

DOGFISH BAY: STRUCTURE AND IMMERSION
QUADRA ISLAND WINE

by

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Abstract

This project is a design of a winery and vineyard on Quadra Island, British Columbia. A precedent study of 2 vineyards and a site suitability study including soil, vegetation and shadow studies were conducted to determine the feasibility of wine production on the site. These studies also informed the placement of agricultural and built components on the site.

The concept based upon tectonics (or structure) and the immersion into the working environment, guided the organization of site characteristics. The goal of this project was to design a landscape that can evolve through time while supporting the residents of the site. A winery and vineyard have the capacity to fill various niches. They can become an integral place within a community where private property can be welcoming and occupiable by the public.

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Introduction

Wine is not merely a consumable, it is a beverage steeped in tradition and celebrated in myth. Choosing to make wine is far beyond a simple job, it is a lifestyle with an august history and a romantic lure. It is a difficult choice to grow and make wine where the profit margins are thin and competition is heavy. Some people are born into winemaking, others are fascinated with the gentleman farmer image, and other people are just passionate about wine and desire to share their passion. Dogfish Bay Winery is a project where the owners are fascinated by the simple process and the artistic challenge of making wine, from the growing of the grapes to sharing the experience.

A winery and vineyard have the capacity to fill various niches. They can become an integral place within a community where private property can be welcoming and occupiable by the public. The goal of this project is to design a landscape that will grow into an economically self-sustaining family run winery and inn where the experience of wine is shared and celebrated. This is a landscape that would be capable of transforming and evolving through time, from a partially wooded hobby farm to a full production facility and accommodation. It will be a place where the landscape changes with the owners and their family.

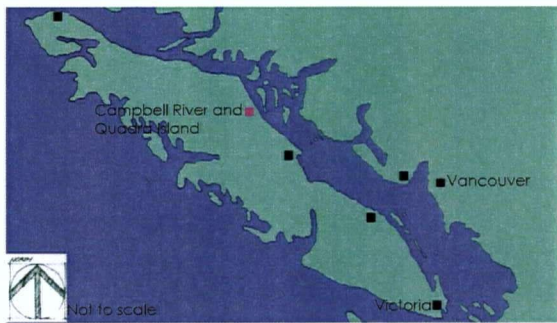


Figure 1. Southern British Columbia

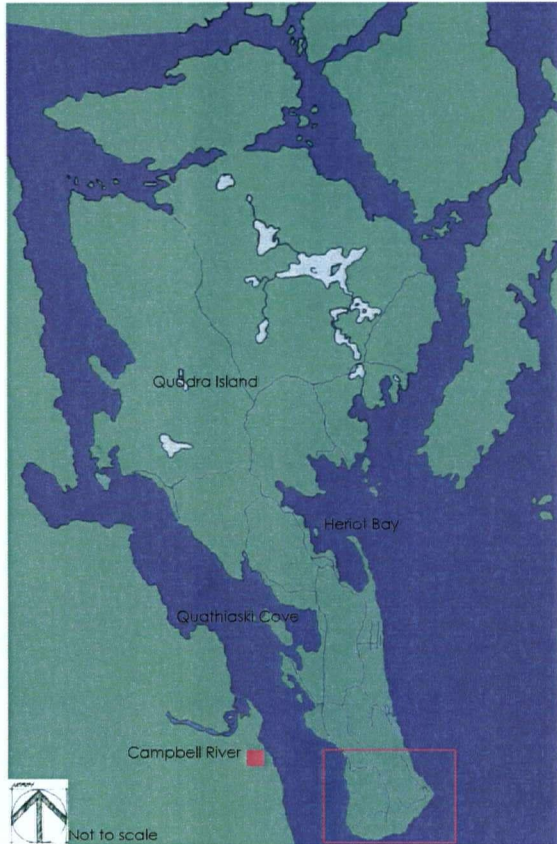


Figure 2. Quadra Island



Figure 3. South End Neighbourhood

Location

Regional Location

Approximately one and a half hours drive north of Nanaimo, B.C. (Figure 1), and a short 10 minute ferry ride, Quadra Island is one of the Northern Gulf Islands also known as the Discovery Islands.

Set within a sheltered coastline, Quadra Island is rife with incredible outdoor recreational opportunities and a burgeoning eco-tourism industry. Due to this abundance of natural beauty which attracts vacation home owners and tourists, the population can double during the summer months.

Quadra Island is serviced by two ferry routes from Campbell River and the other to Cortes Island. These connect to two primary commercial hubs on the Island: Quathiaski Cove and Heriot Bay, respectively (Figure 2). The majority of populated areas on Quadra Island occur in the lowlands of the southern portion of the Island.

Site Location

The site is located near the southern tip of Quadra Island, on the eastern coast in the neighbourhood loosely known as the South End (Figure 3). The site is 4.882 ha (12.06 acres) in area and is home to two families (Figure 4).

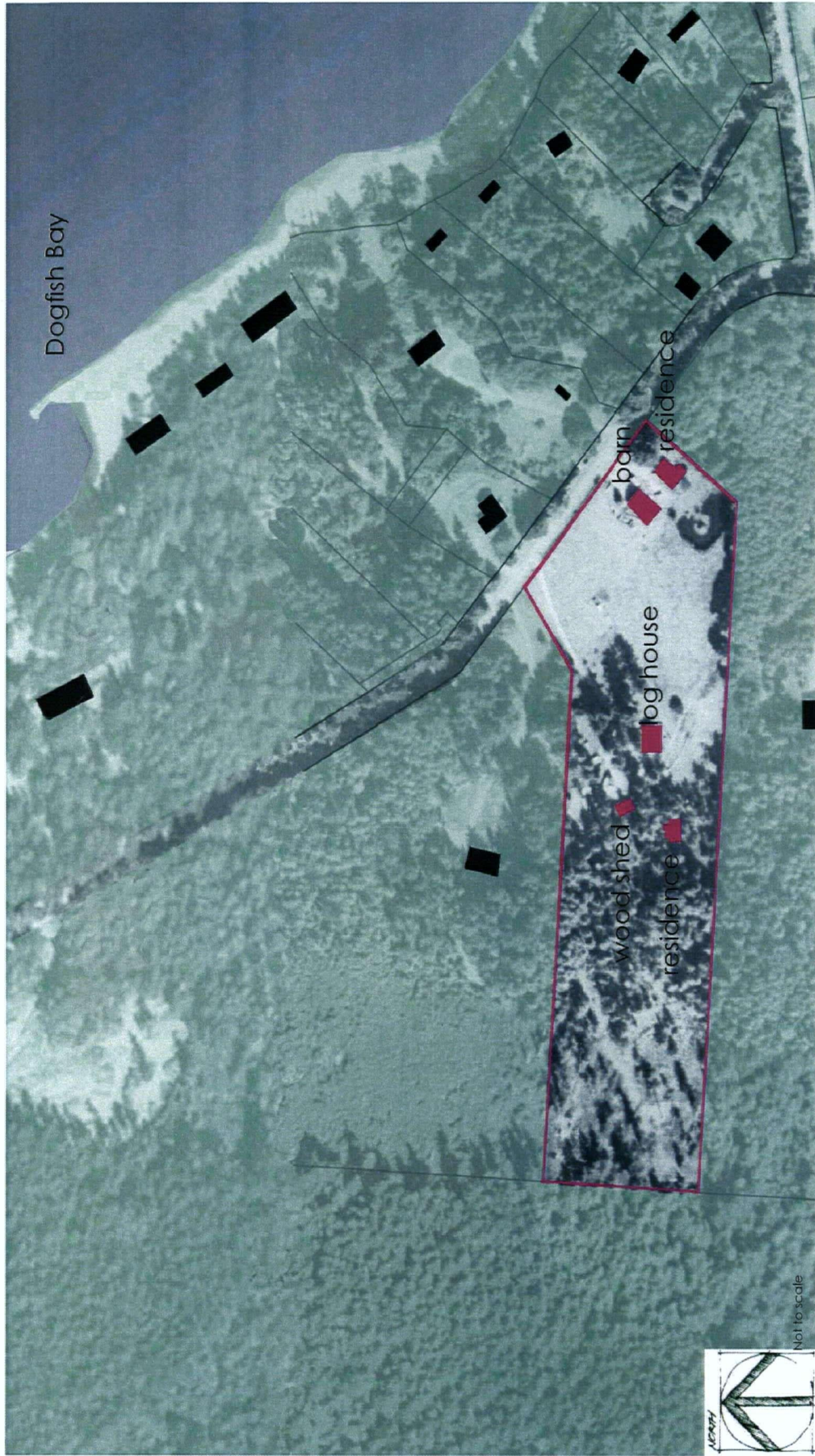


Figure 4. 319 Sutil Road

A Brief History of Wine



Figure 5. Egyptian statue holding urns of wine

from Johnson, H. and J. Robinson. *The World Atlas of Wine*, 2004.

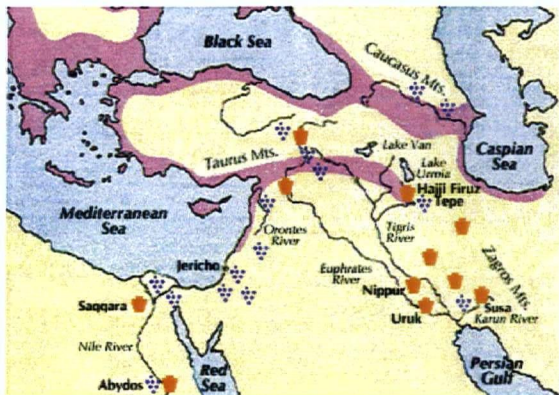


Figure 6. Map of wine travel through the Middle East and South-Eastern Europe

from Johnson, H. and J. Robinson. *The World Atlas of Wine*, 2004.

Older than recorded history, wine originated from the Middle East. There has been evidence from Egyptian tombs, wall paintings and statues holding urns filled with wine (Figure 5), of its cultivation. The range of *Vitis vinifera* was originally only in Europe and the Middle East but soon spread (Figure 6).

Ancient Greece has evidence of cultivation from approximately 1000 B.C., the legacy of vineyards throughout Italy to Southern Gaul. Romans spread wine making throughout Europe. The appreciation and cultivation of wine moved westwards and by the time of Christ the first vineyards were being established along the banks of the Moselle River in Germany. After the Dark Ages and through medieval times the craft of wine making was adopted by the church. The monasteries excelled in and furthered the knowledge of wine growing and making, as well as increasing the notoriety of their own religion. The Benedictines were known for incredible wine and for "Rising from the table with their veins swollen with wine and their heads on fire."¹

¹ Johnson, H. and J. Robinson. *The World Atlas of Wine*. London, UK: Mitchell Beazley, 2004.



Figure 7. Old wine bottle

from www.wineintro.com/history/glassware



Figure 8. Refrigeration fermenting tanks in Australia

from Johnson, H. and J. Robinson. *The World Atlas of Wine*, 2004.

Winemaking techniques from the church have not changed an extraordinary amount since that time; however, in the early 17th century, advances in glass making techniques created bottles that were stronger and less expensive to produce and it was found that wine stored much better in these vessels (Figure 7). Likewise the quality of wine did not degrade when stored in barrels for a long period of time, as well once opened it was an easily drinkable quantity and did not tend to "go off."

Through modern advancements such as refrigeration (Figure 8), tenting, irrigation practices, better understanding about sanitary conditions and improved breeding techniques, we are able to push the geographical limits of viticulture. In the past many locations may have been too cold, too wet or too hot² for wine. As well, the quality and consistency of wine has been considerably advanced. In the last twenty years, consumers have become much more informed about quality and variety of wine. They are more willing to experiment with different varieties and ages of wines making for an exciting and increasingly complex wine market environment.³

² Schreiner, J. *British Columbia Wine Country*. North Vancouver, BC.: Whitecap Books, 2003.

³ Johnson, H. and J. Robinson. *The World Atlas of Wine*. London, UK: Mitchell Beazley, 2004.

A Brief History of Wine Tourism

There has been a historic relationship between wine and wine tourism. Recently, it has become much more prominent in the business dimension of a winery. It is an important method for building a relationship with the consumer, who can be immersed in the not only in the romance of the grape but also the technical knowledge. For smaller wineries substantial sales are made at the cellar door a direct effect of wine tourism. Wine tourism can be defined as "visitation to vineyards, wineries, wine festivals and wine shows for which grape wine tasting and or experiencing the attributes of a grape's wine region are the prime motivating factors for visitors"⁴

Wine tourism can be the core business for smaller wineries, particularly those who have chosen wine-making as a lifestyle. While it may be secondary to the larger wineries it is still an important component serving as a promotional channel, sales channel and a consumer education channel.

For smaller wineries the majority of sales and marketing is done through the cellar door, effectively, face to face contact. Consumer loyalty, increased consumer exposure, increased sales margins, educational opportunities

⁴ Hall, C.M., Johnson, G., Cambournes, B., Macionis, N., Mitchell, R. and L. Sharples. *Wine Tourism Around the World*. Ed. C. M. Hall et al. Oxford, UK: Butterworth-Heinemann, 2000.

and marketing intelligence on both consumers and popular products are all advantages to wine tourism for wineries. Disadvantages include increased costs and management time for the hosting facilities as well as the initial capital required for constructing suitable hosting facilities. There can also be an inability to substantially increase sales necessitating that other avenues need to be sought in order to make sales.

Owners of wineries who do not depend solely on income from their winery sales often find that hosting visitors may provide a substantial personal reward. In these cases, this lifestyle choice dictates business strategies such as maintaining and striving for quality and excellence of wine rather than increasing volumetric output ⁵ as well personal contact with the consumer.

The business of wine tourism is an emerging concept that is increasingly embraced by many wineries and is significant in the wine regions of the world. For many owner-operated wineries, it is a choice to be made as a business strategy. The enjoyable fact is that every time one opens a bottle of wine one is transported to the winery that it was made at and we all become wine tourists at that point (Figure 9).

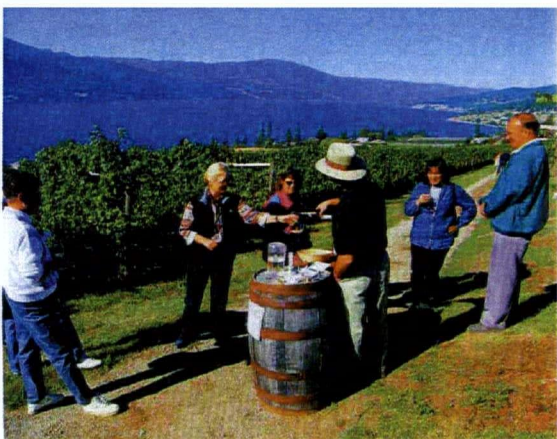


Figure 9. Vineyard tastings

From Schreiner, J. *British Columbia Wine Country*, 2003.

⁵ Hall, C.M., Johnson, G., Cambournes, B., Macionis, N., Mitchell, R. and L. Sharples. *Wine Tourism Around the World*. Ed. C. M. Hall et al. Oxford, UK: Butterworth-Heinemann, 2000.

Precedents

Large designed vineyard *Domaine Clos Pegase Winery*

This winery and vineyard was the product of a design competition that came about due to the owner's own ideas of specific programmatic elements that he wanted included in his plan to establish a home and wine-making business in the Napa Valley (Figure 10). A more unusual aspect of the Clos Pegase Brief was that each architect was required to work with an artist with the theme of collaboration kept in mind. This was meant to fuse art, architecture and landscape.

Further evaluation of each design was based on architecture in relation to time and place, site planning and circulation, private vs. public spaces; integration of art and the treatment of architecture as art; technical requirements of the winery; the potential of phasing construction; the sense of place that resulted from the distribution of functions over the site; and the "business of making and selling wine." The practical consideration of the design was important in the evaluation as this was to be a working winery therefore it had to be functional yet fulfill certain symbolic and imagistic roles.

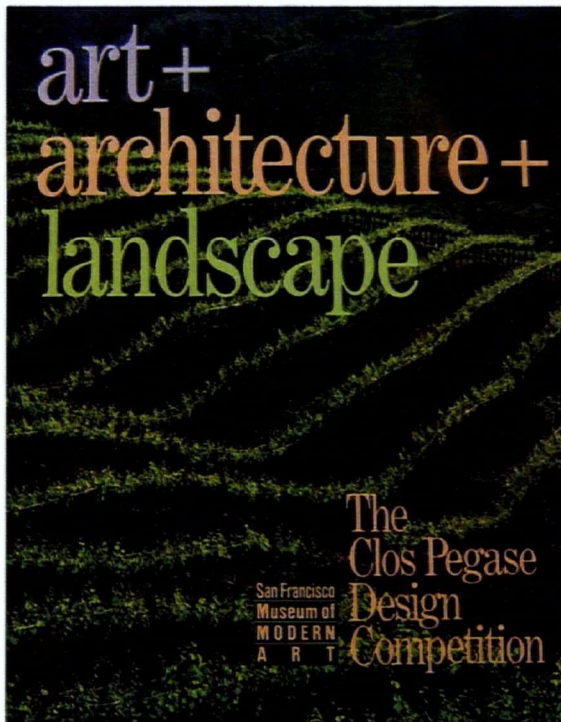


Figure 10. The Clos Pegase Design Competition book cover

From San Francisco Museum of Modern Art.
art + architecture + landscape: The Clos Pegase Design Competition, 1985.

Considerations in the program involved the residence, the winery, and a sculpture garden all placed on a wooded knoll. The owner envisioned the winery to be a landmark, exhibit excellence in architectural design, yet not overpower the art of wine making. It had to be practical, yet romantic.⁶

Within each of these areas were further programmatic requirements relating to square footage of each of the areas of a winery such as grape receiving and crushing, fermenting and processing. The sculpture garden was conceived of as a landscaped park open to the public, featuring water features, lawns, flower beds and a walking path in addition to sculpture. The residence is a large and sprawling garden residence, with very specific elements such as a Japanese bath, 10-15 foot high ceilings, 4 bedrooms, and a pottery workshop.

The winning entry of the competition was an entry that used the myth of Pegasus as the concept and winery and landscape were designed around it. The importance of this precedent is not the concept and how it was implemented but the procedure of how the site itself was perceived and

⁶ San Francisco Museum of Modern Art. *art + architecture + landscape: The Clos Pegase Design Competition*. Sacramento, CA: GraphiCenter, 1985.

then designed for. There was a strong idea of program that was present that the design concept that had to take into consideration as well as the owner's very rigorous ideas. While very different in scale and budget, Dogfish Bay is in a similar situation as the basic program of vineyard and winery is present as well as the owners own strong ideas and values that are tied to this site. The concept is one that must truly tie the values to the program and to the site itself.

Small commercial vineyard Cherry Point Vineyard

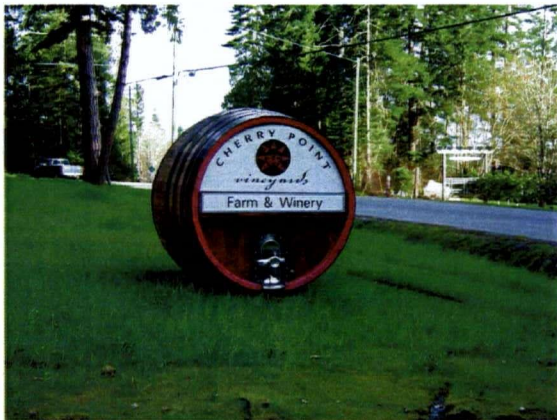


Figure 11. Cherry Point Vineyards, Cobble Hill, Vancouver Island, B.C.



Figure 12. Cherry Point Vineyards, aerial photograph

Cherry Point Vineyard (Figure 11) was established in 1990 on 34 acres in Cobble Hill, south of Cowichan Bay, on a glacial moraine. The soil of this vineyard is a gravelly, sandy mixture underlain with clay. There is a large detention pond that captures winter rain in order to store it for irrigation during the summer. This vineyard was planted when winegrowing was still relatively new on Vancouver Island therefore prior to opening the winery several grape varieties were planted at this vineyard as an experiment to determine what would be most suitable to attempt to grow in this region. Ortega, a germanic cross was chosen as the flagship wine. In 1994, after the grape trials had been completed Cherry Point Vineyards became one of the first licensed wineries on Vancouver Island. Today it is the

second largest vineyard on Vancouver Island at 24 planted acres(Figure 12). The main varieties at this vineyard are Gewürztraminer, Pinot Gris, Pinot Blanc, Auxerrois, Pinot Noir, Agria, Ortega, Siegerrebe and Castel.

The success of the winery has been largely due to the majority of the winery's sales occurring at the cellar door. However, there is also a diversification of program with summertime Sunday picnics, music concerts on the lawn and a picturesque scene of sheep in the meadow.⁷ The winery has also always hosted a wine tasting facility though the winery has recently completed a renovation of the tasting room and a pavilion that is available for rent for various functions.

In April 2004 the vineyard was purchased by the Quw'utsun' Vineyard Development Corporation, a subsidiary of the Cowichan Tribes of Duncan, B.C. It will be interesting to follow the progress of this winery in the future. This is a winery that commenced out of the same roots as Dogfish Bay is and is a successful precedent that has evolved into a more multifaceted site. Though the sole income is dependent upon the winery sales this is a good example of the capitalization on the allure of wineries and wine tourism.

⁷ Schreiner, J. *British Columbia Wine Country*. North Vancouver, BC.: Whitecap Books, 2003.

Analysis

Social

History

Quadra Island Settlement



Figure 13. Discovery's arrival off
Cape Mudge, July 13 1792.
Painted by artist Gordon Miller[©], 1991

from www.civilization.ca/aborig/nwca/nwcam21e.html

Quadra Island had been used by First Nations for over 2000 years. Captain George Vancouver writes of visiting a Coast Salish village at Cape Mudge in 1792 and finding a settlement of longhouses, boats and approximately 350 residents (Figure 13). The current Kwakwak'awakw First Nations invaded the settlement during the early 19th century and are now known as the We Wai Kai Band.¹⁰

Anglo settlement dates back the 1880's. Early settlement throughout the Campbell River- Quadra Island region was based on forestry, farming, ranching, fishing and mining. Quadra Island quickly became the regional commercial hub where freighters and steamships on their way to the north often stopped. The first public school was built at Cape Mudge by the We Wai Kai band in 1893 under the direction of the last hereditary chief, Billy Assu. He is also responsible for building up the fishing fleet which is still present today. By 1904, Quadra Island had 2 post offices,

¹⁰ Taylor, J. *River City A History of Campbell River and the Discovery Islands*. Madeira Park, BC: Harbour Publishing, 1999.

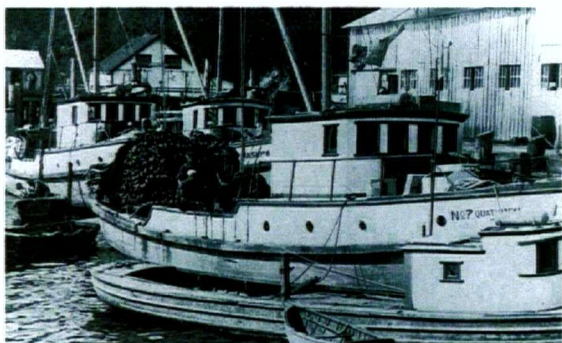


Figure 14. Quathiaski Canning Company, c. 1912

from Taylor, J. *River City A History of Campbell River and the Discovery Islands*, 1999.

a school, hotel, lumber camps and a mission. Residential development was concentrated in Heriot Bay and Quathiaski Cove before 1920. By the 1920's the area had been logged and logging operations failed and the population began to decline. Fishing remained active and Quathiaski Cove remained economically viable (Figure 14).

During the early 1920's tourism also flourished due to excellent fishing and hunting opportunities. After World War II, tourism increased even more including the development of summer homes, which continues today. In the 1960's and 1970's there was an influx of settlers seeking an alternative lifestyle in a rural setting. The passenger ferry service started up in 1949 and the car ferry service in 1960. The economics of Quadra Island are however, closely tied to that of Campbell River with a large fraction of the population employed there.

Property timeline

The original property was more than 30 acres in size that also included waterfront. The history of the land within the family that owns it now began in the late 1940's with the private purchase by George and Estelle Rose. It was used as sheep pasture as well as hay fields. With

the poor health of George Rose, the land was subdivided into smaller parcels and slowly sold off to help support the Roses in retirement. With the death of George, Estelle owned the remaining land and it was further subdivided. Estelle and George having no children of their own left the land for the children of their brothers and sisters. Each of the children was asked if they would prefer land or money and most of the children took the land. Most sold off their land; however, the daughters of Elmer and June (née Rose) Larson chose to keep the 4 acres that they had inherited. Ken and Valerie (née Larson) McGuffie chose to settle on the 4 acres that Valerie had inherited and subsequently bought out each of the 4 acres that Valerie's sisters, Marilyn (née Larson) Collier and Wendy Larson had inherited.¹¹

Again through a purchase in 2004 between family members, the property was kept within the family. Returning the site to its agricultural roots, Ken and Valerie's son, Benjamin McGuffie and his wife (Jill) Takane Ogasawara, the author, have decided to establish themselves, as well as a business, here close to both Ben's family as well as Takane's family. It is planned that Ben and Takane will create a place that future family members will cherish and take pleasure in.

¹¹ Personal Communication. *With June Larson*, 2005.



Figure 15. 319 Sutil Road, Quadra Island

Demographics

Quadra Island is a 9273.43 m² land area that has a population density of 0.3 people per km². The property sizes range from a typical city lot size in the more populated areas of Quadra Island to acreages over 40 acres. The population of Quadra Island in 2001 was 2548 people¹². Most of these people were over the age of 25. There has been an immigration of older people to the Island looking for the rural island lifestyle as the perfect retirement home as evidenced by the increase in dwellings constructed in the last 15 years as well as the top heavy age class (ages 45-64) (Table 1).

Table 1. Selected Quadra Island Demographics from the 2001 census.

Population in 1996	2671
Population in 2001	2548
Age 0-19	615
Age 20-44	745
Age 45-64	905
Age 65-84	260
Median age	43.1
Mobility Status – Place of residence 5 years ago	
Lived at same address 5 years ago	1660
Lived different address	785
Selected Occupied Private Dwelling Characteristics	
Total Number of Dwellings	1105
Number of Owned Dwellings	815
Number of Rented Dwellings	290
Number of Dwellings constructed between 1991 and 2001	265
Work Statistics	
Industry	
Total – Experienced Labour Force	1385
Agriculture and other resource-based industries	215
Manufacturing and construction industries	215
Wholesale and retail trade	105
Finance and real estate	35
Health and Education	240
Business services	180
Other services	375

¹² Statistics Canada. Comox-Strathcona
J - Population Statistics. Online at
www.statcan.ca. (accessed Feb. 2, 2005).

The majority of the population on the Island are still heavily dependent upon work in the resource industry however, there is an increase in health and education employment as well as other industries which represent the increasing tourism sector on Quadra Island (hotels, tour outfits etc.) The majority of people on the Island still commute to Campbell River in order to work and shop.

Vegetation

This region is within the winter wet, summer dry, southern maritime region of British Columbia.¹³ There are 6 major vegetation types found on Quadra Island: mixed forest, Douglas-fir forest, palustrine wetland, beach and coastal prairie, upland forest and estuarine wetlands¹⁴. The site contains the first 3 vegetation types described (Figure 16). The front field original vegetation state is unknown as surrounding forest had been cleared for several years and what is present is all second growth. It can be extrapolated that it was transitional forest between

¹³ Klinka, K., V. J. Krajina, A. Ceska, A.M. Scagel. *Indicator Plants of Coastal British Columbia*. Vancouver, BC: University of British Columbia Press, 1995.

¹⁴ Landscape Architecture Program. *Environmental Inventory and Overview: a framework for land use planning South Quadra Island, BC*. Vancouver, BC: University of British Columbia, 2000.

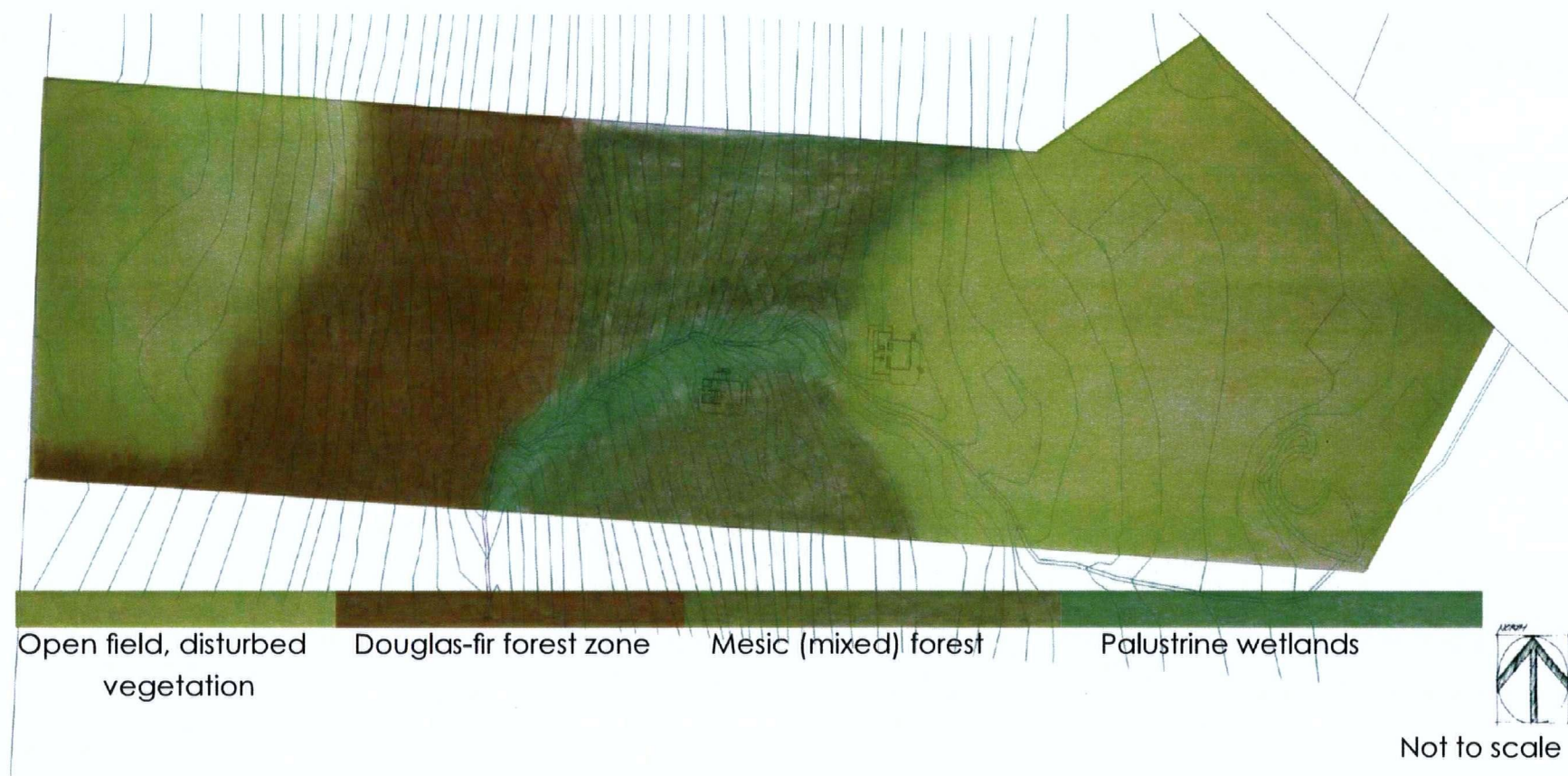


Figure 16. Vegetation map

the mesic forest zone and the Douglas fir-forest zone that prevailed. It is also important to note that this site is situated on the extreme eastern side of the Island which enjoys a slightly drier microclimate to that even 2 km west of the site. This is important to its success as a vineyard and winery.

Mesic (mixed) forest is found in the wet perimeter zone, the understory is moderately closed and comprised of sword fern (*Polystichum munitum*), salmon berry (*Rubus parviflorus*), mosses, and saplings of red alder (*Alnus rubra*), bigleaf maple (*Acer macrophyllum*), Douglas-fir (*Pseudotsuga menziesii*) and western hemlock (*Tsuga heterophylla*). In relation to the site, the eastern edges of the property prior to being cleared would most likely have been within this zone.

Douglas-fir is the dominant species in the Douglas-fir forest zone, with the understory generally consisting of salal (*Gaultheria shallon*) and huckleberry (*Vaccinium parvifolium*). This zone often coincides with the water recharge zone, and slopes of 0-5%. It is buffered from significant coastal impacts and thus is more geotechnically stable than the coastal zones. A large portion of the site falls within this zone, this is the majority of the wooded area on this site that is in a semi logged state rather than in untouched forest.

Palustrine wetlands are the freshwater wetlands that may be divided into different classifications including emergent/riparian, scrub/shrub and pockets of forest wetland in the Douglas fir forest zone as in the case of the wetland to the south-west of the property. There is also a larger wetland to the south-southeast of the site on the adjacent property that is more of a scrub/shrub wetland regenerated because of a field that was present in the past rather than natural regeneration. This is a major discharge zone for the property itself. Dominant vegetation is generally salmonberry, red alder and red elderberry (*Sambucus racemosa* ssp *pubens*).

Further investigation into the vegetation species present, tends towards the diagnosis of a nitrogen medium soil that is on well drained to fresh soils, depending upon the portion of the property that is being studied. If each of the vegetation zones discussed above is studied in further detail, the general soil and moisture regime can be deciphered by looking at certain indicator plants and their associations with each other.

Table 2 details the plants and their soil as well as hydrological regime. The mixed (mesic) forest zone is generally water receiving as well as shedding meaning around stream environments as well as seepages, making it a fresh-

moist environment that has nitrogen rich soil and many nitrogen fixing plants such as red alder and salmon berry. The Douglas-fir zone generally has indicators of fresh to moderately dry soils which are nitrogen medium. There are aberrations such as the presence of huckleberry but this may be due to the microclimate conditions surrounding the plants. The palustrine wetlands are obviously moist to wet areas that are generally in this area nitrogen rich. The actual physiology of the soils is discussed below in the soil section.

Table 2. Existing site vegetation

Botanical Name	Common Name	Hydologic regime	Soil Regime	Zone		
Ground Layer				Mixed forest	Douglas-fir forest	Palustrine wetlands
Carex Species	sedge	Various	various	X	X	X
Digitalis purpurea	Fox Glove	Generally dry			X	
Juncus sp.	Rush	Various		X	X	X
Mahonia nervosa	Oregon Grape	moderately dry, fresh, cutover sites	N medium		X	
Polystichum munitum	Sword Fern	water receiving and colluvial sites	N rich	X	X	
Pteridium aquilinum	Bracken Fern	water shedding and receiving		X	X	
Shrub Layer						
Rubus ursinus	Trailing blackberry	moderately dry, fresh	N medium		X	
Gaultheria shallon	Salal	water shedding/dry	N poor		X	
Rubus spectabilis	Salmon-berry	very moist to wet	N rich, near stream	X	X	X
Vaccinium parvifolium	Huckle-berry	Generally dry environment	N poor		X	
Tree Layer						
Abies grandis	Grand Fir	water shedding and receiving, fresh to moist	N rich	X		X
Alnus rubra	Red Alder	Primary succession: Along streams, water collecting. Secondary succession: water shedding sites	N rich, exposed mineral soil	X	X	X
Picea sitchensis	Sitka spruce	Fresh, moist	N rich, very rare	X		X
Pseudotsuga menziesii	Douglas fir	Generally dry environment		X	X	
Tsuga heterophylla	Western hemlock	water shedding, water receiving	N poor	X	X	

Soil

Island Geology

Quadra Island was glacier covered 20,000 years ago; northern Quadra Island was scraped clean, down to bare rock. In contrast southern Quadra Island is made up of deposition of materials from the northern portion of the island. The soils are made up of horizontal layers of sand, gravely sand, clayey sand, silty, sand, cobbles and glacial till, a mixture of the previously mentioned soil types. The southern portion of the island is basically a plateau consisting of steep coastal walls, shoreline and relatively flat interior (where the property is sited). Drainage consists of small wetlands and creeks¹⁵. Figure 17 illustrates the site slope.

Quadra Island Soil Categories

Quadra Island has a variety of land types with several soil categories including:

1. Thin, irregular soil over bedrock:
 - areas exposed bedrock
 - limited near surface groundwater supply
 - wastewater disposal capacity severely limited

¹⁵Landscape Architecture Program.
*Environmental Inventory and Overview:
a framework for land use planning South
Quadra Island, BC.* Vancouver, BC:
University of British Columbia, 2000.

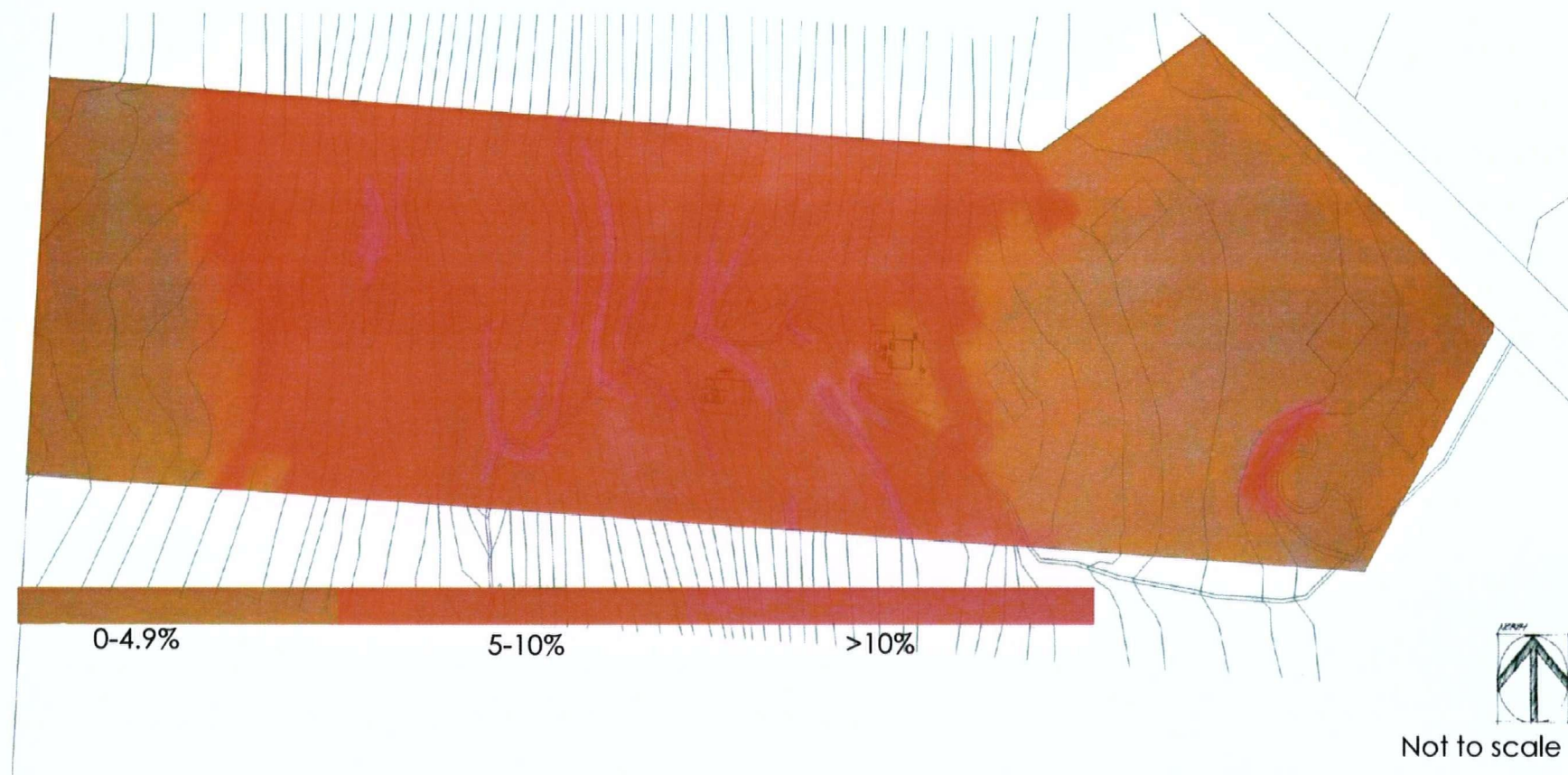


Figure 17. Slope map



Figure 18. Category 2 soil; seasonally, well-drained sandy gravel

2. Seasonally, well-drained sandy gravel (Figure 18):
 - well drained and dry in summer
 - seasonally wet with saturated pockets
 - generally related to flatter topography
 - minimal overland water flow
 - low moisture retention capacity
 - thin top soil layer, generally acidic
3. Poorly drained, sandy loam
 - poorly drained most of year
 - related to sloping ground
 - moderate overland flow
 - wastewater disposal capacity limited in many areas
4. Saturated organic
 - muck and peat
 - saturated most of year with standing water
 - primarily emergent and wooded wetlands
 - severely limiting to development
- 5 Coastal
 - beaches, bluffs
 - sands, pebbles, cobbles of mixed sizes

Site Soil

As discussed previously, this site is situated within the area that covers 2 forest zone types found on Quadra Island, the soil profiles roughly follow the vegetation distribution (Figure 19). As mentioned the soils that correspond

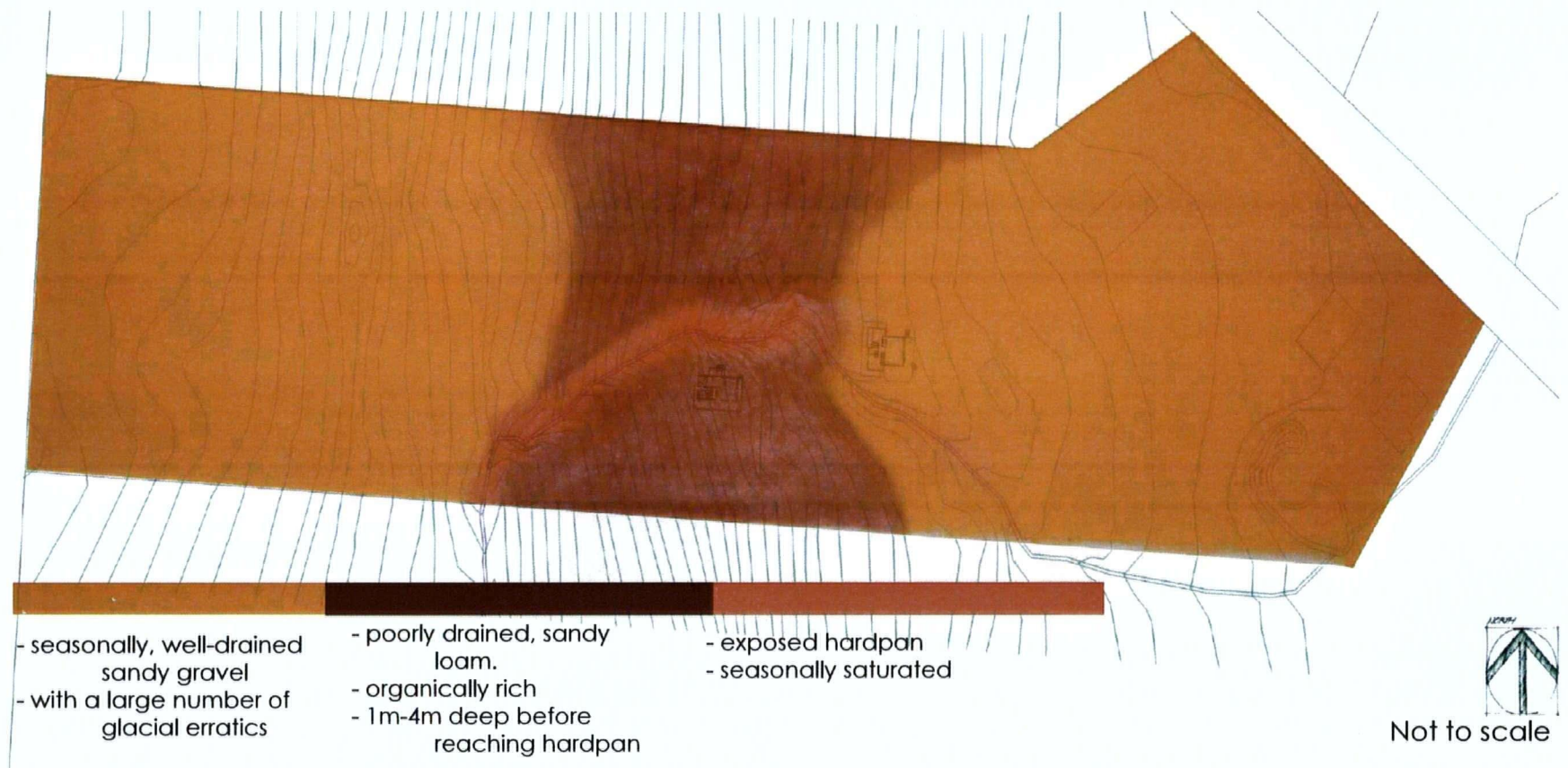


Figure 19. Soil map

to the Douglas fir forest zone are fresh to moderately dry which are generally nitrogen medium soils. The soil profile corresponds to the above category 2; seasonally, well-drained sandy gravel with a large number of glacial erratics present. The soil depth is generally 1-2.5 meters deep with underlying hardpan. The top soil is thin, and rather inorganic.

An elevation break bisects the parcel in approximately the center and signifies the transition from the Douglas-fir forest zone to the mixed forest further east. The soil in this area consists of more category 3 soils; more poorly drained, sandy loam. It is organically rich and is anywhere from 1m-4m deep before reaching hardpan.

Past the break in slope is the front field. As mentioned above, the original state of the vegetation is unknown though it was more likely to be a transitional forest between the Douglas-fir zone and the mesic forest. Soils in the front field indicate an area of disturbance. It is topped by disturbed material, a mix of different soil types mainly gravel, sand and some clay conglomerate (Figure 20). However, below 30-45 cm of the disturbed material category 2 soils are present however it is slightly more silty sand, though still very well drained. Approximately 1-5 m further below the sandy material is hardpan where the majority of the groundwater runs.



Figure 20. Disturbed material, gravel, sand and clay

Hydrology

Quadra Island watershed hydrology

Infiltration occurs in most of the soil in the upland plateau therefore there is very little runoff. The major watersheds are found in Heriot Bay and Quathiaski Cove. The hydrologic system is divided into 3 zones¹⁶:

1. Upland recharge zone in the interior of the Island.

The recharge zone is flat with many wetlands linking to it. This zone is characterized by high groundwater and subsurface water in the winter moving both laterally and vertically. Laterally moving water discharges in seepages along steep slopes, stream channels and wetlands. Vertically moving water recharges the deeper aquifers.

2. Transition zone, the zone where groundwater is transferred from recharge to discharge.

The transition zone is generally found on gentle upland slopes leading to the steeper slopes of the coastal bluffs. It is generally damp throughout the year and seepage is obvious

¹ Landscape Architecture Program.
*Environmental Inventory and Overview:
a framework for land use planning South
Quadra Island, BC.* Vancouver, BC:
University of British Columbia, 2000.

3. Discharge zone, generally at the perimeter at the coastal bluffs.

The discharge zone is where the groundwater is released, seepage and creeks are obvious.

Property Hydrology

The property has a manmade pond which drains offsite and is connected to a seasonal drainage (Figure 21). There is a small wetland to the south-west of the property on adjacent properties and the water from the property drains to it. The wetland eventually drains back onto the property in the form of a seasonal stream (Figure 22). It is the primary drainage system on the property. The majority of the property is well drained and seasonally dry.



Figure 21. Drainage ditch character in cleared eastern half of site



Figure 22. Seasonal stream, through forested section of site

Groundwater

The population of Quadra Island is dependent on groundwater for water supply. The main source of groundwater is a deep body of glacial deposit; this gains its supply mainly from infiltration. The property has a drilled well that exceeds 50 meters in depth. It is tapped into the Quadra Sands, a deep glacial deposit that is an excellent source of water¹⁷.

¹⁷Landscape Architecture Program.
*Environmental Inventory and Overview:
a framework for land use planning South
Quadra Island, BC.* Vancouver, BC:
University of British Columbia, 2000.

Climate Indicators for Wine Cultivation Suitability

There are 3 methods of determining minimum climate characteristics based on the heat accumulation from the growing season generally looked at from April 1 to October 31 of each year. The Hughlin Index, Heat Units and the Latitude Temperature Index are all methods of determining heat accumulation¹⁸. Each has advantages and disadvantages therefore the best method for an average is to use all three and extrapolate the results.

Hughlin Index

The relationship between solar energy and latitude to corresponding list of indicator varieties (Table 3) that would have the greatest chance of success in a certain climate region.

$$HI = \frac{(MDT-10) + (MDMT-10)}{2} \times k \times \text{days/month}$$

where:

MDT= mean daily temperature

MDMT=mean daily maximum temperature

k= constant to correct for latitude difference

Latitudes 48.1-50 k=1.06

HI for Dogfish Bay site = 1407 averaged
over 9 years,
range 1223 – 1656

¹⁸ British Columbia Department of Agriculture.
Management Guide for grapes for commercial growers. Kelowna, B.C.:
Government of British Columbia, 2001.

Table 3 Hughlin Index Indicator Varieties¹⁹

Hughlin Index	Indicator Varieties
<1500	Muller Thurgau, Ortega, Blue Portuguese
1600	Pinot gris, Pinot blanc, Marechal Foch, Gamay noir, Gewürztraminer
1700	Chardonnay, Riesling, Pinot noir
1800	Cabernet Franc, Limburger

The Hughlin Index for Dogfish Bay site average at 1407 therefore the best varieties are those for the <1500 category. These are the varieties that would likely do best in this climate.

Heat Units(Degree Days)

The use of heat units also called the Winkler system was developed in California to characterize grape growing and producing sites. The heat units are summed for all months in a year with a positive value. Table 4 illustrates varieties that have been shown to work in each of the regions.

$$HU = (MDT - 10C) \times \# \text{ day in a month}$$

Where:

MDT= mean daily temperature

DD for Dogfish Bay site= 871 averaged
over 9 years,
range 748-1041

Table 4 Heat Units (Degree Days) Indicator Varieties²⁰

Heat Units (Degree Days)		
Region	Degree Days	Indicator Varieties
I	1390 or less	Pinot noir, Pinot blanc, Chardonnay
II	1390-1650	Cab. Sauvignon, Merlot, Aligoté
III	1650-1930	Sauvignon blanc, Malbec, Barbara
IV	1930-2200	Tinta madeira, Refosco, Orange Muscat
V	over 2200	Trousseau, Muscat blanc

The DD for Dogfish Bay site average at 871 therefore the best varieties are those for Region 1. This was developed for California therefore the minimum heat boundaries are much higher than the other two methods.

Latitude Temperature Index

The latitude temperature index (LTI) was developed in New Zealand. It uses the latitude and the mean temperature for the warmest month of each year. This was developed for cool climate systems where the heat during the warmest months falls well below that of California yet quality wine is able to be produced .

LTI= mean temp. of warmest month x (60-
latitude of vineyard)

LTI for Dogfish Bay Site = 188.4
average over 9 years,
range 179-197

Table 5 Latitude Temperature Index Indicator Varieties²¹

LTI		Indicator Varieties
Group A LTI < 190	very cool	Gewürztraminer, Siegerrebe, Pinot gris, Pinot noir, Pinot blanc, Chasselas, Chardonnay, Bacchus
Group B LTI 190-270	cool to warm	Riesling, Pinot noir, Chardonnay
Group C LTI 270-380	warm	Cabernet sauvignon, Cabernet franc, Merlot, Malbec, Sauvignon blanc, Semillon
Group D LTI 380	warm	Carignane, Grenache, Shiraz

¹⁹⁻²¹ British Columbia Department of Agriculture.
Management Guide for grapes for commercial growers. Kelowna, B.C.:
Government of British Columbia, 2001.

This is probably the most accurate method as it was developed in a cool climate. This method also has the most variety in cultivars to be chosen from.

Environmental comparisons

Though many growers scoff at the idea of growing grapes in the Vancouver Island climate they do not understand the mechanisms of the climate there. Vancouver Island does receive a high annual precipitation amount however most of this falls during the winter not during the critical growing season. The site is approximately 20-40 meters above sea level with a rise of about 20 meters and is sloped generally to the east-south-east. The eastern half of the site is open and gently sloping and though only 500 m horizontally from the ocean, is well sheltered from prevailing winds which blow from the south-east. The western half is extremely well sheltered being upland and surrounded by the upland forests as well as a significant break in slope.

The figures below compare the precipitation (Figure 23, Table 6) and hours of sunshine (Figure 24, Table 7) of Quadra Island with those of the world's premier grape growing areas (data has been taken from Gladstones, 1992).²² As one

²² Gladstones, J.S. *Viticulture and Environment*. Adelaide South Australia: Winetitles, 1992.

Figure 23. Rainfall in millimeters during the growing season

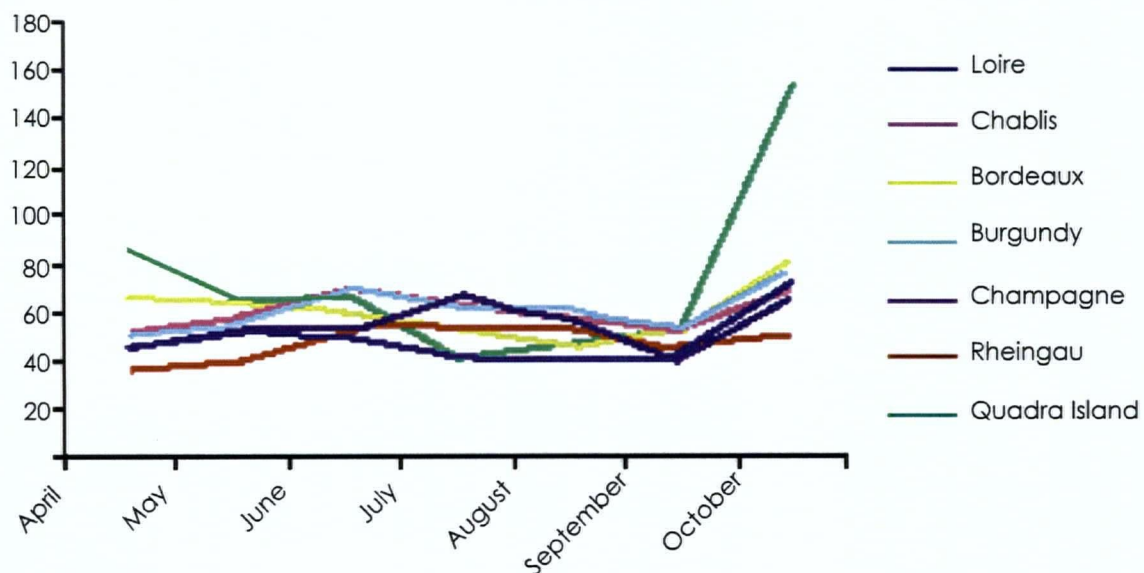


Table 6 Rainfall in millimeters during the growing season

	April	May	June	July	August	September	October	Total
Loire	47	53	50	42	41	41	74	348
Chablis	51	59	71	63	58	53	69	424
Bordeaux	67	65	60	52	47	55	81	427
Burgundy	50	55	69	62	61	54	78	429
Champagne	47	54	53	67	58	42	67	388
Rheingau	36	41	53	53	53	46	51	333
Quadra Island	87	67	68	41	48	53	155	518

Figure 24. Sunshine hours during the growing season

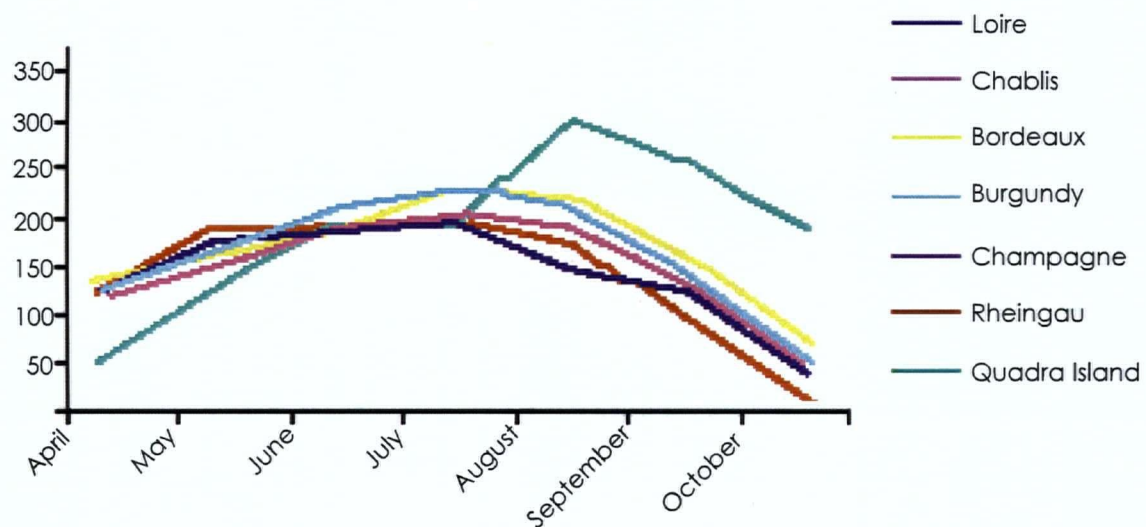


Table 7 Sunshine in hours during the growing season

	April	May	June	July	August	September	October	Total
Loire	176	215	228	240	223	180	127	1389
Chablis	175	200	223	236	228	184	125	1371
Bordeaux	185	205	227	257	250	205	143	1472
Burgundy	175	212	241	258	242	192	129	1449
Champagne	175	217	224	228	197	178	118	1337
Rheingau	177	226	228	233	214	159	96	1333
Quadra Island	128	184	232	231	307	275	225	1582

can see the precipitation levels during the months of June-August are comparable with some of the other regions as are the hours of sunshine.

Shadow

Figure 25 illustrates typical shadows cast upon the site during different times of the year at different times of the day. This is important in consideration of where to layout the vineyard and the corresponding facilities. It was important to also take into consideration how shadows affect the site in its present condition and how this could affect the matter in which the site is developed.

Vine Life History

Wine is the literal transformation of rain into beverage, water from the ground is converted by the plant with the help of sunlight, into vine growth, grapes and fermentable sugars. In the wild, a young vine spends the first few years of life establishing a strong root system before sprawling and expending energy on vegetative growth. Reproduction through sexual means is often rare as the vines tend towards asexual reproduction growing roots where the vine is in contact with the ground for a period of time. This plant would naturally climb up any

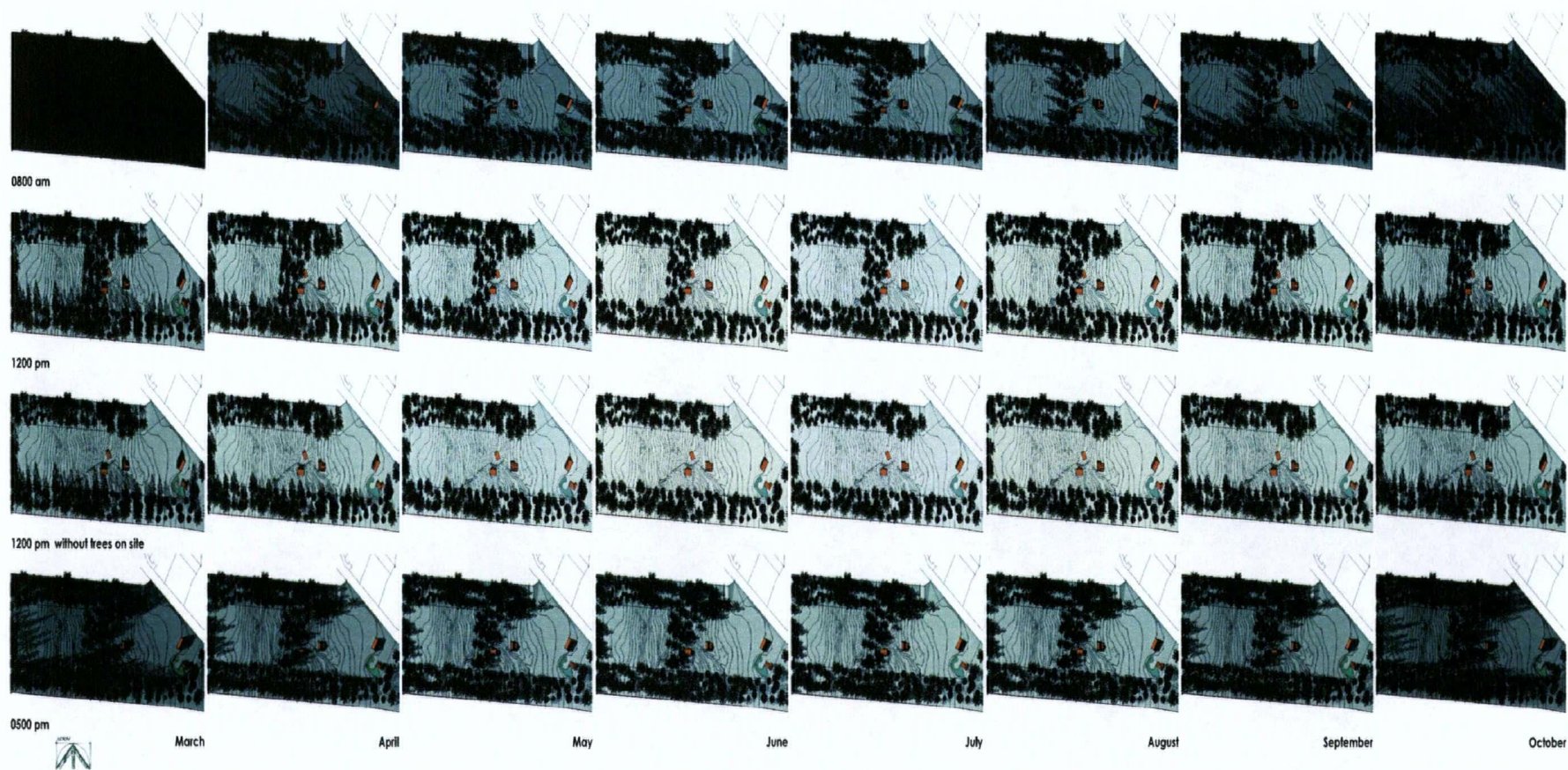


Figure 25 Shadow diagram

vertical surface in close proximity. It is said that the Romans planted Elms just for this purpose, to harness the vertical growth to keep the grapes off the ground preventing rot and rodent damage²³.

Modern vines are coddled and severely trained to produce better quality grapes, mainly through the prevention of vegetative growth thus forcing the grapevine to concentrate its energy into the grapes themselves. The younger the vine, the lighter and less subtle the wine. Wines 3-6 years after planting have generally filled out the space allotted to them above and below the ground. The wines produced from this time tend to be increasingly more complex often attributed to the more intricate root systems which presumably regulate water supply and nutrient levels.

Yields generally begin declining after 25-30 years after planting and vines are often pulled out due to poor health, decreased demand or purely dependent of economic reasons. However, the wines produced from these older vines of popular varieties often command premium prices and are labeled as old vine wines or as the French say "vielle vignes".²⁴

²³⁻²⁴ Johnson, H. and J. Robinson. The World Atlas of Wine. London, UK: Mitchell Beazley, 2004.

Results of Analysis

How this project fits into Quadra Island

Similar to many of the smaller inhabited islands on the BC coast, Quadra Island is now in flux, it is in the midst of developing an Official Community Plan in order to aid in the guidance of future land use and community development. It is difficult because of the need for the Island to embrace development of existing as well as future uses if there is to be economic sustainability, but also to try and maintain the rural character of the Island itself. The tentative OCP for Quadra outlines several community values such as²⁵:

- The promotion of a strong rural community that reflects a diversity of lifestyles, economics and recreational opportunities.
- The promotion of land use patterns which do not compromise the ecological integrity and rural character of the Island.
- The recognition of the unique natural characteristics of the Island, and to safeguard sensitive areas including the Islands groundwater recharge areas from inappropriate forms of development and sources of pollution.

²⁵ Regional District of Comox-Strathcona. Bylaw No. 1840. *Quadra Island Official Community Plan Bylaw*, 1996. Comox Valley, BC: Regional District of Comox-Strathcona, 1996.

Some of the objectives stated in the OCP are²⁶:

- The maintenance of the rural nature of the Island and encourage a small close-knit community.
- To provide forms of development which are mindful of the capacity of the land to support such development and do not detract from the rural nature of the Island.
- To encourage affordable and safe living and housing opportunities on the Island.
- To recognize that home occupations and home industries are important to the lifestyle of Quadra Island residents.

The owners as longtime residents of the region and of the Island as well as young people, trying to make a living in this area where employment is limited, understand the need for diversification. Nothing can remain static. The objectives of Dogfish Bay Winery are:

- To design a landscape that will with time become an economically self-sustaining family run winery and inn.
- To design a vineyard and winery where the aspects of great wine and great wine-making are explored and shared.

²⁶Regional District of Comox-Strathcona. *Bylaw No. 1840. Quadra Island Official Community Plan Bylaw, 1996.* Comox Valley, BC: Regional District of Comox-Strathcona, 1996.

- To design a place where one has the choice of immersion into the experience of the site from staying at an inn to working and staying in the vineyard itself.
- To design a place of certain characteristic where family, neighbours and visitors to the winery are welcome to experience and immerse themselves in all the stages of the art and craft of wine-making, celebrations of the passage of time and joy.

Grape varieties

The following table (Table 8) summarizes grape cultivars that are suitable for this climate as divided by maturing time. Early maturing varieties ripen from mid-August to mid-September. Medium maturing varieties mature from mid-September to mid-October and late maturing varieties are ready to be harvested from mid-October onwards^{27, 28}. These are generally not recommended as the growing season in this region generally ends in late September, not due to temperature but more due to precipitation. However, it is important to

²⁷ Fisher, D.V., J. Vielvoye. *Grape Growing in British Columbia*. Ottawa, Ontario: Queen's Printer, 1968.

²⁸ British Columbia Department of Agriculture. *Management Guide for grapes for commercial growers*. Kelowna, B.C.: Government of British Columbia, 2001.

note that this does vary from year to year.
Varietals chosen for this project are:

1. Gewürztraminer
2. Ortega
3. Siegerrebe
4. Pinot noir
5. Blackberry (not a grape)

The one grape that is still an unknown is Gamay noir. This classic red grape of the Beaujolais region in France will be an experimental variety for Dogfish Bay. It buds early, flowers and supposedly ripens early and it can produce heavy crops unless reduced. It exhibits relatively high acidity and ripens with lower sugars. It makes very dark wines. However, recent experiments in the Puget Sound²⁹ suggest that it might not ripen reliably here, the big experiment.

Table 8 Grape Cultivar summary

Early Ripening	Mid Ripening	Late Ripening
White Dunkelfelder Madeleine sylvaner Ortega Siegerrebe	White Auxerrois Gewürztraminer Bacchus Ehrenfelser Kerner Madeleine angevine Pinot blanc Pinot gris Schönburger	White Dornfelder
Red Gamay noir? (big experiment)	Red Agria Léon Millot Pinot noir	Red Marechal Foch

Early Ripening Mid-August to Mid-September
Mid Ripening Mid-September to Mid-October
Late Ripening Mid-October to Mid-November

²⁹ Snyder, S. *Growing Wine Grapes in the Puget Sound*. Online at <http://pswg.org/grapes.htm> (accessed June 21, 2003).

Varietal notes

What kind of wine and how they grow.

1. Gewürztraminer (white)

Wine Notes

When made right this is a delicious, fruity, full-bodied wine with a spicy bouquet with typically a strong floral and lychee aroma and spicy taste.

Viticulture

This is a fairly light cropper with small compact clusters that can be excessively vigorous, producing large, shady canopies that are conducive to delayed fruit ripening and harvest season cluster rot complex. This cultivar likes deep, fertile loams with some clay in a cool climate. Yields are low to moderate approximately 45-65 hl/ha.

2. Ortega (white)

Wine Notes

Ortega is a German hybrid that was developed specifically for cooler climates notable in Germany. At its best is fat and jammy when ripe, ripe honeyed, peach fruit on nose with peppery crisp acidity with retained freshness of fruit. It becomes herbaceous in cooler years with a white currant character when unripe. Its flavor and aroma are consistent with the volatile terpenes of Riesling, Sylvaner and Muller-Thurgau. Wine quality has been consistently high with a good resemblance to Riesling.

Viticulture

This is a cold hardy vine. The grapes ripen very early, and attain high sugar levels with low acidity. However it does not have good disease resistance, therefore stringent canopy management must be undertaken. It has a susceptibility to fungal diseases and coulure but in cool climates it is a good, consistent producer. The major complaint has been that it possesses thick tendrils that are difficult to remove during dormant pruning

3. Siegerrebe (white)

Wine Notes

The wine is very fruity with some similarity to that of Gewürztraminer, golden brown berry of good flavour, trace of muscat and high sugar with pleasant light floral tones, highly aromatic.

Viticulture

The early ripening fruit tend to attract the attention of birds, bees and wasps. Very high sugar content but low acids have been reported at harvest in Washington State. It is susceptible to mildew and rot diseases as well as stem necrosis in wet/humid regions. It has variable productivity of around 2-5 tonnes per acre, with a tendency to overcrop, therefore again stringent canopy management must be undertaken.

4. Pinot noir (red)

Wine Notes

This is a light red wine that is one of the most popular wines sold. It typically has an aroma of violets, red cherry, and raspberry, an earthy taste.

Viticulture

This grape is adapted to cooler areas; however it is one of the most elusive grape to grow. It is relatively early ripening and it is extremely sensitive to terroir. The yields are low and the best results occur when vigour and yield are controlled.

Concept

Structure and Immersion

The concept is to celebrate the vine structure (the trellis) as a highly visible and captivating design element in one's experience of the vineyard. These vine structures are the main organizing device that is used to structure the agricultural and touristic uses of this site. Likewise, the vine structure serves as a metaphor for the organization of the site circulation. A main circulation system bi-sects the site with adjacent program areas located along its course, much like the vines hanging off the vine structure. The circulation system is extremely important to the workings of any farm. It is how product reaches the winery, how people are able to travel to and within the vineyard and how one can choose to experience the site itself. This is the basic unchanging portion of the site design, it is the constant.

Structure

Support and Training

There are 2 components to successfully growing a grapevine, one is the support structure and the other is the vine training system. One is typically a built structure (although in the past trees

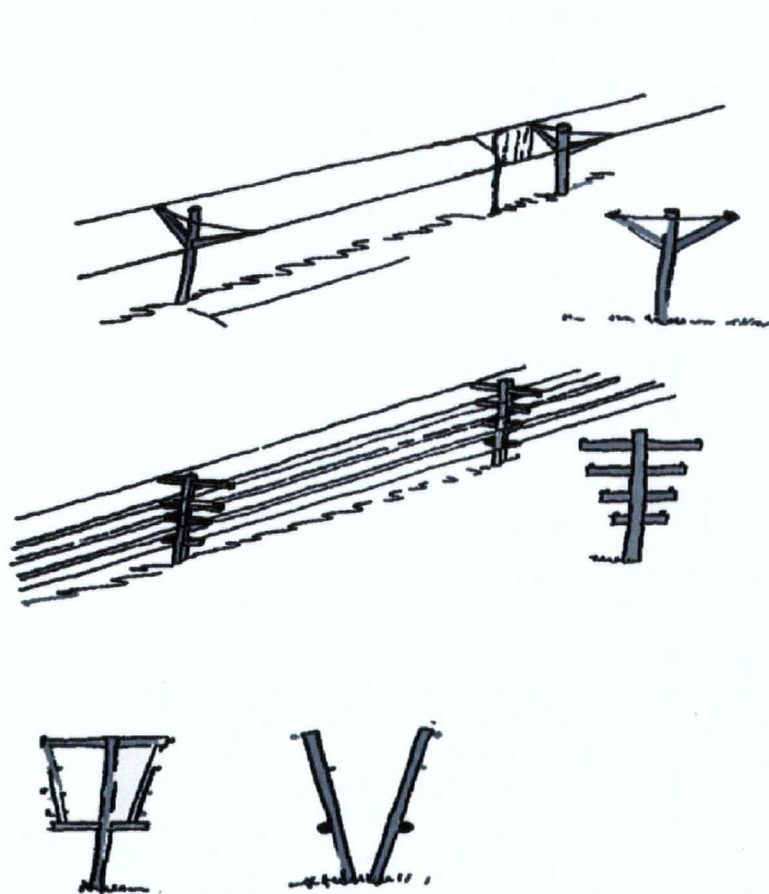
formed a living trellis) the vines growing up them. The other is a manipulation of the plant material itself where the form changes from region to region, country to country. This is the actual training and pruning methods to influence growth habit and production.

Support

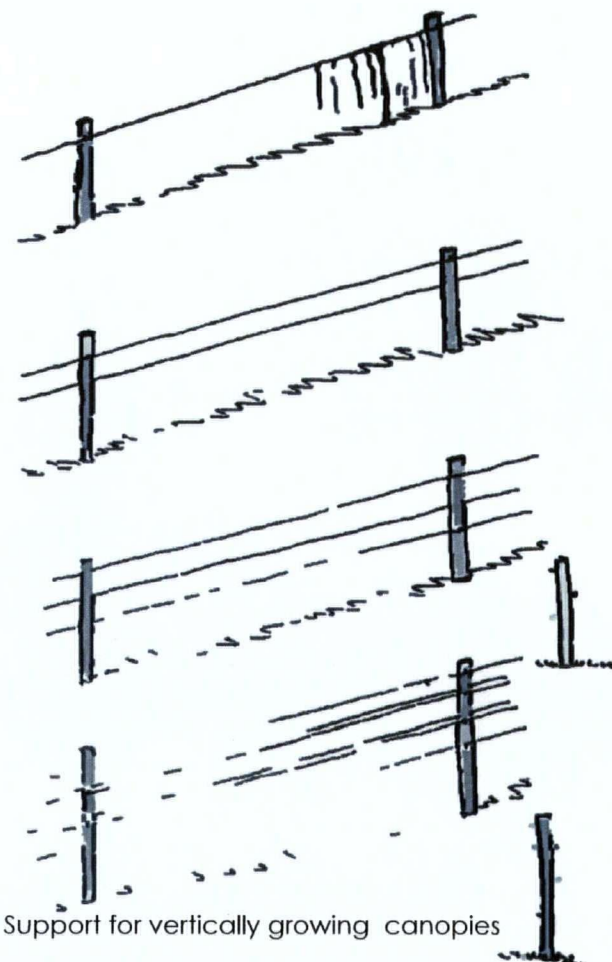
The majority of vineyards in the world use a trellis support system in growing their grapes; there are many types of structures from no supporting wires to several wires, posts, end posts and crossarms³². All are regionally specific, specially suited to the local conditions. The underlying reason for these systems is to get the vines off the ground. In colder regions the vines are typically supported higher to keep the fruiting components away from the colder air that tends to lie along the ground surface. In hotter climates the vines are trellised lower.

The trellis design can be divided into 2 different systems, ones that support vertically growing vine canopies and ones that support horizontally divided canopies (Figure 26). Vertically growing canopy trellises can be a simple stake driven into the ground to support the vine for the first few years until the trunk can support the rest of the vine similar to a small tree. More commonly on the North American West Coast vertically growing

³² Jackson, R.S. *Wine Science Principles, Practice, Perception*. San Diego, CA: Academic Press, 2000.



Support for Horizontatally divided canopies



Support for vertically growing canopies

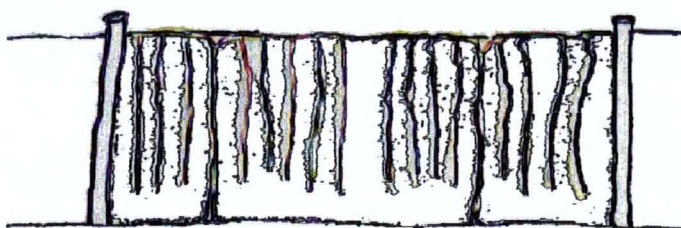
Figure 26 Various trellis designs

canopy trellises are similar to a typical fence construction, with supporting wires running between the trellis posts. The wires are placed at different heights in accordance to the type of training system that is employed.

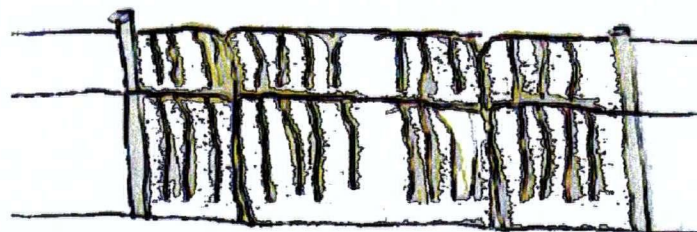
A single wire trellis is fine for table grapes and ornamental grapes however not recommended for fine wine grapes. This is due to possible breakage of the vines under the increased weight from the fruit because of lack of support. The 2 wire system is more common due to simplicity and efficacy. More recently multiple wire systems are used because growers are able to tie the grape vine to each wire to increase support that gives the grower a greater control of the growth and the positioning of the fruit and leaves in terms of sunlight and air flow (thus moisture control).

Training

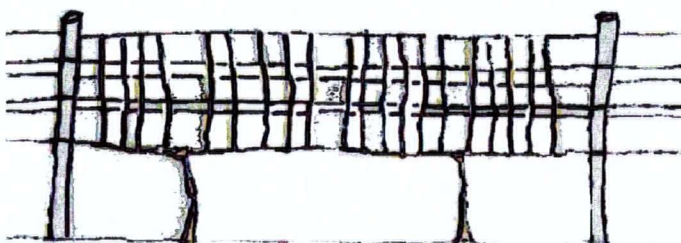
There are several training methods available to viticulturalists, from head training systems to various forms of vertically trained canopy systems (Figure 27) and horizontally divided canopy systems. The difference between each training system depends upon the variety trained and the economic cost installing and maintaining the support structure.



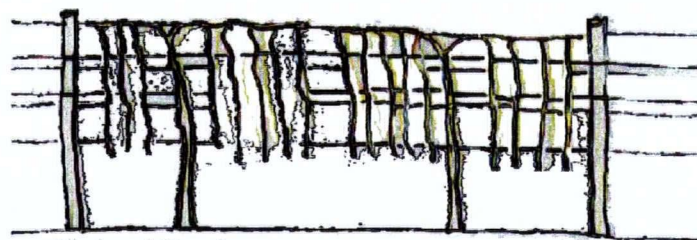
High Hanging



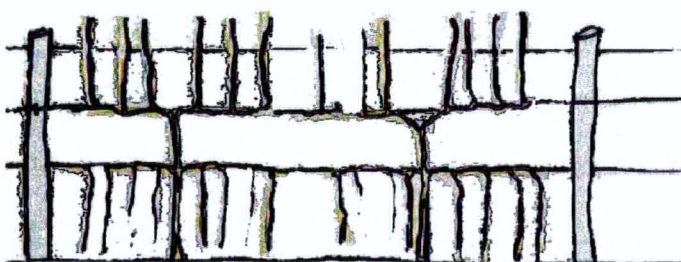
Kniffen



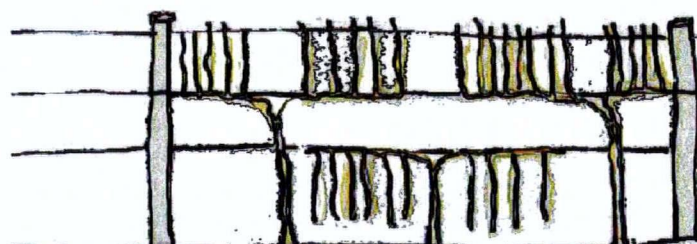
Guyot



Bilateral Cordon



Scott Henry



Modified Scott Henry

Figure 27 Vertical canopy training systems.

All training systems should³³:

- Spread the canes on a trellis to allow movement of equipment through a vineyard.
- Arrange trunks and canes to avoid competition between vines.
- Provide renewal zone for pruning that keeps the vine form and yield.
- Places fruit in a position to allow ease of harvest, adequate spray penetration and exposure to sunlight.
- Weighs the economics of a simple trellis used in large vineyards where mechanization is utilized against a more expensive trellis system and the possible benefits of increased yield and fruit quality.

The danger of a vertical training system is that if not thinned properly fruit shading and overcropping may occur. Advantages are that the trellises used in this training system are relatively inexpensive to install, there is an increased canopy surface and reduced canopy density with increased fruit exposure.

The Scott Henry vertical training system (Figure 27) was developed in Oregon and consists of 2 fruiting wires, one at 96 cm off the ground on one side of the trellis post and the second at 126 cm off the ground on the other side of the post. Therefore 30 cm separates the 2 wires.

³³ British Columbia Department of Agriculture. *Management Guide for grapes for commercial growers*. Kelowna, B.C.: Government of British Columbia, 2001.

The shoots on the upper wire are trained upwards and the shoots on the lower wire are trained downwards.

There is also a modification of this system where the fruiting canes of one plant are placed on the lower wire and the canes of another plant are placed on the upper wire. This decreases dominance of one level over the other and decreases competition between the wires when only one vine is used.

Other advantages to this system are or increased sun exposure, decreased crop losses due to increased air movement within and around the vines, as well as slightly earlier fruit ripening³⁴.

Horizontally divided canopies are much more labour intensive. The advantages of the horizontally divided canopy are reduction of shade in the renewal zone, the doubling of canopy area, good leaf and fruit exposure and often increases yield. The quality of the fruit and wood may also increase. However, this is only if shoot positioning is done during the growing season, once in during the beginning of the growing season and secondly once during middle of the growing season. These are use more in very high capacity sites, areas with highly fertile soil and readily available water during the growing season³⁵.

³⁴Henry, S. III. "Scott Henry Training System." in *Oregon Viticulture*. Ed. E. W. Hellman. Corvallis, OR: Oregon State University Press, 2003. 91-96.

³⁵ British Columbia Department of Agriculture. *Management Guide for grapes for commercial growers*. Kelowna, B.C.: Government of British Columbia, 2001. 51

Design strategy

The Visual Patterns of the viticultural landscape

Different varieties of crops and the their changing qualities across the landscape are possibly the most distinct visual characteristics of an agricultural landscape. These are patterns that are derived from topography and light exposure among other factors. Grapevines themselves also create a landscape that reveals and accentuates the topography (Figure 28). There may seem to only be a finite number of patterns that can be made however the variance in local conditions must be taken into account. Unlike the vast vineyard landscapes of California's Napa Valley, many Vancouver Island vineyards are tucked into the forest sharing the landscape with native vegetation, vines amongst the Douglas-firs, sword ferns and big leaf maples.

Human choices concerning viticulture are also deciding factors in the look of vineyard landscapes. The density of planted vines is an example, where 1.5 m spacing forms a distinct usual pattern different from vines planted 3 m apart³⁰. As well, the manner in which the vines are trellised, pruned and maintained have very different visual characteristics.

³⁰ Peters, G.L. *American Winescapes The Cultural Landscapes of America's Wine Country*. Boulder, Colorado: Westview Press, 1997.

Further, there are inter-row cultivation differences where some vineyards use turf, others flowers or clover, some just till the rows in order to increase soil heat. Other viticultural practices that depend on region are most prominently row orientation, irrigation method and frost control. Here in the north, rows tend to be oriented North-South whereas in warmer climates, they may run in all directions³¹.

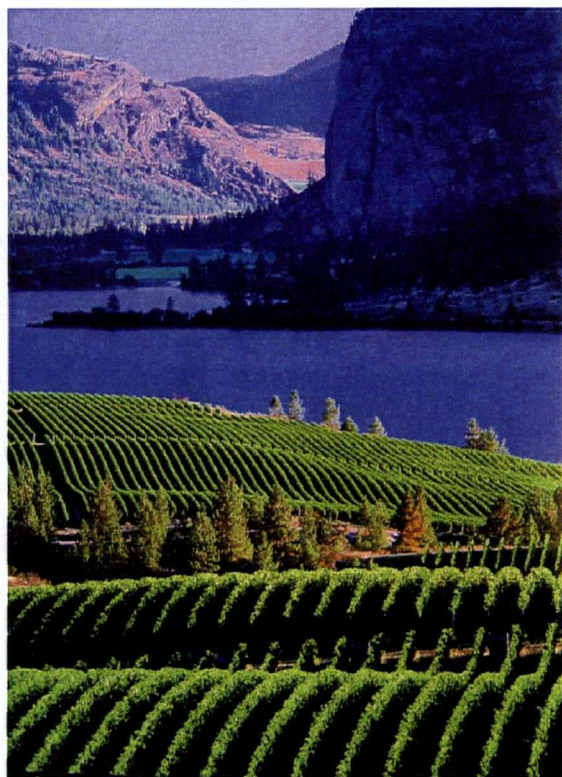


Figure 28. Vines and topography
from Schreiner, J. *British Columbia Wine Country*, 2003.

³¹ Peters, G.L. *American Winescapes The Cultural Landscapes of America's Wine Country*. Boulder, Colorado: Westview Press, 1997.

Immersion/Program

The process of wine; growing, making and imbibing, is an experience that often becomes obscured and exclusive to the public. The wine in various stages is not accessible by the public, and the celebration of wine-making becomes concentrated in the tasting room where the finished product is served. Therefore the very agrarian nature of this endeavor cries out for festivities and celebrations of seasonality both in the polished, finished form and the rough, unrefined form. It is always difficult to remember that the year of a vineyard and winery is a year that is full of activity, moving from inside to outside, from a leisurely pace to a frenetic 24 hour a day tempo. The seasons change as does the experience of the vineyard and winery. This is also the immersion experience where the guest to the site can choose to experience the site superficially, looking at the vineyard or to fully immerse themselves in the working and the life of the vineyard.

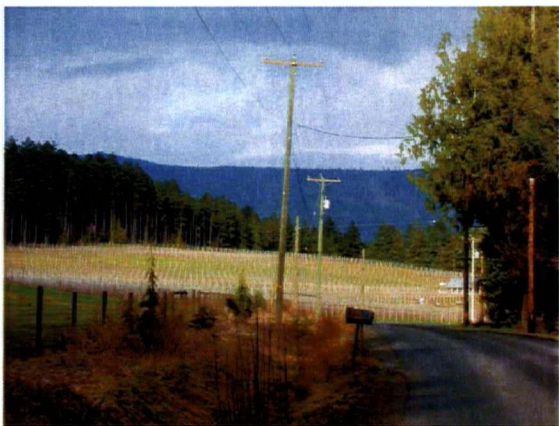


Figure 29. Springtime vineyard

Experience

Seasons of a winery and vineyard

Spring

This is the renewal of the vineyard, the magic 10°C is reached and the buds begin to swell and burst. The vineyard clean up continues, trellises

are examined and repaired if necessary. In March to April new one year old cuttings are taken from the green house and planted. May continues with monitoring of the vineyard for disease, weeds and frost, though on Quadra Island this is rarely a problem. In late May into June each new shoot is succulent and laden with small clusters of flowers that will be the future grapes.

In the winery racking of the new wine into new barrels continues from during the winter. Bottling also continues and is finished before the start of the new growing season. In the cellar topping up of the barrels continues as 5% of wine is lost through evaporation and air in the barrels is undesirable³⁶.

Summer

In June, shoots are thinned and the best ones are tied to the trellis wires. This is the time of hope and waiting, it is the time when one hopes for the perfect amount of sunshine and water. Too little sun and the grapes do not ripen, too much and the sugar content rises



Figure 30. Summer at Victoria Estate Winery

³⁶Johnson, H. and J. Robinson. *The World Atlas of Wine*. London, UK: Mitchell Beazley, 2004.

too quickly and the delicate balance between acidity and sugar is lost. Equipment is also inspected and made ready in anticipation of the upcoming harvest.

Inside, this is the beginning of the hosting season in the tasting room; this is the time when customer contact is made and in smaller wineries when most of the winery income occurs. Bottling continues and the preparation and inspection of the casks begins for the upcoming crush.

Fall

Harvest time! Different varieties ripen at different times so the crush flurry may last for a few weeks. The activity around a vineyard and winery reaches a frenzy at this time because the ripened grapes wait for no one. Pickers fill baskets and tubs which wend their way to a winery where sorting occurs. In many modern vineyards, machinery is used sometimes during the night when the temperature is low, adding a dull roar to the landscape.



Figure 30. Harvest

from www.cherrypointvineyards.com

³⁶Johnson, H. and J. Robinson. *The World Atlas of Wine*. London, UK: Mitchell Beazley, 2004.

Floors in the wineries are sticky with grape juice, hoses litter the ground and fermenters are either ready to be used or are filled, contents fermenting away.

Winter

The flurry of the crush behind, there is time, a moment of respite, a pause. The vines now dormant are pruned, selecting the best canes for next year's growth. Inside the new wine is fermenting, year old wine if present is given a final racking. Barrels are turned and moved to make room for the new wine. Tasting of the new wine begins and the winemaker makes key decisions on her wine process.

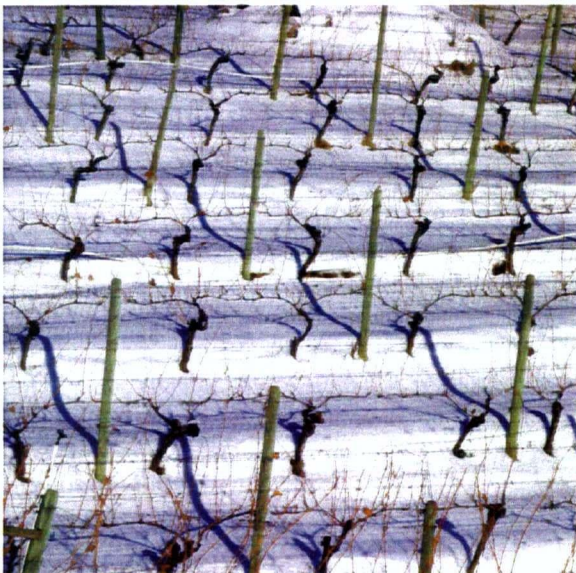


Figure 31. Winter vines

from Harper, T. *The Spirituality of Wine*, 2004.

Festivals and Celebrations

There are always the solstice festivals, marking out the passage of time, the harvest festival, Christmas, but there are still other seasons, other reasons to be celebrated. One example in the wine world is the annual release of Beaujolais Nouveau. Every third Thursday at one minute past midnight, the Beaujolais Nouveau of the year begin their journey from the Beaujolais region to sleeping Paris and onto other areas of the world. Banners arise and proclaim: Le Beaujolais Nouveau est arrivé! "The New Beaujolais has arrived!" One of the most frenetic and animated rituals in the wine world has begun³⁷.

At the end of the tumult, over 65 million bottles, nearly half of the region's total annual production, will have been distributed and drunk all over the world. It has become a worldwide race to be the first to serve to this new wine of the harvest. In doing so, it has been carried by motorcycle, balloon, truck, helicopter, Concorde jet, elephant, runners and rickshaws to get it to its final destination. It is amazing to realize that just weeks before this wine was a cluster of grapes in a growers vineyard. But by an expeditious harvest, a rapid fermentation, and a speedy bottling, all is ready at the midnight hour.

³⁷Johnson, H. and J. Robinson. The World Atlas of Wine. London, UK: Mitchell Beazley, 2004.

Wine Related Programs

In order to make this a viable project there has to be a diversification, a thickening, of the different elements, both business and residential. There is the physical structure of the program, the built elements including the vineyard, picnic areas, winery, tasting room/Inn and residence and the circulation element of the site including the multi-use courtyard(Figure 32-38). There is also the experiential portion of the program where the program begins to become more multifaceted.

This project concentrates mainly on the aspects of a vineyard and winery however, since the area that is able to be planted is limited, not only grape wine but blackberry wine and port will be produced as well. There is also the market garden which would supply produce and flowers to the families present as well as the Inn. The excess will be sold at the local farmer's market in a contribution to the local economy as well as the farm income.

The tasting room/Inn will be a further diversification of the experience at this site capitalizing not only on the vineyard and wine experience but the island experience, something that that is difficult to describe, rather it must be experienced. There is always the opportunity for a beach walk as the site is extremely close to the ocean, throughout the vineyard paths have been designed

to pull the visitor through to what is at the far end. The owners could also offer to the visitors to the Inn prawning and fishing excursions. Partnerships with other local produce farmers could create events such as an oyster and wine night and a local wine festival, featuring locally made wines. The tasting room would be open to not only winery visitors to anyone who was curious about the property. Tastings would include the current year's offerings but also the unsuccessful trials in order to educate the visitor.

Different levels of immersion could be attained through merely staying at the Inn. One will be able to choose to have a bird's eye view of the vineyard from a second story guest room in the Inn which will also be the tasting room/barrel cellar, or to have a first floor room where the outside is readily accessible. A full immersion experience will entail staying in a cottage at the level of the vineyard and possibly working at the facility itself. A vineyard walk both guided and self-guided, through the various grape varieties as well as experimental training systems could be set up as an educational element of the vineyard. Further elements would be winery and cellar tour; however this would be quite short as they are physically small. In addition to the winery and vineyard area would be the forest and field elements which would be an important element in the integrated pest management plan that would be used for this vineyard. Further education in this as well as native

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vegetation would be an interesting layer of the program. Another facet to the immersion experience of the site would be the opportunity to work at the vineyard during the year.

There is also the access to the woodlot to the west of the property which is ideal for a forest walk or mountain bike ride, the garden that would be open to neighbours who would like do a bit of gardening as many of the properties on the South End are still heavily forested and not ideal for food gardening.

The site could also be available for pictures for weddings and other special occasions through the variety of areas designed throughout the vineyard itself, from small garden shelters to the full use of the architectural courtyard. The tasting room would also be open for rental for use of small local affairs, seasonal festivals and the wineries own festivals such as the celebration of the crush, the release of the first wines of the year etc. There are also the picnic areas of the vineyard varying in levels of immersion from the vineyard picnic area, where one is surrounded by the vineyard, to the winery picnic area to the more remote picnic area in the western portion of the property.

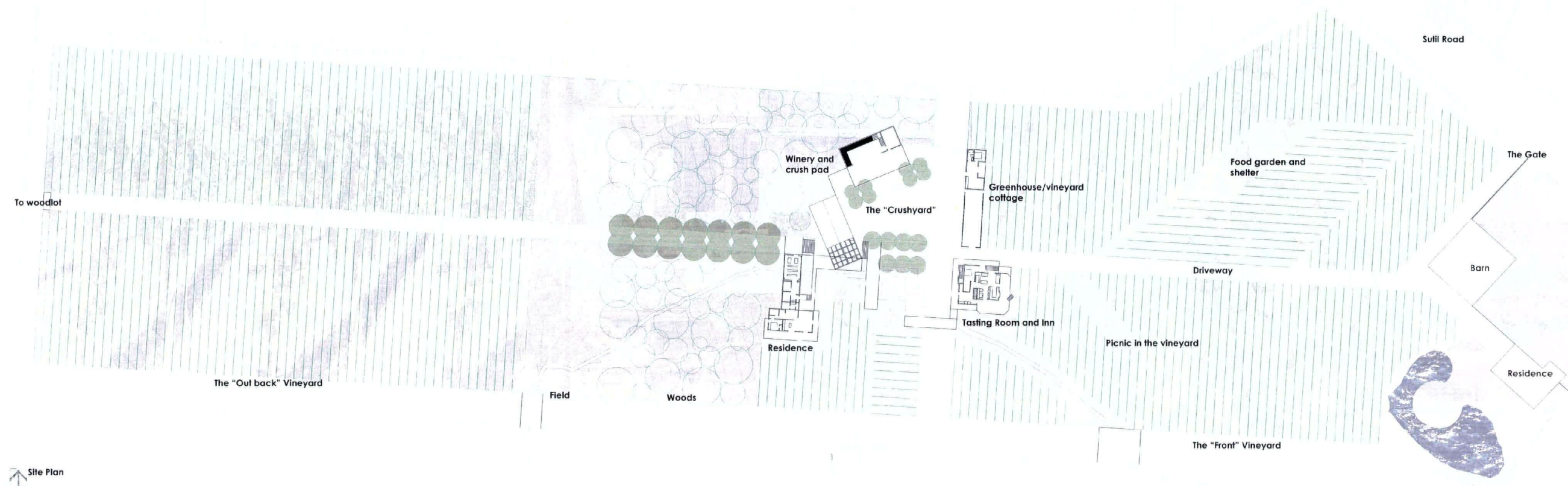


Figure 32 Site Design Plan
Not to scale

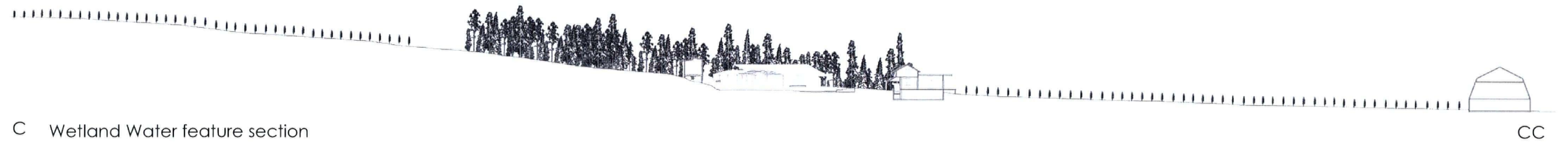
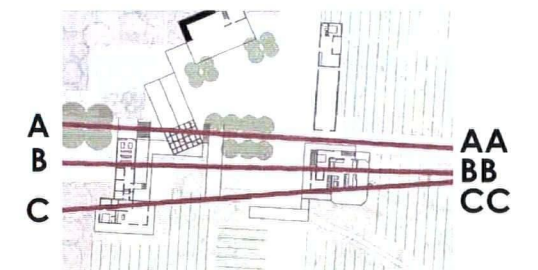


Figure 33 East-west site sections
Not to scale



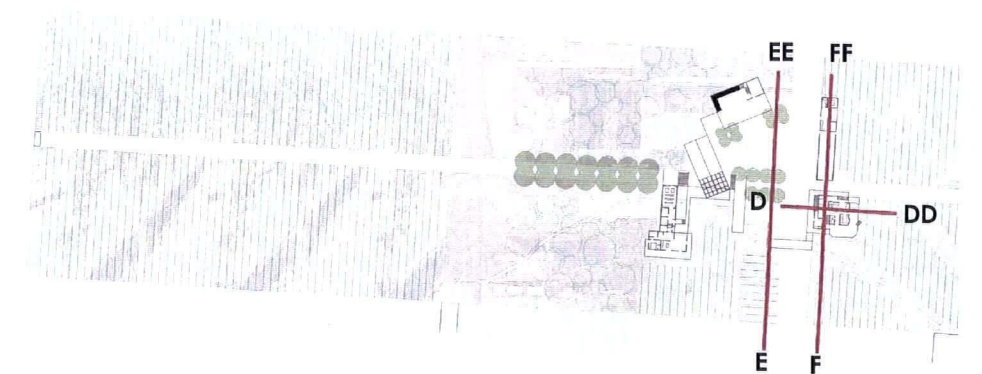
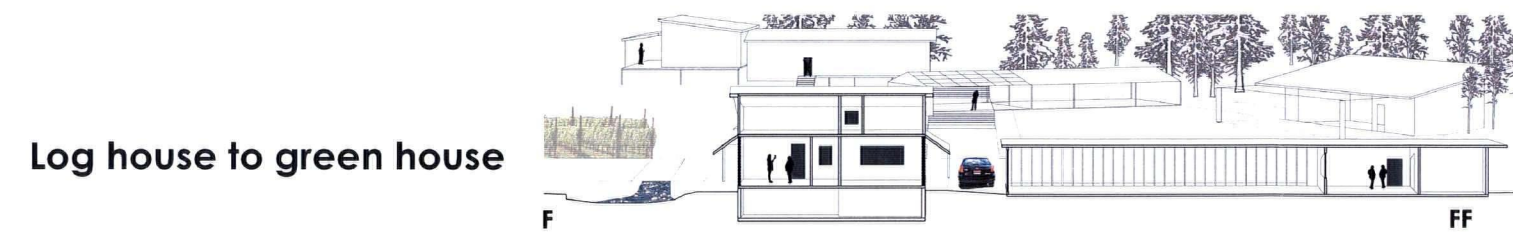
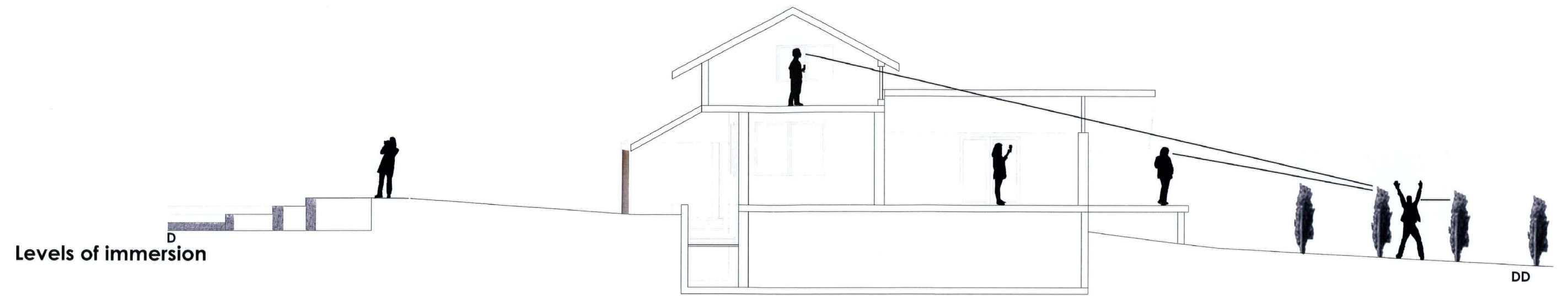


Figure 34 North-south site sections
Not to scale

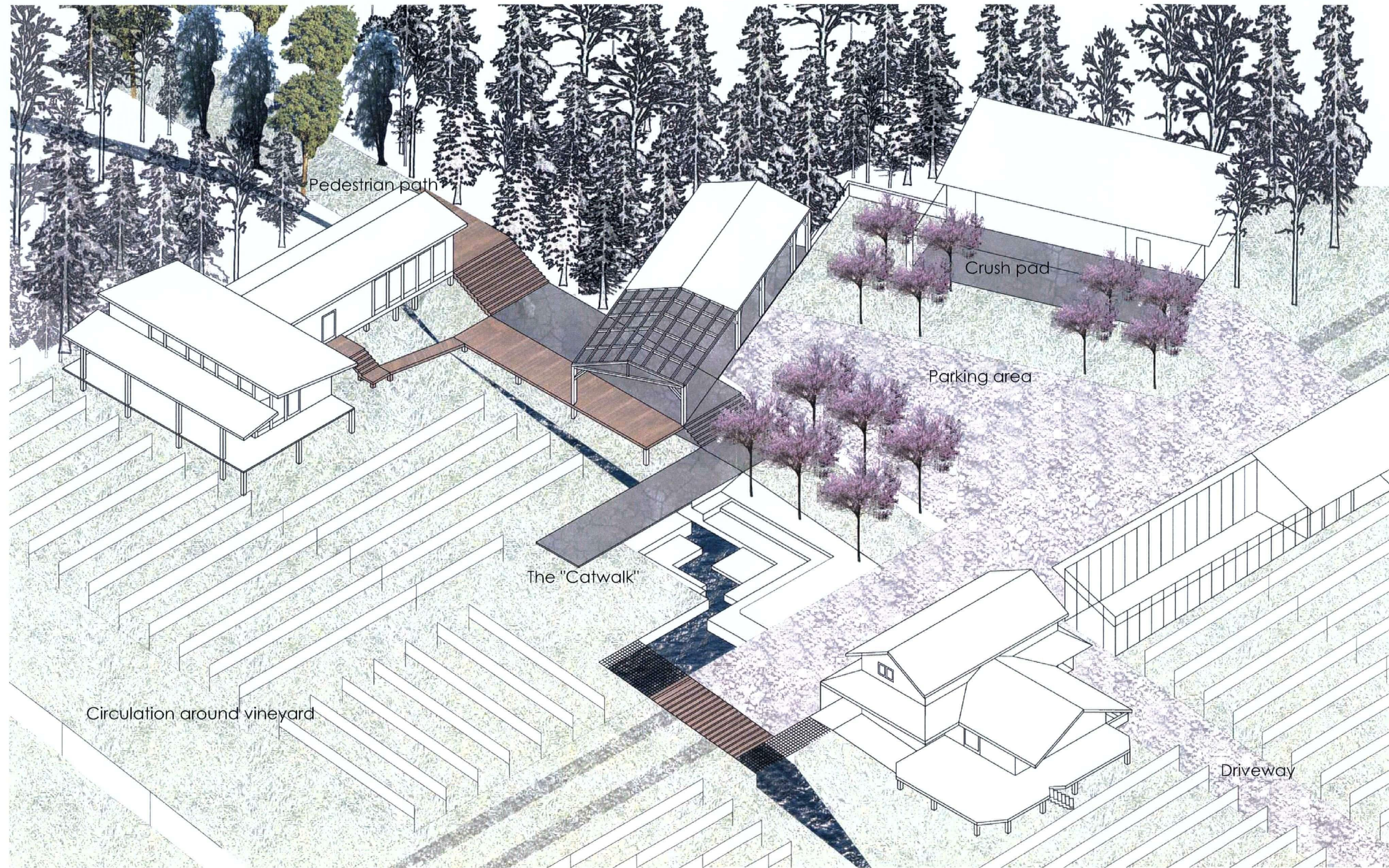


Figure 35 Crushyard axonometric drawing, orientation towards north-west
Not to scale

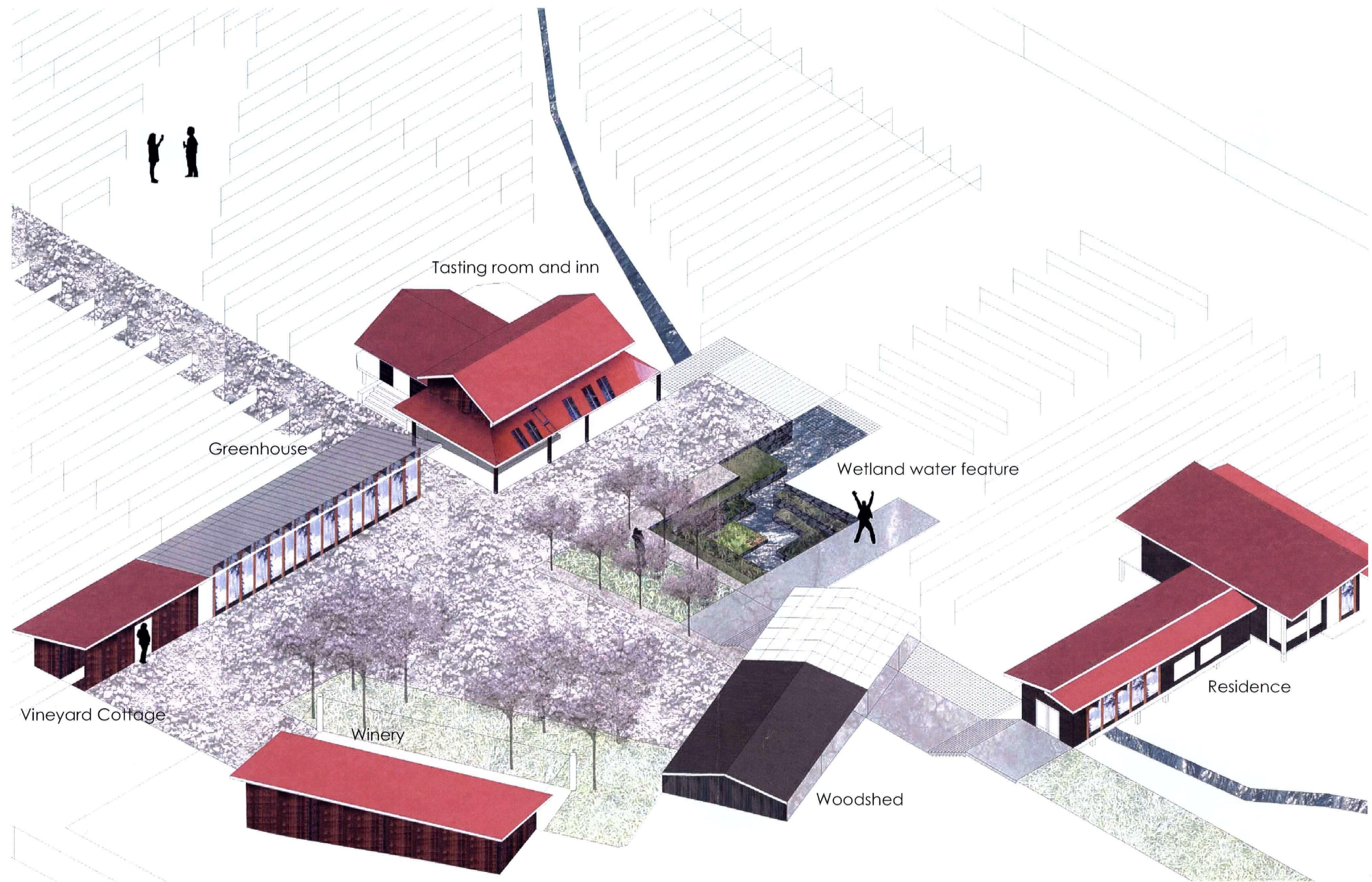
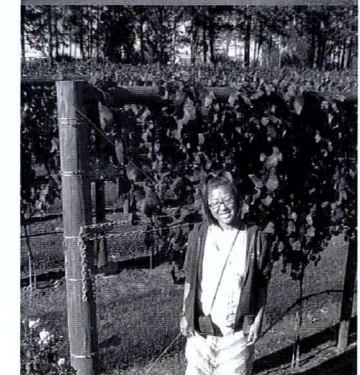
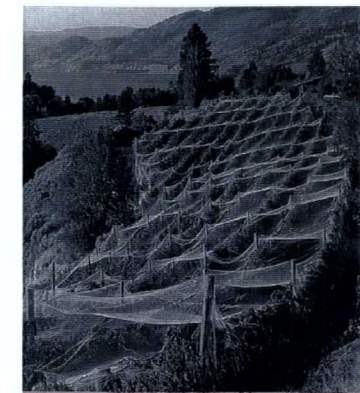
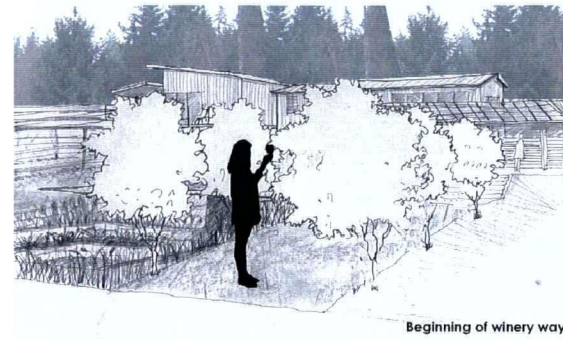
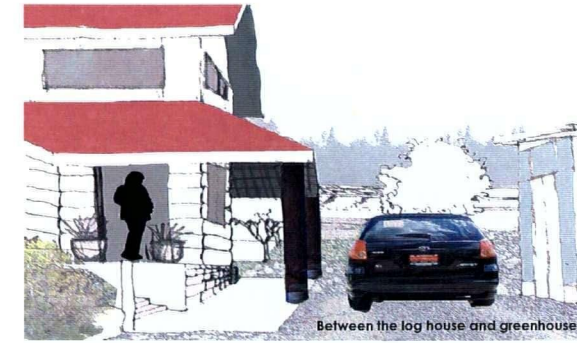
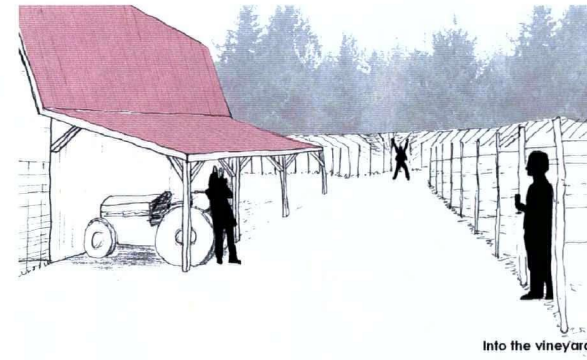


Figure 36 Crushyard axonometric drawing, orientation towards north-east
Not to scale



Dogfish Bay Winery: The Vision

Figure 37 Detail Drawings, site imaging

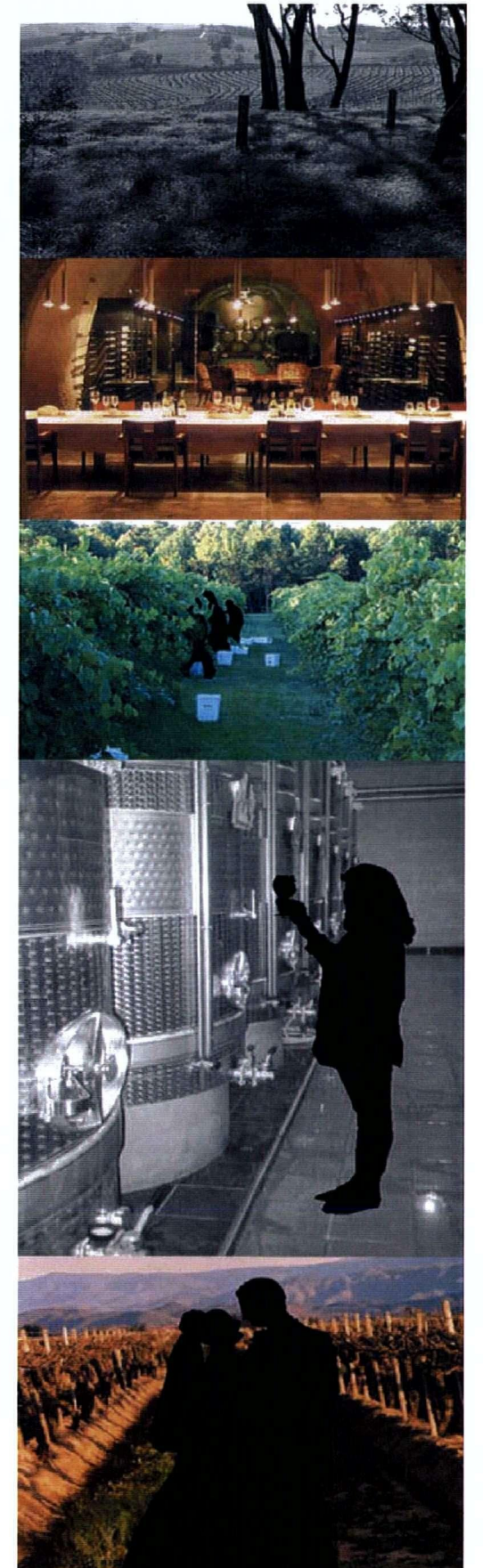
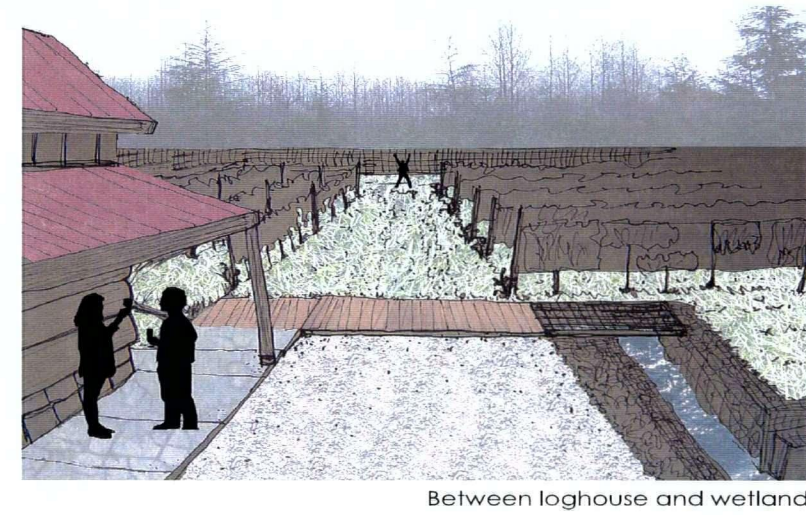
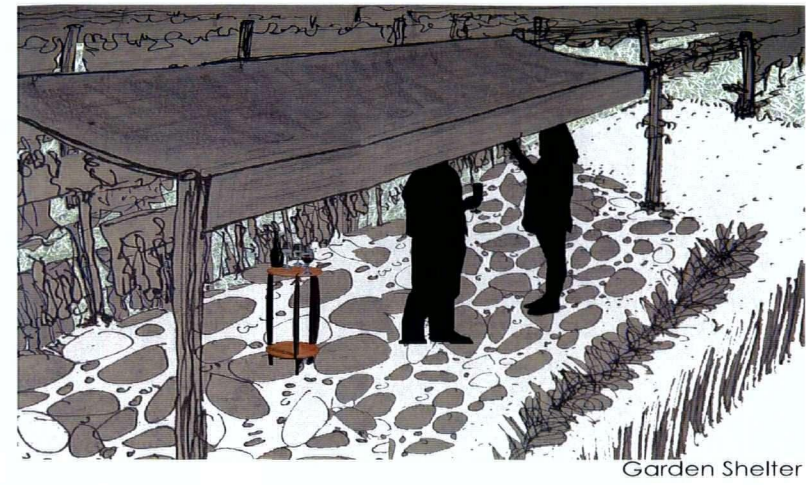
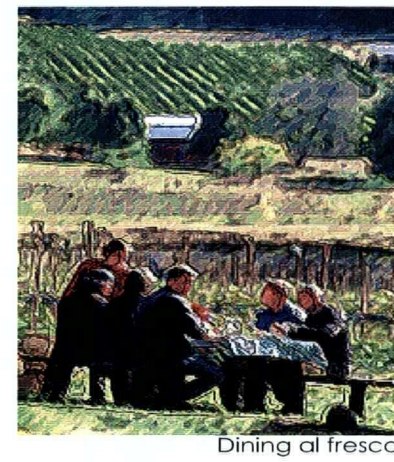
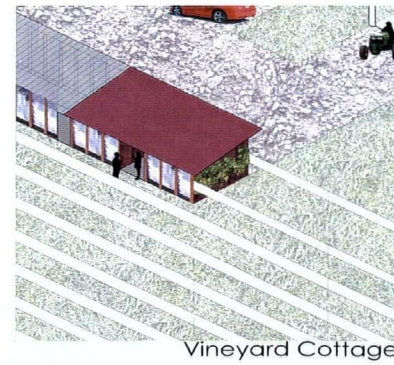


Figure 38 Detail Drawings of programmatic elements

Conclusion

This is a dynamic project that will constantly evolve throughout the coming years. There will be something new every year and it is this dynamicity that will keep Dogfish Bay young and exciting because as the owners mature as wine makers so will the site and the vines. More importantly this is a residence for 2 families; the atmosphere will be one that is welcoming and open. The structure of the site is based upon the concept of a structure and how it can affect the levels of immersion into the site. This site structure will provide an opportunity for programs to evolve and metamorphose. This is an ongoing project and is intended to be a life's work. All viticulturists and winemakers will sagely give this advice, "This is not a short term endeavour, think of it not as a 5 year plan rather it is a 40 year plan."

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Appendix A Production Equations

A. Assumptions

1. mature Vinifera vine \$ 8 lb grapes
2. 11-12 lbs grapes yield 3.8 l finished wine
3. vines 1.5 m apart: rows, 2.5 m apart

Acres grapes	5.7
2666	plants/ha $10000/(2.5*1.5)$
1066	plants/acre $(10000*.4)/(2.5*1.5)$
6076	total plants $5.7*1066$
48608	total pounds $6076 * 8 \text{ lbs/vine}$
0.34	liters/lb grape $3.8 \text{ l} / 11 \text{ lbs}$
16526	liters total $0.34 * 48608 \text{ total lbs}$
22034	Total 750 ml bottles
1865	Cases/year # bottles/ 12
308485	\$ gross/ year at 14\$/bottle

B. Assumptions

1. 12 pounds/ blackberry bush
2. 7 lbs blackberries yield 3.8 l finished wine
3. bushes 1.5 m apart: rows, 2.5 m apart

Acres Blackberries	0.27
2666	plants/ha $10000/(2.5*1.5)$
1066	plants/acre $(10000*.4)/(2.5*1.5)$
287	total plants $0.27 * 1066$
3444	total pounds $287 * 12 \text{ lbs/}$ blackberry bush
0.54	liters/lb berries $3.8 \text{ l} / 7.0 \text{ lbs}$
1859	liters total $0.54 * 3444 \text{ total lbs}$
2478	Total 750 ml bottles
206	Cases/year # bottles/ 12
39,648	\$ gross at 16\$/bottle

348133\$	potential gross winery income
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Appendix B Program Specifics

Area Description	Area needed	Notes
Winery 2000 case winery (24,000 bottles/year)	6m x 17m	
Grape receiving and crush pad	6m x 17m	
Fermenting and processing (tank hall)	6m x 17m	3000 l tanks*6 dimensions height 60", diameter 36"
Bottling	6m x 10m	
Laboratory/tasting room	6m x 6 m	
Offices	6m x 6m	
Log House: Cellar/Tasting room/Inn		
Barrel storage	6m x 6m	1 barrel=59 gal=224 l need 16 barrels diameter 24"
Bottle and supply storage	2m x 3m	
Cased goods storage	6m x 5m	
Mech room(hot water heater etc.)	4m x 3m	
Bathrooms	2m x 3m	
Tasting/café	6m x 5m	
Laundry facilities	2m x 2m	
Inn: 2 rooms to rent		
Kitchen/breakfast nook	4m x 5m	
Guest cottage	400 sq ft	
Area Description	Area needed	Notes
Barn/Shop/maintenance and tools	barn...	
Vineyard		
Picnic area	15' X 20'	Over the septic field, part of parking lot
Parking Lot		8 visitor stalls: depth 5.5 m, width 2.5 m
Tractor roads	4 m wide	
Driveway	5 m wide	
Food garden		
Drainage ditches	1 m wide	
Woodlot	1 acre	
Orchard		Part of parking lot, architectural court.
Grapes	5.7 acres	Gewürztraminer, Ortega, Siegerrebe, Marechal Foch, Pinot noir and Gamay noir
Blackberries	0.3 acres	
Residence		
Ken and Val's	1200 sq ft	
Ben and Jill Takane's	1200 sq ft	
Woodshed/battery shack/goatpen-chicken coop	10' X 20'	