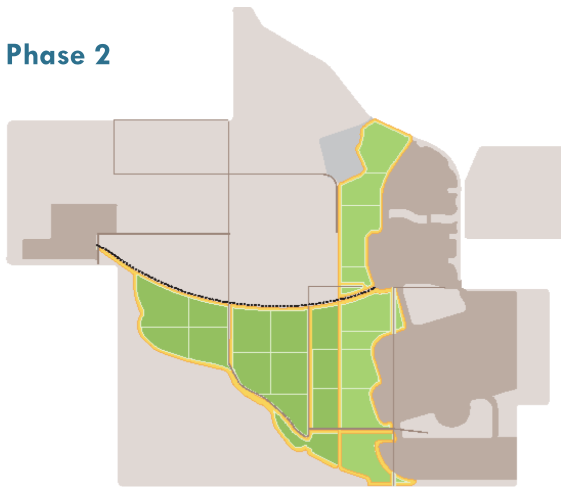
  As a benefit of the annual sub-lease fee, farmers could have access to a wide range of basic equipment (such as tractors and associated implements, pick-up trucks and trailers). By sharing equipment, individual farmers can save substantially in start-up and long-term operations costs.

- **Establish a farmers market fee.** Each farming operation could be charged a $35 fee/market day for 100 square feet of space at the Southlands Farmers Market. Assuming the farmers market will operate once a week from June 1 to November 1, or 22 times, the seasonal fee will be $770 per 5 acre farm, or $154 per acre. This fee is based on the Steveston Farmers and Artisan Market and the Abbotsford Farm & Country Market vendor applications.

In this phase, the annual revenue would not be enough to offset the initial start-up costs and the annual operating costs associated with staff salaries. However, the NPO could explore adding specialized shared equipment or facilities (as discussed earlier in the plan) to provide the required revenue to cover these costs. Such specialized equipment and facilities would be important to the economic viability of the District. For more detailed information, see Appendix E.

PHASE 2: EXPANDING COMMUNITY-BASED FARMING

At the end of the 10-year head lease, Century Group could transfer the management of the land back to the Corporation of Delta. At this time, Delta would have the option of continuing to support the established NPO, alter the structure of the NPO, or create a new entity to oversee the community-based farming activities.



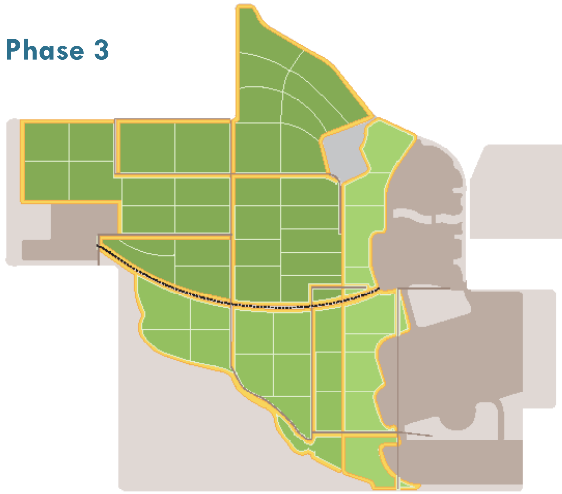
In order to fully realize the potential of the land, Delta could expand the community-based farming activities by an additional 60 acres (see Phase 2, highlighted in green on the map below) for years 10-20. Of the 60 acres added in Phase 2, approximately 42 acres would be farmable. The rest would be set aside for hedgerows and shared facilities. Total acreage for Phase 1 and Phase 2 would equal 109.3 acres). In addition, Delta could provide specialized facilities, such as a small-scale food processing facility. This would allow for increased revenue to off-set both start-up and annual operating costs. Because not all farmers would require the use of these specialized facilities and equipment, the NPO could establish a user fee for each. For more information, see Appendix C and E.

This could allow for approximately $80,986 in annual net revenue (from the various user annual fees for land access, farmers market, and specialized equipment and facilities) to the NPO, or $809,863 in net revenue for the 10-year time period, which would cover the $557,900 start-up costs. For more information, see Appendix E.

PHASE 3: ACHIEVING ECONOMIC VIABILITY

In order for the agricultural lands to achieve economic viability and self-sufficiency, Delta could expand the community-based farming activities to an additional 169.8 acres (see Phase 3, highlighted in green on the map below), to a cumulative total of 279.2 acres. Of the 169.8 acres added in Phase 3, approximately 127.4 acres would be farmable. The rest would be set aside for hedgerows and shared facilities. This could allow for approximately $233,931 in net revenue per year to the NPO, or approximately $2.3 million in net revenue for the 10-year time period, which would cover the $899,880 start-up costs necessary to expand the shared facilities and equipment, specialized facilities and equipment, and hedgerows. The 10-year profit of approximately $1.4 million could be used to support continued operating costs, support of community-based farming, as well as such purposes as community education and programming, research, or farmer training programs. For more information, see Appendix E.

Phase 3



TIMELINE

The following table provides an overview of the various phased steps that could be taken to activate and sustain community-based farming over the course of 30 years:

Steps	Preparation	Phase 1	Phase 2	Phase 3
	Before Year 1	Years 1-10	Years 11-20	Years 21-30
Register a conservation covenant				
Prepare the land with essential infrastructure				
Establish hedgerows				
Transfer the title of the land to Delta				
Lease land to establish proof of concept				
Establish a non-profit organization				
Select a board of directors and hire staff				
Identify and select farmers				
Establish farmland access agreements				
Establish a farmers market fee				
Expand community-based farming				
Achieve economic viability				

BUDGET

The following start-up and operating costs would be required to implement the governance and management steps outlined above. Annual revenue generated from the sub-lease fees, farmers market fees, and specialized facilities and equipment user fees could provide enough money to cover start-up and annual operating costs for Phases 2 and 3. Total start-up costs for the 30-year time period would be approximately $1.61 million, and total net revenue would be approximately $2.81 million.

For more detailed information, see Appendix E.

Community Farming District Start-Up and Operations Economic Summary

START-UP COSTS	Prepatory	Phase 1	Phase 2	Phase 3	TOTAL
Essential Components*	$106,134.74	$55,000.00	$55,000.00	$110,000.00	$326,134.74
Specialized Components**	$-	$-	$502,900.00	$789,880.00	$1,292,780.00
START-UP COSTS SUBTOTAL	**$106,134.74**	**$55,000.00**	**$557,900.00**	**$899,880.00**	**$1,618,914.74**

ANNUAL OPERATING COSTS	Prepatory	Phase 1	Phase 2	Phase 3	
Essential Components	$-	$59,320.62	$99,097.84	$158,797.92	
Specialized Components	$-	$-	$157,706.67	$250,148.67	
ANNUAL OPERATING COSTS SUBTOTAL	**$-**	**$59,320.62**	**$256,804.51**	**$408,946.59**	

ANNUAL REVENUE	Prepatory	Phase 1	Phase 2	Phase 3	
Essential Components	$-	$26,048.00	$55,616.00	$145,305.60	
Specialized Components	$-	$-	$282,174.88	$497,572.61	
ANNUAL REVENUE SUBTOTAL	**$-**	**$26,048.00**	**$337,790.88**	**$642,878.21**	

ANNUAL NET REVENUE	$-	$(-33,272.62)	$80,986.37	$233,931.61	
10-YEAR NET REVENUE		$(-332,726.20)	$809,863.73	$2,339,316.14	$2,816,453.67
10-YEAR PROFIT/LOSS*	**$(-106,134.74)**	**$(-387,726.20)**	**$251,963.73**	**$1,439,436.14**	**$1,197,538.94**

**10 year net revenue minus start-up costs*

*Essential Components = Hedgerows, Staff Salaries, Basic Shared Equipment

**Specialized Componens = Specialized Shared Equipment

benefits

OVERVIEW

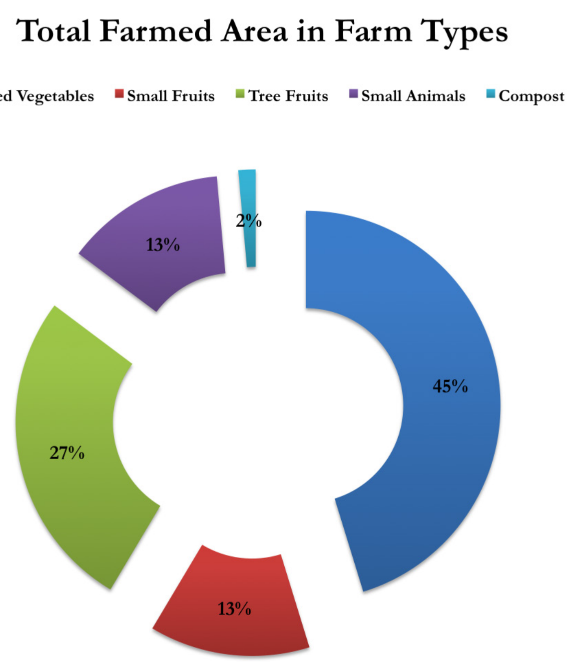
The Delta Community-Based Farm District has the potential to provide a number of health, social, economic, and ecological benefits to Delta residents and surrounding communities. In particular, the District could provide:

HEALTH	Increased access to healthy food	by increasing the production of a diverse range of vegetables and fruit.
	Increased food-health literacy	by hosting healthy eating education programs.
	Healthy eating	by providing a diverse range of vegetables and fruits that contribute to healthy diets.
	Physical activity	by hosting recreational habitats that support physical activity.
SOCIAL	Empowerment & mobilization	by providing new farmers access to land, education and farming communities.
	Youth development & education	by educating and hosting young minds.
	Food security	by improving household access diverse fruit and vegetable crops.
	Safe spaces	by creating welcoming spaces that are cared for by residents and farmers.
	Socially integrated aging	by enabling education and demonstration programs specific for aging visitors.
ECONOMIC	Local economic stimulation	by increasing the amount of money within the community.
	Job growth	by increasing the number of jobs created.
	Job readiness	by providing education and training activities for new farming entrants.
	Food affordability	by demonstrating how fresh foods can significantly reduce household food costs.
	Agriculture industry interactions	by engaging with producers around education and research opportunities.
ECOLOGICAL	Awareness of food systems ecology	by engaging people in education, tours, research and recreation on a community farm.
	Stewardship	by ensuring that farmers meet the sustainability standards created.
	Conservation	by increasing habitat areas and through sustainable management practices.
	Storm water management	by increasing habitat areas that function to manage store water runoff.
	Soil improvement	by increasing soil organic matter through compost and sustainable amendments.
	Biodiversity and habitat improvement	by promoting crop and animal diversity and through enhancement of natural habitats.
	Lower GHG emissions	by promoting shorter food supply chains and by using climate-smart management practices.
	Increased carbon sequestration	by increasing greenspace.
	Waste recycling	by managing waste and organics.

POTENTIAL ECONOMIC BENEFITS OF THE DISTRICT

If community-based farming is expanded to all phases of the District (or 209.4 farmable acres), then certain economic benefits could be achieved. To illustrate these benefits, the following scenario summarizes the economic startup costs, annual net revenue, and annual full-time jobs for a specific mixture of community farm types.

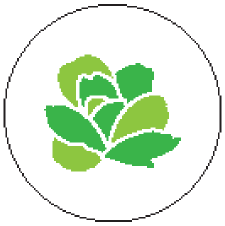
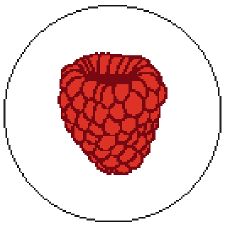
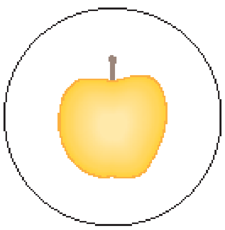
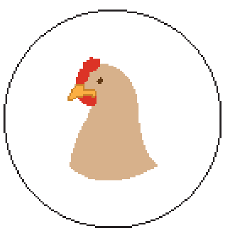
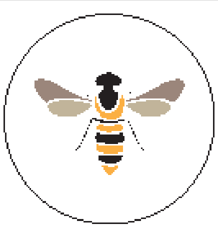
In this scenario, there are a total of 209.4 farmable acres of land in mixed community farming production, according to the following land allocation: 45% of the farmable land to mixed vegetable farm types, 27% of the land to tree fruit production, 13% to small animal production, 13% to small fruit operations and 2% to composting operations.



An exploration of this specific scenario reveals significant economic benefits for Delta and its residents. These estimated annual benefits include over $2.39 million per year in net revenue for farmers, approximately 26 full-time jobs[1] per year created, and $233,931 per year in net revenue for the proposed governing non-profit organization. Total net revenue for the 30-year time period would be approximately approximately $2.8 million for the proposed governing non-profit organization. Startup costs for this scenario would be $1.9 million for farmers and $1.6 million for the non-profit organization. This scenario successfully illustrates how such a community-based farming endeavor could be economically self-sufficient after only ten years of operation and serve as an innovative model for community-based farming in Metro Vancouver and beyond.

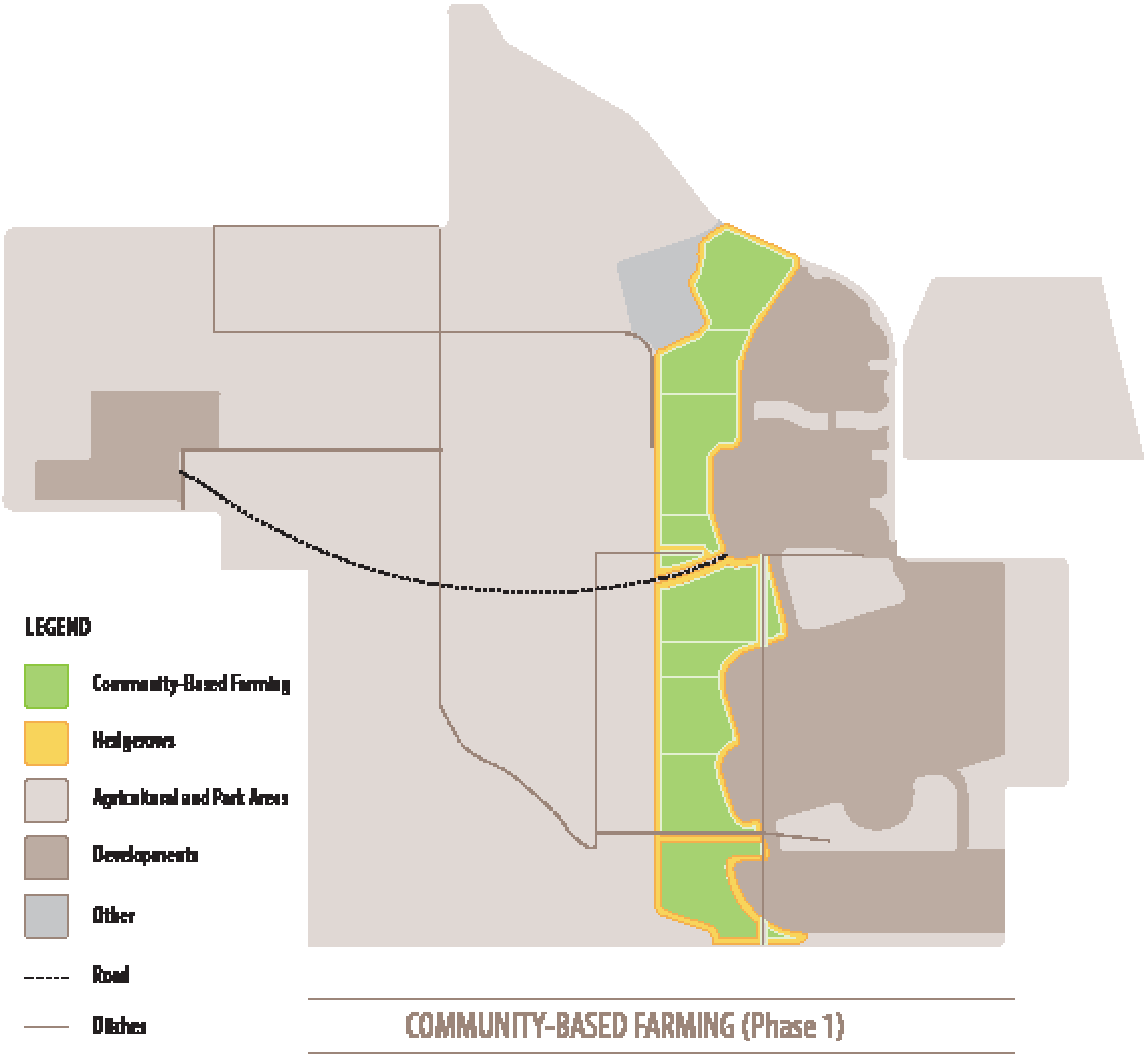
1 Full-time jobs are measured in full-time equivalents (FTE), calculated at 1960 working hours/ year, or 40 hours per week for 40 weeks per year.

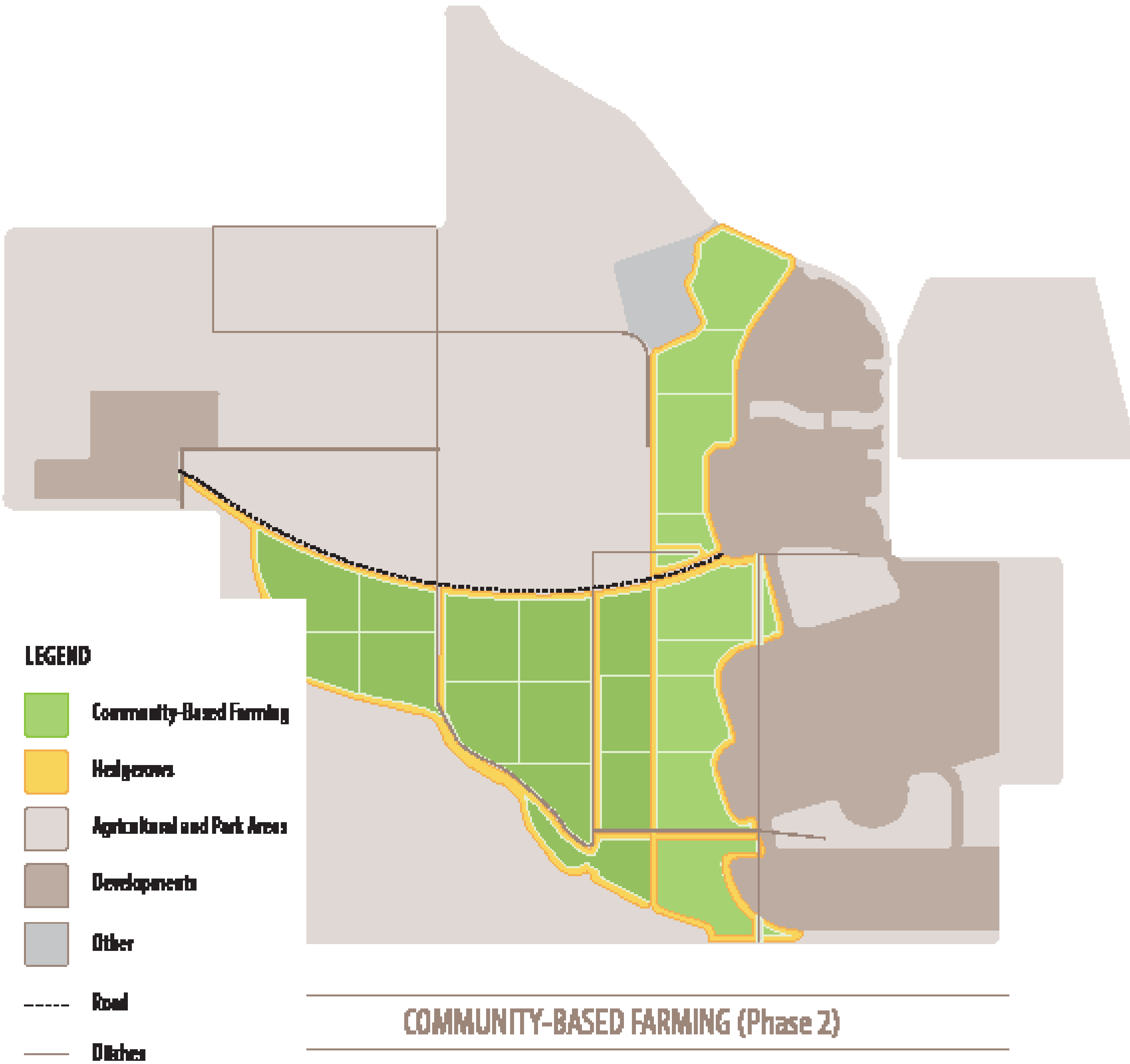
ANNUAL ECONOMIC POTENTIAL OF THE DISTRICT

	Mixed Vegetables	94.7 acres	Startup Cost:	$663,751.30
			Annual Net Revenue:	$1,649,005.80
			Annual # labor hours:	17,524.20
			FTE:	9.1
	Small Fruits	27.9 acres	Startup Cost:	$185,256.00
			Annual Net Revenue:	$202,445.20
			Annual # labor hours:	7,991.10
			FTE:	4.2
	Tree Fruits	55.8 acres	Startup Cost:	$715,852.60
			Annual Net Revenue:	$365,135.50
			Annual # labor hours:	15,958.80
			FTE:	8.3
	Small Animals	27.9 acres	Startup Cost:	$217,620.00
			Annual Net Revenue:	$8,152.40
			Annual # labor hours:	2,300.90
			FTE:	1.2
	Compost	3 acres	Startup Cost:	$109,447.00
			Annual Net Revenue:	$134,124.00
			Annual # labor hours:	$745.00
			FTE:	$0.40
	Bees	279 hives	Startup Cost:	$90,730.80
			Annual Net Revenue:	$32,869.00
			Annual # labor hours:	$6,553.70
			FTE:	$3.40
	TOTAL		Startup Cost:	$1,982,657.70
			Annual Net Revenue:	$2,391,731.90
			Annual # labor hours:	$51,073.71
			FTE:	26.6

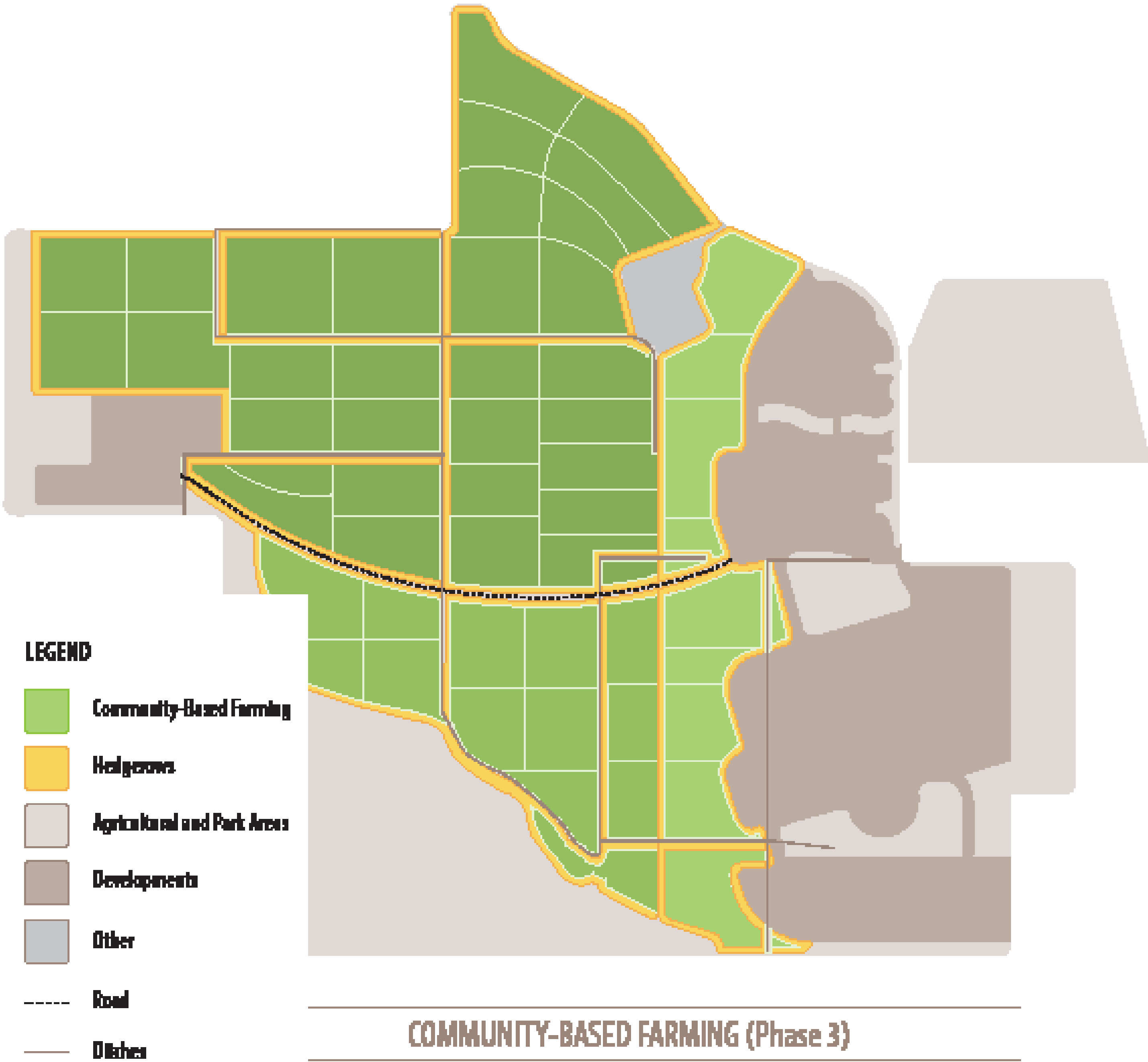
appendix a

Phased Maps of Community-Based Farming





COMMUNITY-BASED FARMING (Phase 2)



COMMUNITY-BASED FARMING (Phase 3)

appendix b

Standards of Performance

All activities in the Delta Community-Based Farm District will adhere to the following Standards of Performance.

1 Protect and conserve water resources

- Protect water resources by using methods such as: creating buffer zones along waterways, reducing chemical and sediment runoff, managing animal wastes to prevent ground and/or surface water contamination, and using tillage practices that conserve organic matter and maintain soil structure.
- Conserve water by encouraging infiltration and storage of rainfall in the soil.
- Increase irrigation water efficiency through soil moisture monitoring, scheduling based on evapotranspiration and the use of new irrigation technologies.

2 Protect and enhance soil resources

- Reduce erosion and protect soils by optimizing plant cover throughout the year, by establishing permanent vegetative cover in orchards and vineyards, and by using pastures and management intensive grazing.
- Use crop rotations that include cover crops in order to build soil organic matter and productivity.
- Select tillage technologies that minimize degradation of soil quality.

3 Reduce the environmental and health impacts of pesticides with Integrated Pest Management and biologically based pest management regimes.

- Create an Integrated Pest Management strategy adapted to local farm/ranch conditions in order to deliver economically effective pest control while minimizing negative impacts to human health and the environment.
- Make informed decisions regarding pest management and pesticide use.
- Employ cultural and biological pest prevention strategies preferentially to reduce or eliminate the need for a pesticide application.
- When pesticides are needed, select effective materials with fewer known environmental and health hazards (use only those pesticides that are on the Ministry of Environment Excluded Pesticides list (URL), i.e. those approved for organic management.
- Properly maintain application equipment to ensure precise applications and monitor weather conditions to prevent pesticide drift.

4 Conserve and enhance wildlife habitat

- Foster vegetative cover, food, and water resources necessary for habitat by using methods such as establishing or maintaining biological corridors, managing mowing and grazing cycles, and restoring or protecting riparian zones, meadows (there are no prairies here) and woodlands.
- Take steps to provide habitat for beneficial organisms including insects, raptors, reptiles and mammals in order to reduce the need for insecticides.

5 Conserve and recycle nutrients

- Conserve and recycle nutrients by converting organic wastes into productive uses and by seeking ways to generate nutrients on farm through such methods as cover cropping, on-farm composting, and integrating livestock into crop production.

6 Provide safe and fair working conditions for employees and families

- Develop farm (no ranches on Southlands) employment policies in order to establish open channels for communicating with employees about such issues as workplace safety and job satisfaction.
- Provide incentives and opportunities for the development of employee skills and incorporate quality of life issues into daily decision making for themselves, their families and employees.

7 Provide healthy and humane care for livestock

- Raise livestock with the greatest respect for their needs and comfort.
- Provide proper nutrition for excellent animal health and fitness, without excess fat. Provide living conditions and space allowances that provide physical and thermal comfort, afford access to natural lighting and vegetated pasture (where appropriate), and enhance natural behaviors (including social contact among animals.)
- Ensure producers are trained and competent handlers, minimizing animal fear and stress during handling, transportation and slaughter.
- Use of hormone treatments is prohibited.
- Antibiotic use is restricted to treatment of occasional illness, and not as a substitute for healthy living conditions.
- Alternatives to commonly used and unneeded surgical manipulations such as tail docking and branding are explored.

8 Produce foods that are not derived from genetically modified organisms (GMO's)

- Crops or livestock products may not be derived from transgenic or genetically modified organisms.

9 Continually improve farming practices

- Set goals and assess progress toward these goals by monitoring for impacts of decisions on the farm, family, employees and the environment.
- Seek out new and innovative management techniques to integrate into farm management.
- Respect neighbors and take steps where possible to prevent agricultural production from being a nuisance.
- Take leading roles in ones communities by participating in community groups and industry associations, sharing information and expertise and serving as mentors to others.

The standards of performance are based on the *Food Alliance Standards* (for more information, see http://foodalliance.org/certification/producer/ProducerProcedures.pdf)

appendix c

Farm Type Economic Detail

Economic and Job Opportunity Summary for the District

			Phase 1				Phase 2				Phase 3				Total			
	Economic and Job Opportunties	Economic & Job Summary For 1 Farm Type Unit * See Appendix #	Farm Type % of Area	Farm Type # Acres	Economic & Job Summary For X Acres	10 year Summary	Farm Type % of Area	Farm Type # Acres	Economic & Job Summary For X Acres	10 year Summary	Farm Type % of Area	Farm Type # Acres	Economic & Job Summary For X Acres	10 year Summary	Farm Type % of Area	Farm Type # Acres	Economic & Job Summary For X Acres	30 Year Summary of Farm Type Contributions
Mixed Vegetables (1 acre)	Startup Cost	**$7,007**	35	0.0	$0.0		30	0	$0.0		35	0.0	$0.0		33.9	0.0	$0.0	$0.0
	Annual Net Revenue	**$17,408**	35	0.0	$0.0	$0.0	30	0	$0.0	$0.0	35	0.0	$0.0	$0.0	33.9	0.0	$0.0	$0.0
	Annual # labour hours	**185.0**	35	0.0	0.0	0.0	30	0	0.0	0.0	35	0.0	0.0	0.0	33.9	0.0	0.0	0.0
	FTE	**0.1**	35	0.0	0.0	0.0	30	0	0.0	0.0	35	0.0	0.0	0.0	33.9	0.0	0.0	0.0
Small Fruits (0.5 acre)	Startup Cost	**$6,640**	10	4.9	$32,764.7		10	6	$39,840.0		10	17.0	$112,880.0		10.0	27.9	$185,256.0	$185,484.7
	Annual Net Revenue	**$7,256**	10	4.9	$35,804.8	$358,048.1	10	6	$43,536.6	$435,366.0	10	17.0	$123,353.7	$1,233,537.0	10.0	27.9	$202,445.2	$2,026,951.1
	Annual # labour hours	**286.4**	10	4.9	1,413.3	14,133.2	10	6	1,718.5	17,185.2	10	17.0	4,869.1	48,691.4	10.0	27.9	7,991.1	80,009.8
	FTE	**0.1**	10	4.9	0.7	7.4	10	6	0.9	8.9	10	17.0	2.5	25.3	10.0	27.9	4.2	41.6
Tree Fruits (1 acre)	Startup Cost	**$12,828.90**	20	9.9	$127,006.1		20	12	$153,946.8		20	34.0	$436,182.6		20.0	55.8	$715,852.6	$717,135.5
	Annual Net Revenue	**$6,543.65**	20	9.9	$64,782.1	$647,821.1	20	12	$78,523.8	$785,237.7	20	34.0	$222,484.0	$2,224,840.2	20.0	55.8	$365,135.5	$3,657,899.0
	Annual # labour hours	**286**	20	9.9	2,831.4	28,314.0	20	12	3,432.0	34,320.0	20	34.0	9,724.0	97,240.0	20.0	55.8	15,958.8	159,874.0
	FTE	**0.149**	20	9.9	1.5	14.8	20	12	1.8	17.9	20	34.0	5.1	50.7	20.0	55.8	8.3	83.3
Small Animals (0.5)	Startup Cost	**$7,800.00**	10	4.9	$38,220.0		10	6	$46,800.0		10	17.0	$132,600.0		10.0	27.9	$217,620.0	$217,620.0
	Annual Net Revenue	**$292.20**	10	4.9	$1,431.8	$14,317.8	10	6	$1,753.2	$17,532.0	10	17.0	$4,967.4	$49,674.0	10.0	27.9	$8,152.4	$81,523.8
	Annual # labour hours	**82.47**	10	4.9	404.1	4,041.0	10	6	494.8	4,948.2	10	17.0	1,402.0	14,019.9	10.0	27.9	2,300.9	23,009.1
	FTE	**0.043**	10	4.9	0.2	2.1	10	6	0.3	2.6	10	17.0	0.7	7.3	10.0	27.9	1.2	12.0
Compost (1 3-acre facility)	Startup Cost	**$109,447.00**	0	1.00	$109,447.0		5				0				1.1	1.00	$109,447.0	$109,447.0
	Annual Net Revenue	**$134,124.00**		1.00	$134,124.0	$1,341,240.0	5	1.00	$134,124.0	$1,341,240.0	0	1.00	$134,124.0	$1,341,240.0	1.1	1.00	$134,124.0	$4,023,720.0
	Annual # labour hours	**745**		1.00	745.0	7,450.0	5	1.00	745.0	7,450.0	0	1.00	745.0	7,450.0	1.1	1.00	745.0	22,350.00
	FTE	**0.388**		1.00	0.4	3.9	5	1.00	0.4	3.9	0	1.00	0.4	3.9	1.1	1.00	0.4	11.64
Bees (per hive)	Start-up Costs/hive	**$325.20**		49.30	$16,032.4			60.00	$19,512.0			170.00	$55,284.0			279.00	$90,730.8	$90,730.8
	Annual Net Revenue/hive	**$117.81**		49.30	$5,808.0	$58,080.33		60.00	$7,068.6	$70,686.0		170.00	$20,027.7	$200,277.0		279.00	$32,869.0	$329,043.3
	Annual # labour hours/hive	**23.49**		49.30	1,158.1	11,580.6		60.00	1,409.4	14,094.0		170.00	3,993.3	39,933.0		279.00	6,553.7	65,607.57
	FTE	**0.012**		49.30	0.6	6.0		60.00	0.7	7.3		170.00	2.1	20.8		279.00	3.4	34.17

1 - Mixed Vegetable

FTE - 40 hrs/week at 48 weeks = 1920 hours

START-UP COSTS

Materials	Cost
Irrigation Capital	2440
Raised Beds (compo	367.12
Tools and Supplies	$600
Storage shed	3600
Fencing	2400
Total Materials	**7007.12**

ANNUAL OPERATING COSTS: VARIABLE

Mixed Vegetable Crops	Production Costs per 1200 sq ft	Crop Yield (lbs) per 1200 sq ft	# of Labour Hours	Wholesale Market Price (CDN per lb)	Revenue For Wholesale Price per 1200 sq ft	Direct-Market Price (CDN per lb)	Revenue For Direct-Market price for 1200 sq ft
Beets	219.1	545.5	10.0	$0.8	$409.1	$2.8	$1,500.0
Broccoli	153.7	214.9	5.5	$1.2	$251.4	$2.3	$483.5
Brussels Sprouts	169.2	290.9	6.1	$1.0	$276.4	$2.0	$576.0
Cabbage	179.2	878.8	7.0	$0.8	$667.9	$1.6	$1,406.1
Carrots	402.6	652.9	23.1	$0.9	$561.5	$2.2	$1,452.7
Cauliflower	138.7	221.8	3.0	$0.6	$122.0	$3.5	$776.2
Cucumbers	119.2	402.9	2.8	$0.4	$165.2	$2.3	$906.5
Garlic	337.1	94.5	8.9	$3.4	$320.3	$9.0	$850.4
Kale	49.3	206.6	3.8	$0.3	$62.0	$4.0	$826.4
Lettuce	162.4	619.0	6.4	$0.8	$464.3	$1.3	$773.8
Onions (yellow)	185.3	903.3	6.4	$1.0	$939.4	$1.1	$980.1
Pak Choy	70.6	495.9	4.3	$0.2	$89.3	$4.0	$1,973.6
Peas (Snow)	335.6	282.4	18.7	$1.9	$530.9	$8.0	$2,253.3
Peppers (Bell)	212.6	256.2	7.5	$3.3	$832.6	$4.0	$1,019.7
Potatoes	187.4	541.3	7.4	$0.6	$303.1	$1.8	$998.7
Spinach	393.3	355.4	23.1	$2.2	$796.0	$8.0	$2,835.9
Squash	110.3	829.2	3.0	$0.6	$497.5	$1.6	$1,351.6
Tomatoes	273.3	630.9	11.2	$1.1	$712.9	$1.6	$1,025.1
Turnips	252.1	1043.3	12.7	$1.5	$1,523.1	$1.2	$1,288.4
Zucchini	118.8	273.4	2.9	$0.6	$164.0	$1.6	$444.3
Mixed Flower	284.2		11.2				
Total Annual Costs	4353.9		185.0		$9,688.9		$23,722.2

*FTE = 185/1920

0.096

ANNUAL OPERATING COSTS: FIXED

Materials	Cost
Sublease on land	550
Accounting and leg	180
Bank charges	60
Taxes	440
Insurance	250
Telephone	240
WCB, EI, CPP	240
Annual Fixed Costs	**1960**

ANNUAL REVENUE

	Whole Sale Market Price	Direct-Market Price
Revenue	$9,688.9	$23,722.2
less		
Operating Costs (Variable)	$4,353.9	$4,353.9
Equals		
Gross Margin	$5,335.0	$19,368.3
Less		
Operating Costs (Fixed)	$1,960.0	$1,960.0
Net Revenue	**$3,375.0**	**$17,408.3**

2 - Small Fruit (1/2 acre)

FTE - 40 hrs/week at 48 weeks = 1920 hours

START-UP COSTS

Water	Irrigation	2440
Equipment	Tools and Suppli	$600
Infrastructure	Storage shed	3600
Infrastructure	Fencing	2400
Infrastructure	Trellising	600
Total Required Capital		**6640**

ANNUAL OPERATING COSTS: VARIABLE

Small Fruit Crops	Production Costs per 1/8 acre	Crop Yield (lbs) per 1/8 acre	# of Labour Hours	Wholesale Market Price (CDN per lb)	Revenue For Wholesale Price for 1/8 acre	Direct-Market Price (CDN per lb)	Revenue For Direct-Market price for 1/8 acre
Blackberries	1901.96125	1210	99.30125	$2.6	$3,182.3	$3.0	$3,678.4
Raspberries	1971.46875	1396.125	95.725	$2.5	$3,532.2	$2.9	$3,979.0
Strawberries	1503.41625	1304.5	65.83375	$2.3	$2,961.2	$2.9	$3,822.2
Table Grapes	229.065	2362.5	25.55625	$0.8	$1,771.9	$1.0	$2,362.5
Total Variable Costs	**5605.91125**		**286.41625**		**$11,447.6**		**$13,842.0**

*FTE = 286/1920
0.149

ANNUAL OPERATING COSTS: FIXED

Sublease on land	275
Accounting and leg	90
Bank charges	30
Taxes	220
Insurance	125
Telephone	120
WCB, EI, CPP	120
Total Indirect Cost	**980**

ANNUAL REVENUE

Net Revenue	Whole Sale Market Price	Direct-Market Price
Revenue	$11,447.6	$13,842.0
less		
Operating Costs (Variable)	$5,605.9	$5,605.9
Equals		
Gross Margin	$5,841.7	$8,236.1
Less		
Operating Costs (Fixed)	$980.0	$980.0
Net Revenue	**$4,861.7**	**$7,256.1**

3 - Tree Fruits (1 Acre)

FTE - 40 hrs/week at 48 weeks = 1920 hours

START-UP COSTS

Water	Irrigation	2440
Plants	Trees ($7.79/tre	3972.9
Plants	Tree support	2216
Equipment	Tools and Suppli	$600
Infrastructure	Storage shed	3600
Total Required Capital		**12828.9**

ANNUAL OPERATING COSTS: VARIABLE

Tree Fruit Crops	Production Costs per 1/4 acre	Crop Yield (lbs) per 1/4 acre	# of Labour Hours	Wholesale Market Price (CDN per lb)	Revenue For Wholesale Price 1/4 acre	Direct-Market Price (CDN per lb)	Revenue For Direct-Market price for 1/4 acre
Apples	669.435	7200	46.87	$0.2	$1,440.0	$0.5	$3,600.0
Cherries	1226.025	2800	98.8775	$1.2	$3,360.0	$1.2	$3,360.0
Nectarines	519.435	1378.25	32.5075	$0.6	$758.0	$1.2	$1,653.9
Peaches	648.4825	3937.5	73.895	$0.3	$1,181.3	$0.8	$2,953.1
Total Variable Costs	3063.3775		252.15		$6,739.3		$11,567.0

*FTE = 286/1920
0.149

ANNUAL OPERATING COSTS: FIXED

Sublease on land	550
Accounting and leg	180
Bank charges	60
Taxes	440
Insurance	250
Telephone	240
WCB, EI, CPP	240
Total Indirect Cost	**1960**

ANNUAL REVENUE

	Whole Sale Market Price	Direct-Market Price
Revenue	$6,739.3	$11,567.0
less		
Operating Costs (Variable)	$3,063.4	$3,063.4
Equals		
Gross Margin	$3,675.9	$8,503.6
Less		
Operating Costs (Fixed)	$1,960.0	$1,960.0
Net Revenue	**$1,715.9**	**$6,543.6**

4 - Small Animals (1/2 acre)

FTE - 40 hrs/week at 48 weeks = 1920 hours

START-UP COSTS

Materials	Cost
Coop	3600
Machine shed	1200
Tools and Supplies	$600
Fencing	2400
Total Materials	**7800**

ANNUAL OPERATING COSTS: VARIABLE

Small Fruit Crops	Production Costs per 99 chickens	Annual Yield for Sale Per 99 chickens	# of Labour Hours per 99 chickens	Wholesale Market Price (CDN per lb)	Revenue For Wholesale Price for 99 birds	Direct-Market Price (CDN per lb)	Revenue For Direct-Market price for 99 birds
Layer/Eggs	2508.54	1128.6	21.110642	$2.2	$2,494.21	$2.8	$3,103.65
Chicken Broilers	4425.31	1862.19	61.3552	$2.2	$4,096.82	$2.7	$5,102.40
Total Annual Variable Costs	**6933.86**		**82.465842**		**$6,591.0**		**$8,206.1**

*FTE = 82.47/1920
0.043

ANNUAL OPERATING COSTS: FIXED

Sublease on land	275
Accounting and leg	90
Bank charges	30
Taxes	220
Insurance	125
Telephone	120
WCB, EI, CPP	120
Total Indirect Cost	**980**

ANNUAL REVENUE

	Whole Sale Market Price	Direct-Market Price
Revenue	$6,591.0	$8,206.1
less		
Operating Costs (Variable)	$6,933.9	$6,933.9
Equals		
Gross Margin	-$342.8	$1,272.2
Less		
Operating Costs (Fixed)	$980.0	$980.0
Net Revenue	**-$1,322.8**	**$292.2**

Bees & Honey Production

START-UP COSTS

Materials		Cost $/unit		$/279 hives
Hives	$	255.00	$	71,145.00
Extracting & storage equipment	$	70.20	$	19,585.24
Total Materials	**$**	**325.20**	**$**	**90,730.24**

ANNUAL COSTS

Supplies & Services	Quantity #/hive	Unit		Price $/unit		Cost $/hive		$/279 hives
Feed, sugar	13.60	kg	$	0.71	$	9.66	$	2,694.02
Feed, protein	0.90	kg	$	5.18	$	4.66	$	1,300.70
Queens	0.60	each	$	17.00	$	10.20	$	2,845.80
Formic Acid	0.10	litre	$	7.15	$	0.72	$	199.49
Mite Wipes	3.00	each	$	0.10	$	0.30	$	83.70
Apistan	2.00	each	$	2.20	$	4.40	$	1,227.60
Labour	1.74	hour	$	13.50	$	23.49	$	6,553.71
Hive, repair & maintenance					$	5.24	$	1,461.96
Honey containers & labels	90.00	g4	$	0.63	$	56.61	$	15,794.19
Total Annual Costs					**$**	**115.27**	**$**	**32,161.17**

ANNUAL REVENUE

	Yield lb/hive	Unit	Price $/lb		Revenue $/hive		$/279 hives
Honey, retail-container	80.0	lb	2.64	$	211.20	$	58,924.80
Honey, retail-bulk	20.0	lb	0.77	$	15.40	$	4,296.60
Wax	1.5	lb	4.32	$	6.48	$	1,807.92
Total Annual Revenue				**$**	**233.08**	**$**	**65,029.32**
Projected Annual Net Income				**$**	**117.81**	**$**	**32,868.15**

5 - Compost (3 acres)

FTE - 40 hrs/week at 48 weeks = 1920 hours

START-UP COSTS

Materials	Cost
Equipment	80,000
Buildings for curing	16,687
Buildings for storage	12,760
Total Materials	**109447**

ANNUAL OPERATING COSTS: VARIABLE

	Compost Production Costs per m3	Annual Compost Production costs for Windrow Turned	Compost yield per facility (L/year)	# of Labour Hours/year	Bulk	Revenue For Wholesale Price	Retail	Revenue For Direct-Market price
Compost	21.2	68918.0	3254000.0	745.0	$0.1	$172,462.0	$0.1	$205,002.0
Total Annual Costs		68918.0		745.0		$172,462.0		$205,002.0

*FTE = 745/1920

0.388

Includes bulking material, labour, fuel, electricity and investment costs (interest, depreciation, repair, and maintenance.)

ANNUAL OPERATING COSTS: FIXED

Materials	Cost per acre	Cost per 3 acres
Sublease on land	550	1650
Accounting and leg	180	540
Bank charges	60	180
Taxes	440	1320
Insurance	250	750
Telephone	240	720
WCB, EI, CPP	240	720
Annual Fixed Costs	**1960**	**5880**

ANNUAL REVENUE

	Bulk Market Costs	Retail Market Costs
Revenue	$172,462.0	$205,002.0
less		
Operating Costs (Variable)	$68,918.0	$68,918.0
Equals		
Gross Margin	$103,544.0	$136,084.0
Less		
Operating Costs (Fixed)	$5,880.0	$5,880.0
Net Revenue	**$97,664.0**	**$130,204.0**

Hedgerows

Community-Based Farming Area	Perimeter Length *ft*	Perimeter Area *sq ft*	Ditch Length *ft*	Ditch Area *sq ft*	Total Hedgerow Length *ft*	Total Hedgerow Area *sq ft*	Total Hedgerow Area *acres*
	Hederow Length and Area						
Phase 1	11,410.2	187,127.9	1,273.1	20,879.3	12,683.4	208,007.3	4.8
Phase 2	7,316.3	119,986.6	4,318.2	70,818.1	11,634.4	190,804.7	4.4
Phase 3	12,960.3	212,548.7	7,694.3	126,185.8	20,654.5	338,734.5	7.8
Total	**31,686.8**	**519,663.2**	**13,285.6**	**217,883.3**	**44,972.3**	**737,546.5**	**16.9**

START-UP COSTS

Installation Materials	Cost *$/unit*	*unit*	Quantity *per 44,972 LF*	Total Cost *per 44,972 LF*
Compost	$ 30.00	ton	13.49170374	$ 404.75
Water	$ 13.40	ac inches	33.72925935	$ 451.97
Perennial plants	$ 5.00	seedlings	9893.916076	$ 49,469.58
Drip irrigation materials	$ 375.00	system	44.9723458	$ 16,864.63
Mulch	$ 5.00	bales	539.6681496	$ 2,698.34
Fuel, lube, repairs				$ 539.67
Total Materials				**$ 70,428.94**

Installation Labor	Non-Machine Labor *hrs/LF*	*hrs/44,972 LF*	Cost *$13.5/hr*	Machine Labor *hrs/LF*	*hrs/44,972 LF*	Cost *$20/hr*	Total Cost *$*
Land preparation	0.0000	0.00	$ -	0.0013	58.46	$ 1,169.28	$ 1,169.28
Compost application	0.0015	67.46	$ 910.69	0.0000	0.00	$ -	$ 910.69
Drip irrigation installation	0.0100	449.72	$ 6,071.27	0.0000	0.00	$ -	$ 6,071.27
Plant perennials installation	0.0400	1798.89	$ 24,285.07	0.0015	67.46	$ 1,349.17	$ 25,634.24
Initial irrigation	0.0003	13.49	$ 182.14	0.0000	0.00	$ -	$ 182.14
Mulch around plants	0.0015	67.46	$ 910.69	0.0010	44.97	$ 899.45	$ 1,810.14
Total Installation Labor	0.0533	2397.03	$ 32,359.85	0.0038	170.89	$ 3,417.90	**$ 35,777.75**

Total Start-Up Costs	**$ 106,206.69**
Average $/LF	*$ 2.36*

ANNUAL OPERATING COSTS

Materials	Cost *$/unit*	*unit*	Quantity *per 44,972 LF*	Total Cost *per 44,972 LF*
Water	13.4	ac inches	22.49	$ 301.31
Perennial plants	5	seedlings	809.50	$ 4,047.51
Rodent traps	12	traps	134.92	$ 1,619.00
Total Materials				**$ 5,967.83**

Labor	Non-Machine Labor *hrs/LF*	*hrs/44,972 LF*	Cost *$13.5/hr*	Machine Labor *hrs/LF*	*hrs/44,972 LF*	Cost *$20/hr*	Total Cost *$*
Maintenance irrigation	0.0008	35.98	$ 485.70	0	0.00	$ -	$ 485.70
Replanting	0.0033	148.41	$ 2,003.52	0.0003	13.49	$ 269.83	$ 2,273.35
Hand weeding around plants	0.02	899.45	$ 12,142.53	0	0.00	$ -	$ 12,142.53
Rodent controp	0.004	179.89	$ 2,428.51	0	0.00	$ -	$ 2,428.51
Total Labor	0.0281	1263.72	$ 17,060.26	0.0003	13.49	$ 269.83	**$ 17,330.09**

Total Annual Operating Costs	**$ 23,297.92**
Average $/LF	*$ 0.52*

Small-Scale Food Processing Facility Based on Existing Operations

Cost Estimates Based on Existing Operations

START UP COSTS

	Size	Total Cost	Cost
Existing Building	*sq ft*	*$*	*$/sq ft*
Toronto Food Business Incubator	2000	$ 285,000.00	$ 142.50
Shared-Use Food Processing Facility in the Fraser Valley	6000	$ 600,000.00	$ 100.00
Average Cost (per sq ft)			**$ 121.25**
New Building			
21 Acres Center for Local Food and Sustainable Living	9000	$ 7,000,000.00	$ 777.78
Vermont Food Venture Center	15000	$ 3,000,000.00	$ 200.00
Average Cost (per sq ft)			**$ 488.89**

ANNUAL OPERATING COSTS

	Size	Total Cost	Cost
Existing Building	*sq ft*	*$*	*$/sq ft*
Toronto Food Business Incubator	2000	NA	$ -
Shared-Use Food Processing Facility in the Fraser Valley	6000	$ 286,000.00	$ 47.67
Average Cost (per sq ft)			**$ 47.67**
New Building			
21 Acres Center for Local Food and Sustainable Living	9000	NA	NA
Vermont Food Venture Center	15000	NA	NA
Average Cost (per sq ft)			NA
	FTE	**Salaries**	**Salaries**
Labor	.920 work hrs/yr	$/year	$/yr/sq ft
Facility manager, food technologist, and administrative assistant	2.5	$ 109,000.00	$ 18.17
Total Annual Operating Costs (per sq ft)			**$ 65.83**

ANNUAL REVENUE	Size	Annual Membership Fee	Rental Fee	Monthly Clients	Monthly Client Hours	Total Annual Client Hours	Annual Revenue	Annual Revenue
	sq ft	*$*	*$/hr*	*#/month*	*rs/month/client*	*hrs/yr*	*$/yr*	*$/yr/sq ft*
Toronto Food Business Incubator	2000	$ 750.00	$ 30.00	9	NA	NA	$ 64,350.00	$ 32.18
Shared-Use Food Processing Facility in the Fraser Valley	6000	$ -	$ 26.00	35	8.6	3612	$ 93,912.00	$ 15.65
21 Acres Center for Local Food and Sustainable Living	9000		$ 15.00				$ 28,800.00	$ 3.20
Vermont Food Venture Center	15000	$ 50.00	$ 48.00				$ 92,160.00	$ 6.14
Average Revenue (per sq ft)			**$ 28.00**	**22**			**$ 79,131.00**	**$ 23.91**

Data Sources

Vermont Food Venture Center	http://vermontfoodventurecenter.files.wordpress.com/2010/03/brochure_vfvc.pdf
Toronto Food Business Incubator	http://www.edmonton.ca/city_government/documents/Food_and_Agriculture_Example_Practices_Guide.pdf
Shared-Use Food Processing Facility in the Fraser Valley	http://www.fraserbasin.bc.ca/publications/documents/08_Hope_Small_Scale_Food_Processing_Report.pdf
21 Acres Center for Local Food and Sustainable Living	http://21acres.org/rentals/kitchen

Delta Community-Based Farm District Small-Scale Food Processing Facility

Cost & Revenue Estimates

	Size *sq ft*	Avg. Cost or Rev *$/sq ft*	Total Cost or Rev *$*	Phase 1	Phase 2	Phase 3
START-UP COSTS (average for existing building)	2000	$ 121.25	$ 242,500.00	$ -	$ 242,500.00	$ -
ANNUAL OPERATING COSTS (average for existing building)	2000	$ 65.83	$ 131,666.67	$ -	$ 131,666.67	$ 131,666.67
ANNUAL REVENUE ($4,953.60/farmer/year)*						
Number of District farmers**				0	15.8	41.3
Number of external farmers^				0	30	30
Annual Revenue Subtotal				**$ -**	**$ 226,874.88**	**$ 353,191.68**
Annual Net Revenue				**$ -**	**$ 95,208.21**	**$ 221,525.01**

*The annual revenue figure assumes that each farmer would be using the facility for on average 8.6 hours/month (or 103.2 hours/year) at $48 per hour of use, which equals $4,953.60/farmer/year.

**This number assumes there would be one farmer per 5 acre plot of land, or 15.8 farmers in Phase 2, and 41.3 farmers in Phase 3, where each farmer is operating a 5 acre farm.

^In order to cover the annual operating costs of the small-scale food processing facility, the District would need to open the doors of the facility to farmers in other areas of the region.

appendix d

Governance & Management Structure

The non-profit organization could consist of the following:

Board of Directors

The Board of Directors (BOD) could be comprised of 5-10 volunteer, 2-year term positions, appointed initially by Century Group, and subsequently by the NPO and BOD members. The initial BOD will be comprised of:

- 1 representative from the Corporation of Delta
- 1 farmer from the site
- 1 resident from the Southlands development
- 1 resident from the greater Delta community
- 1 representative from the Delta Farmers Institute
- 1 representative from a local university (with agriculture focus and expertise)
- 1 food systems expert
- 1 small scale agricultural expert
- 1 representative from the Delta Ag Advisory Committee

The main responsibility of the BOD would be to ensure the vision, goals, and actions of the plan are implemented. Other responsibilities include:

- Write the constitution and by-laws for the BOD;
- Recommend candidates for a Community Farm Manager and Administrative Assistant positions to the NPO;
- Recommend general criteria to be used in selecting farmers as lessees/renters;
- Develop an application process for prospective farmers;
- Identify potential farmers and solicit applications;
- Review and recommend potential farmers for specific areas of the District.

Community Farm Manager

The Community Farm Manager could be a full-time, salaried position that would report directly to the NPO and the BOD. Responsibilities of this position could include:

- In coordination with the Committee, lead the implementation of the Delta Community Agriculture District Plan;
- Monitor and evaluate progress in implementing the community agriculture plan;

- Identify individual farmers and food system related organizations that would be suitable to conduct community farming and related food system activities on the land;
- Develop land tenure agreements to sub-lease the land to individuals and organizations wishing to farm the land;
- Sub-lease the land to individuals and organizations that meet specific, identified criteria.
- Manage and oversee all aspects of day-to-day operations of the District;
- Serve as District liaison to the Committee, Southlands development, and Corporation of Delta;
- Oversea, coordinate, and manage community agriculture and related food system activities;
- Ensure ecologically, economically, and socially sustainable farming practices;
- Ensure community agricultural activities adhere to ecological, health and safety regulations and standards, as outlined in the Plan;
- Create and maintain a system of cooperative partnership among community agriculture farmers for shared infrastructure and equipment use, maintenance tasks, and other areas requiring coordination;
- Ensure shared infrastructure and equipment is properly maintained and used appropriately;
- Develop and maintain relationships with farmers to foster information sharing, conservation partnerships, and project development;
- Ensure that visitors to the farm are integrated into the farm in meaningful, productive and educational ways;
- Serve as primary point of contact for the District.

Qualifications for this position could include, but are not limited, to the following:

- Bachelor's degree in sustainable agriculture, agricultural management, business development, or related field. Advanced training in farm business management preferred.
- Minimum 5 years experience in agricultural development or business development.
- Experience working directly with farmers and other food system entrepreneurs.
- Experience with farm/small business financial planning.
- Excellent budget, project management, and computer skills.
- Ability to work independently and manage time, staff, and multiple clients.
- Strong verbal and written communication skills.
- A demonstrated passion for and commitment to community agriculture.
- A solid working understanding of good agricultural stewardship and best management practices.

ADMINISTRATIVE ASSISTANT

The Administrative Assistant could be a part-time, salaried position (20 hours/week), that reports directly to the Community Farm Manager. The main responsibilities of this position could include:

- Assist the Manager in tracking Plan implementation progress;
- Administer farm access lease agreements with farmers;
- Maintain financial, operational, production, and volunteer records as appropriate.

Maintenance Contractors

Maintenance contractors could be hired hourly or on a per job basis, as needed by the Manager to maintain natural features, roadways and trails, and essential infrastructure and equipment of the community farm.

Volunteers/Internships

In order to further connect the District to the surrounding community, the NPO and Manager could create several part-time volunteer positions for high school and university students in the region to assist with the day-to-day operations of the District, and learn about the inner workings of economically viable community agriculture.

appendix e

Governance & Management Budget

The following budget provides estimates for potential start-up and operating costs and sources of revenue for the Delta Community-Based Farm District. Existing data was compiled from multiple sources, including *Planning for Profit, BC Ministry of Agriculture* and additional sources cited in the Hedgerow and Shared Equipment sections of the plan. Staff salaries are based on competitive rates in the Pacific Northwest. Annual operating costs related to facilities and equipment repair and maintenance, with the exception of Hedgerows, are estimated at 5% of the facility or equipment purchase cost in Phase 1, 10% in Phase 2, and 15% in Phase 3.

Governance & Management Budget

Essential Components

Phases	Perimeter m	Area sq m	sq ft	acres	Hedgerow Length ft	Hedgerow Area sq ft	Farmable Land sq ft	Farmable Land acres	Small Animal Land acres	Cumulative Farmable Land acres
Phase 1 - Short-Term, Years 0-10	3,498.3	199,689.7	2,149,443.0	49.3	12,683.4	208,007.3	1,941,435.7	37.0	4.9	37.0
Phase 2 - Mid-Term, Years 11-20	2,817.4	242,803.3	2,613,514.1	60.0	11,634.4	190,804.7	2,422,709.4	42.0	6.0	79.0
Phase 3, Long-Term, Years 21-30	4,349.1	687,301.8	7,398,058.2	169.8	20,654.5	338,734.5	7,059,323.7	127.4	17.0	206.4
Subtotal	**10,664.8**	**1,129,794.8**	**12,161,015.3**	**279.2**	**44,972.3**	**737,546.5**	**11,423,468.8**	**206.4**	**27.9**	**206.4**

START-UP COSTS	**Cost/Unit**	**Unit**	**Prepatory Phase Start-Up Costs**		**Phase 1**		**Phase 2**		**Phase 3**	
			Quantity	*Cost*	*Quantity*	*Cost*	*Quantity*	*Cost*	*Quantity*	*Cost*
Hedgerows (installation)*	$2.36	linear ft	44,972.35	$ 106,134.74	0.0	$ -	0.0	$0.00	0.0	$0.00
Used tractor**	$ 15,000.00	one unit/50 acres	0	$ -	1.0	$ 15,000.00	1.0	$ 15,000.00	2.0	$ 30,000.00
Tractor implements, equipment and machinery**	$ 22,000.00	one set/50 acres	0	$ -	1.0	$ 22,000.00	1.0	$ 22,000.00	2.0	$ 44,000.00
Pick-up truck with trailer**	$ 18,000.00	one unit/50 acres	0	$ -	1.0	$ 18,000.00	1.0	$ 18,000.00	2.0	$ 36,000.00
START-UP COSTS SUBTOTAL				**$ 106,134.74**		**$ 55,000.00**		**$ 55,000.00**		**$ 110,000.00**

ANNUAL OPERATING COSTS	**Cost/Unit**	**Unit**	**Prepatory Phase Start-Up Costs**		**Phase 1**		**Phase 2**		**Phase 3**	
			Quantity	*Cost*	*Quantity*	*Cost*	*Quantity*	*Cost*	*Quantity*	*Cost*
Maintenance, Hedgerows*	$ 0.52	linear ft	0	$ -	12,683.37	$ 6,570.62	24,317.80	$ 12,597.84	44,972.35	$ 23,297.92
Maintenance, used tractor^^	% of purchase price		0	$ -	5%	$ 750.00	10%	$ 1,500.00	15%	$ 4,500.00
Maintenance, Tractor implements, equipment and machinery**	% of purchase price		0	$ -	5%	$ 1,100.00	10%	$ 2,200.00	15%	$ 6,600.00
Maintenance, Pick-up truck with trailer**	% of purchase price		0	$ -	5%	$ 900.00	10%	$ 1,800.00	15%	$ 5,400.00
Staff, Manager^	$ 50,000.00	person	0	$ -	1.00	$ 50,000.00	1.00	$ 60,000.00	1.00	$ 70,000.00
Staff, Administrative Assistant^	$ 35,000.00	person	0	$ -	0.00	$ -	0.50	$ 21,000.00	1.00	$ 49,000.00
ANNUAL OPERATING COSTS SUBTOTAL				**$ -**		**$ 59,320.62**		**$ 99,097.84**		**$ 158,797.92**

REVENUE	**Cost/Unit**	**Unit**	**Prepatory Phase Start-Up Costs**		**Phase 1**		**Phase 2**		**Phase 3**	
			Quantity	*Revenue*	*Quantity*	*Revenue*	*Quantity*	*Revenue*	*Quantity*	*Revenue*
Sub-lease fee	$ 550.00	acre/year	0	$ -	37.0	$ 20,350.00	79.0	$ 43,450.00	206.4	$ 113,520.00
Farmers market access fee	$ 154.00	acre/year	0	$ -	37.0	$ 5,698.00	79.0	$ 12,166.00	206.4	$ 31,785.60
ANNUAL REVENUE SUBTOTAL				**$ -**		**$ 26,048.00**		**$ 55,616.00**		**$ 145,305.60**
ANNUAL NET REVENUE				$ -		$ (33,272.62)		$ (43,481.84)		$ (13,492.32)
10-YEAR NET REVENUE				$ -		$ (332,726.20)		$ (434,818.37)		$ (134,923.24)
10-YEAR PROFIT/LOSS*				$ (106,134.74)		$ (387,726.20)		$ (489,818.37)		$ (244,923.24)

**10 year net revenue minus start-up costs*

Data Sources

*Hedgerows	Estimated Costs And Potential Benefits For A Perennial Hedgerow Planting, University of California's Cooperative Extension, 2003, http://caff.org/wp-
**Basic equipment	Planning for Profit, BC Ministry of Agriculture, http://www.agf.gov.bc.ca/busmgmt/budgets
^Staff	Staff salaires are based on competetive salaries in the Pacific Northwest, and include a 20% increase in Phase 2, and 40% increase in Phase 3 to account for inflation and wage
^^Basic equipment maintenance and repair	With the exception of the small-scale food processing facility and hedgerows, annual maintenance and repair costs estimated at 5% of the facility or equipment purchase cost in

Governance & Management Budget

Specialized Components

Phases	Perimeter m	Area sq m	sq ft	acres	Hedgerow Length ft	Hedgerow Area sq ft	Farmable Land sq ft	Farmable Land acres	Small Animal Land acres	Cumulative Farmable Land acres
Phase 1 - Short-Term, Years 0-10	3,498.3	199,689.7	2,149,443.0	49.3	12,683.4	208,007.3	1,941,435.7	37.0	4.9	37.0
Phase 2 - Mid-Term, Years 11-20	2,817.4	242,803.3	2,613,514.1	60.0	11,634.4	190,804.7	2,422,709.4	42.0	6.0	79.0
Phase 3, Long-Term, Years 21-30	4,349.1	687,301.8	7,398,058.2	169.8	20,654.5	338,734.5	7,059,323.7	127.4	17.0	206.4
Subtotal	**10,664.8**	**1,129,794.8**	**12,161,015.3**	**279.2**	**44,972.3**	**737,546.5**	**11,423,468.8**	**206.4**	**27.9**	**206.4**

START-UP COSTS	**Cost/Unit**	**Unit**	**Prepatory Phase Start-Up Costs**		**Phase 1**		**Phase 2**		**Phase 3**	
			Quantity	*Cost*	*Quantity*	*Cost*	*Quantity*	*Cost*	*Quantity*	*Cost*
Small-scale food processing facility *	$ 242,500.00	one unit	0.0	$ -	0.0	$ -	1.0	$ 242,500.00	0.0	$ -
Cold storage^	$ 2,600.00	per acre	0.0	$ -	0.0	$ -	42.0	$ 109,200.00	127.4	$ 331,240.00
Dry storage^^	$ 3,600.00	per acre	0.0	$ -	0.0	$ -	42.0	$ 151,200.00	127.4	$ 458,640.00
START-UP COSTS SUBTOTAL				**$ -**		**$ -**		**$ 502,900.00**		**$ 789,880.00**

ANNUAL OPERATING COSTS	**Cost/Unit**	**Unit**	**Prepatory Phase Start-Up Costs**		**Phase 1**		**Phase 2**		**Phase 3**	
			Quantity	*Cost*	*Quantity*	*Cost*	*Quantity*	*Cost*	*Quantity*	*Cost*
Small-scale food processing facility maintenance*	$ 131,666.67	2,000 sq ft space	0.0	$ -	0%	$ -	1.00	$ 131,666.67	1.00	$ 131,666.67
Cold storage maintenance^	% of purchase price		0.0	$ -	0%	$ -	10%	$ 10,920.00	15%	$ 49,686.00
Dry storage maintenance^^	% of purchase price		0.0	$ -	0%	$ -	10%	$ 15,120.00	15%	$ 68,796.00
ANNUAL OPERATING COSTS SUBTOTAL				**$ -**		**$ -**		**$ 157,706.67**		**$ 250,148.67**

ANNUAL REVENUE	**Cost/Unit**	**Unit**	**Prepatory Phase Start-Up Costs**		**Phase 1**		**Phase 2**		**Phase 3**	
			Quantity	*Revenue*	*Quantity*	*Revenue*	*Quantity*	*Revenue*	*Quantity*	*Revenue*
Small-scale food processing facility user fee (District farmers)	$ 4,953.60	5 acre farm/year	0.0	$ -	0.0	$ -	15.8	$ 78,266.88	41.3	$ 204,484.61
Small-scale food processing facility user fee (external farmers)	$ 4,953.60	5 acre farm/year	0.0	$ -	0.0	$ -	30.0	$ 148,608.00	30.0	$ 148,608.00
Cold storage user fee	$ 350.00	acre/year	0.0	$ -	0.0	$ -	79.0	$ 27,650.00	206.4	$ 72,240.00
Dry storage user fee	$ 350.00	acre/year	0.0	$ -	0.0	$ -	79.0	$ 27,650.00	206.4	$ 72,240.00
ANNUAL REVENUE SUBTOTAL				**$ -**		**$ -**		**$ 282,174.88**		**$ 497,572.61**
ANNUAL NET REVENUE				$ -		$ -		$ 124,468.21		$ 247,423.94
10-YEAR NET REVENUE				$ -		$ -		$ 1,244,682.10		$ 2,474,239.38
10-YEAR PROFIT/LOSS*				$ -		$ -		$ 741,782.10		$ 1,684,359.38

**10 year net revenue minus start-up costs*

Data Sources

*Small-scale food processing facility	Data compiled from multiple sources, see Appendix B, Shared Facilities
**Propagation hoophouse	Cost of a 1,000 sq ft propagation house is based on figure from BW Structures Inc ($7,500 or $7.5/sq ft). According to Planning for Profit, approximately 1,200 sq ft of propagation space is needed per acre, or $9,000 propagation house.
^Cold storage	Data from Plannig for Profit ($13,000 for a 5 acre farm, or $2,600/acre).
^^Dry storage	Data from Plannig for Profit ($18,000 for a 5 acre farm, or $3,600/acre).
Maintenance and repair	With the exception of the small-scale food processing facility, annual maintenance and repair costs estimated at 5% of the facility or equipment purchase cost in Phase 1, 10% in

Governance & Management Budget

Essential + Specialized Components

START-UP COSTS	Prepatory	Phase 1	Phase 2	Phase 3	TOTAL
Essential Components^	$ 106,134.74	$ 55,000.00	$ 55,000.00	$ 110,000.00	$ 326,134.74
Specialized Components^^	$ -	$ -	$ 502,900.00	$ 789,880.00	$ 1,292,780.00
START-UP COSTS SUBTOTAL	**$ 106,134.74**	**$ 55,000.00**	**$ 557,900.00**	**$ 899,880.00**	**$ 1,618,914.74**

ANNUAL OPERATING COSTS	Prepatory	Phase 1	Phase 2	Phase 3
Essential Components	$ -	$ 59,320.62	$ 99,097.84	$ 158,797.92
Specialized Components	$ -	$ -	$ 157,706.67	$ 250,148.67
ANNUAL OPERATING COSTS SUBTOTAL	**$ -**	**$ 59,320.62**	**$ 256,804.51**	**$ 408,946.59**

REVENUE	Prepatory	Phase 1	Phase 2	Phase 3
Essential Components	$ -	$ 26,048.00	$ 55,616.00	$ 145,305.60
Specialized Components	$ -	$ -	$ 282,174.88	$ 497,572.61
ANNUAL REVENUE SUBTOTAL	**$ -**	**$ 26,048.00**	**$ 337,790.88**	**$ 642,878.21**

ANNUAL NET REVENUE	$ -	$ (33,272.62)	$ 80,986.37	$ 233,931.61	
10-YEAR NET REVENUE		$ (332,726.20)	$ 809,863.73	$ 2,339,316.14	$ 2,816,453.67
10-YEAR PROFIT/LOSS*	**$ (106,134.74)**	**$ (387,726.20)**	**$ 251,963.73**	**$ 1,439,436.14**	**$ 1,197,538.94**

**10 year net revenue minus start-up costs*

^Essential Components = Hedgerows, Staff Salaries, Basic Shared Equipment

^^Specialized Componens = Specialized Shared Equipment