

DISCOVERING HOME: TRAIL DESIGN FOR THE FOOTHILLS, LANTZVILLE BC

by

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## ABSTRACT

The Foothills in Lantzville, BC is a unique and beautiful place; stunning even. Admittedly, it presently takes a future vision to see its beauty. Heavily degraded by a history of forest operations, this site is in need of healing hands, engaged people who will help with the restoration work that the developers, Lantzville Foothills Estates Inc., are committed to completing.

An inventory and mapping of the site in 2004 defined the site's biophysical character. This information was used to define areas suitable for development and areas suitable for open space. As a result, of the 1826 acres that make up the Foothills, half has been set aside to become public park. This project is designed to help with insights, directions and design possibilities for the future core area of this park.

This project is an attempt to connect people with this landscape through well thought out trail systems and facilities such that they will develop a connection to this place and will become engaged with the restoration and protection of the future park.

Guiding principles were established to guide the design of interventions that minimize user impacts while creating opportunities for wonder and discovery. Facilities rest lightly on their site while being deeply rooted in their position in the greater landscapes. Trails, designed by linking key features with appropriate sequencing, speak to the uniqueness of this landscape. Discovering Home provides an illustration of an approach to trail design that should be undertaken in the rest of the park at The Foothills.

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## 1.0 INTRODUCTION

The site for this project, The Foothills in Lantzville, BC, is a unique and beautiful place; stunning even. Admittedly, it presently takes a future vision to see it. The site has been heavily degraded by forest operations ending in the spring of 2004 and is desperate for healing hands, engaged people who will help out with the restoration work that the developers, Lantzville Foothills Estates Inc., are committed to completing.

Our present economic system tends to place our own interests above the interests of landscapes. Cities grow and suburbs expand with often little to no response to their landscapes. Parking lots replace rivers and clearcuts replace forests. The disconnect between humans and natural ecology is growing to the detriment of the world around us. Near my home in the Kitsilano neighbourhood of Vancouver, the salmon bearing streams, now long gone under roads and buildings, have been replaced by metal markers in the ground marked "Lost Stream: coho, weasel, cottonwood", as if naming things is a reasonable substitute for protection.

However, the planning for The Foothills is different. An inventory and mapping of the site in 2004 defined the site's biophysical character and this was used to define areas suitable for development and those suitable for open space. As a result, of the 1826 acres that make up The Foothills, half (913 acres) has been set aside to become public park. Under the Comprehensive Development Plan (CDP), the developers are responsible for formulating the park master plan and will work with the community to design and develop it.

The protection of landscapes demands a strong sense of place. In the words of Wendell Berry, "you cannot know who you are until you know where you are". This can also apply to parks and protected areas. Parks need to express what is so special about their location. What is it about *this* place as opposed to *that* place that is worthy of protection? In so doing, they can engage people in their landscapes and create a place that feels like home, a place that people will feel inspired to protect.

This project is nested within the portion of the CDP dealing with the park and is designed to help with insights, directions and design possibilities for the future core area of this park. In order to heal and restore landscapes, we must relearn that "we not only live on this planet, but this planet lives in us, in our minds, in our dreams and in our genes" (Orr, 1992). This is my passion for The Foothills: to connect people with this landscape through a well thought-out trail system, such that they will develop a connection to this place and will become engaged with the restoration and protection of the future park, both now and in perpetuity.

## 2.0 THE STUDY SITE

### 2.1 GEOGRAPHICAL CONTEXT

Located on Vancouver Island in the District of Lantzville, 'The Foothills' is comprised of 1826 acres and is bounded by urban areas to the north and east (the District of Lantzville and the City of Nanaimo respectively), by the Malaspina University-College's 3000+ acre research forest to the south and by active timber lands to the west.

Lantzville, like many of its Vancouver Island small-town counterparts, is a community formed out of a resource-based economy. Originally known as Grant's Mine, Lantzville obtained its name from one of the directors of an American firm who purchased the coal mine in 1920, donated land for a schoolhouse and social hall in 1921, and built 14 houses in 1922. When the mines closed in the early 1940s, Lantzville served as a summer cottage and residential community until the 1970s when it took on the role of a bedroom community for the growing City of Nanaimo. Lantzville incorporated in June of 2003 in order to set out a future of its own, distinct from Nanaimo and other nearby urban areas (District of Lantzville, 2005). With incorporation, the Village expanded its area to 2800 hectares, including 1826 acres (738 hectares) that became The Foothills site.

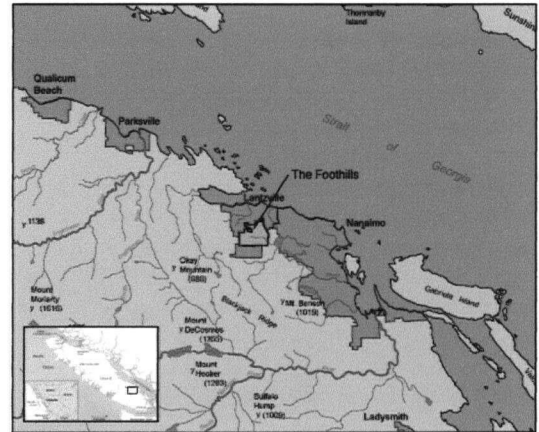


Figure 2.1 Site Context. The site is bounded by urban areas to the north and east and wilderness areas to the south and west.

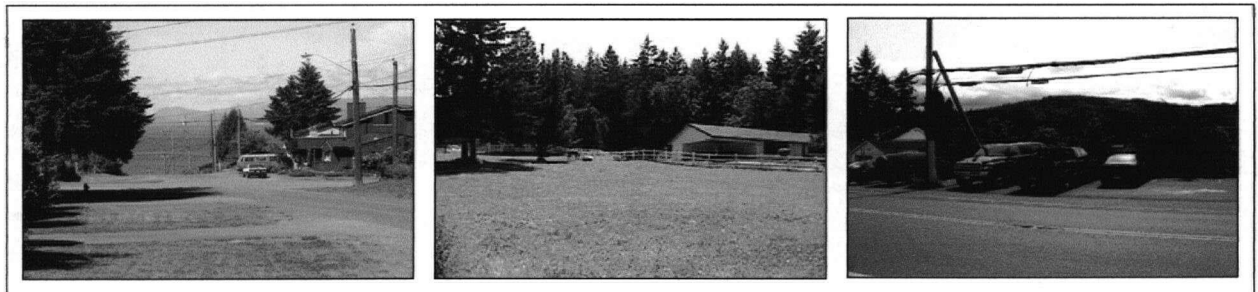


Figure 2.2 Snapshots of a small-town, the landscapes of Lantzville.

As of the 2001 Census, the District of Lantzville had a population of 3,643. Of these, 28 were non-permanent residents. Thirty percent of the population is in the 45 to 64 age bracket and 27% is in the 20-44 age bracket. Lantzville is comprised predominantly of single-family residential development with a small commercial area located in the core Village. Most residential and commercial development is located in Lower Lantzville, the historic centre of the Village, which is situated on the ocean. Upslope from this and beyond the Island Highway is Upper Lantzville, an area of light industrial development, additional residential development, resource lands and farm land. Approximately 165 hectares of Lantzville's land fall into the Agricultural Land Reserve.

The 2005 Lantzville Official Community Plan (OCP) designated The Foothills Estates site as a Comprehensive Development Plan Area (CDPA) and stated that securing a significant portion of The Foothills area as a community open space was an important goal.

Lantzville Foothills Estates Inc. purchased the site in 2005 with the objective of developing a premier rural view home development. In the Spring of 2004 they undertook an inventory and mapping program to define the site's biophysical character. This included both a hydrogeological and a geographical survey. This information provided the first land use approximation, showing potential areas for park and open space, buildable lands, circulation and access points. Land use selection was based on three factors: terrain suitability; recreational amenities and usage traditions; and larger locational considerations within the region.

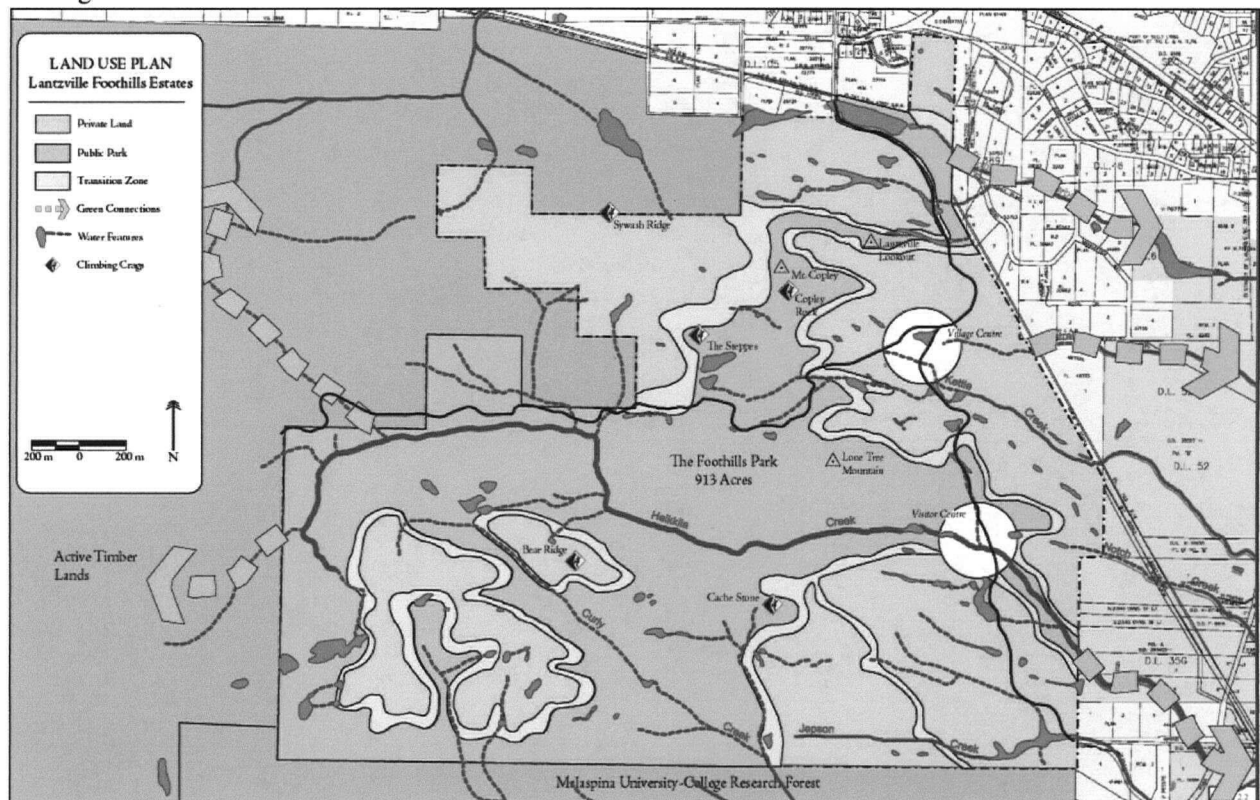


Figure 2.3 The Land Use Plan is based on terrain suitability, recreational amenities and usage traditions and larger locational considerations within the region.

Within the Comprehensive Development Plan, the primary logic for the Land Use Plan is based on the fact that the site is bounded by urban areas to the north and east and wilderness areas to the south and west (LFEI, 2006). As shown in Figure 2.3, it consists of three major components:

**1) Private Residential Development:** This accounts for 893 acres or 49% of the site with a total of 730 units, as designated in the Official Community Plan. These units are located in two major zones. Firstly, the Scenic Corridor zone which includes four parcels in the eastern-most portion of the site. This zone accounts for 499 acres and is designed to accommodate 80% of the residential development with an average lot size of 0.85 acres. Secondly, the Upland Estates zone which includes the remaining four parcels. This zone accounts for 414 acres and is designed to accommodate 20% of the residential development. The average lot size in this zone is 2.79 acres.

**2) Mixed-Use Cluster:** This accounts for 20 acres or 1% of the site and is located within the Scenic Corridor Zone. This core will include commercial services as well as public amenities such as a community centre.



**3) Public Park:** This accounts for 913 acres or 50% of the site. The park is designed to “provide a large block of contiguous land that includes The Foothills most attractive recreational features, linkage with neighbouring lands in Lantzville and Pleasant Valley, and opportunities for integration with Foothills residential development areas” (LFEI, 2006). It consists of a large, interior core area and connecting corridors to the north, south, east and west. The park will be further discussed below.

The Land Use Plan also provides a transition zone between the development zones and the park. At full build-out this ribbon will disappear with half going to the park and half to private ownership under conservation covenants, based on a parcel by parcel field analysis. This is to create a seamless edge between park and development.

## 2.2 SITE CONDITIONS AND ISSUES

Three major conditions and issues have been noted and each will be discussed in turn.

**1) The site is biophysically distinct both in terms of the District and the larger coastal region.** This fact has not gone unnoticed by local residents. The site is situated between the Nanaimo Lowlands and the Beaufort Range and possesses a unique physiographic structure, primarily due to its glacial history and climatic conditions.

**A. Topography and Landforms:** The site is topographically diverse, particularly in comparison with lands to the north, east and south. Geologically, it is comprised of a great mass of fractured volcanic rock covered by an uneven, often thin cover of glacial deposits. Figure 3 shows some of the exposed rocks that occupy the site. As the Fraser Glacier advanced and retreated over this section of the island, approximately 13,000 years ago, these exposed rocks became scoured by other materials travelling along the bottom of the glacier.

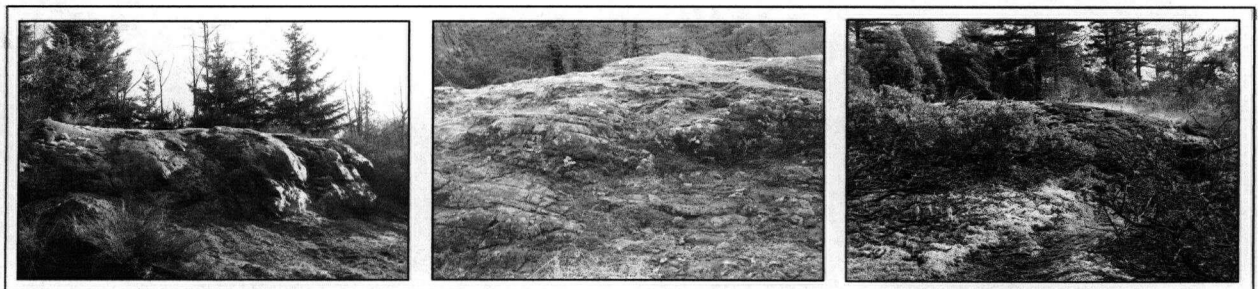


Figure 2.4 Outcrops of volcanic rock dominate the site. Most are treeless and covered with mosses and lichens.

**B. Drainage:** A series of faults trend across the site in a southeast-northwest direction, creating a unique footprint to the site's hydrology. Streams within the site trend in the same direction, following these faults. Approximately 90% of the site's watershed drain to the east, to either Brannen Lake or Green Lake. Glaciation deepened and widened the faults, leaving canyons through which small streams now flow. Most of the small streams and wetlands are ephemeral. Heikkila Creek, the largest stream on the site, as well as Copley, Kettle and Jepson Creeks “appear to maintain perennial flows and in most years their discharges decline to a small fraction of 1 cubic metre per second in the summer” (LFEI, 2006).

C. Climate: The climate on the site is dry by Vancouver Island standards and some slopes are quite mediterranean in climate. Nanaimo itself averages 1144 mm of precipitation every year, typically with a summer drought period. The Restoration Framework Plan for Lantzville Foothills Estates states that the site receives less than 1000 mm of rainfall annually, however detailed precipitation amounts are not available for The Foothills (LFEI, 2005).

D. Vegetation: Streams on the site have typical riparian assemblages (LFEI, 2005). Vegetation throughout the site is predominantly Douglas fir (*Pseudotsuga menziesii*) with large stands of Arbutus (*Arbutus menziesii*) on drier southwest facing slopes and some lodgepole pine (*Pinus contorta* var. *latifolia*) at higher elevations (LFEI, 2005).

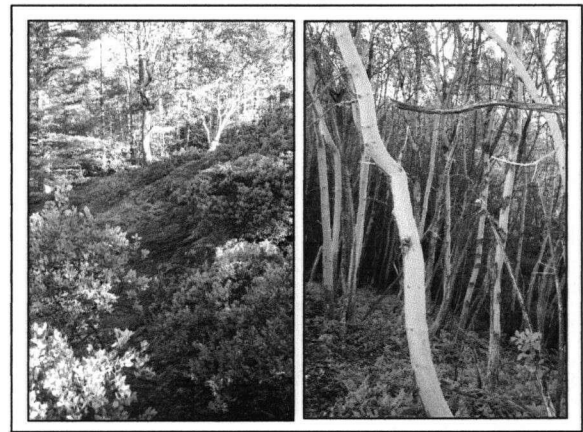


Figure 2.5 Arbutus and large stands of hairy manzanita found on dry southwest-facing slopes.

All of these above points have created a unique biophysical character to the site, including pocket wetlands, glacial scoured outcrops and valleys, arbutus groves, exposed mossy knolls and rocky crags.

**2. The Lantzville community has a long history of informal recreational access to the site.** Long considered the 'backyard' of Lantzville, locals presently enjoy access to this natural recreation area. Although close to Lantzville and other neighbouring areas, the site has a sense of isolation and remoteness, partially due to limited access and the absence of roads and trails. This sense of 'accessible wilderness' is what attracts people to the site and is what the CDP identifies as important to maintain following development.

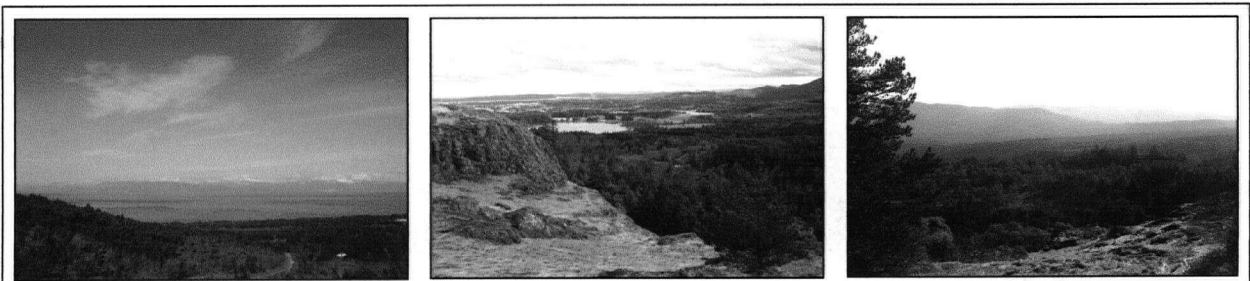


Figure 2.6 Views from Lone Tree Mountain looking north to the Georgia Strait; south to the Nanaimo Lowlands and Brannen Lake and west to the Beaufort Range.

Hiking, cycling, horseback riding, ATV and dirt biking all presently occur on the site, mostly along old logging roads. Prized environmental features include Heikkila Canyon, Lone Tree Mountain and Copley Mountain, the latter two known particularly for their spectacular views to the Georgia Strait and the Coast Mountains beyond. There are five well-known climbing crags within the site: Copley Rock, The Steppes, Cache Stone, Sywash Ridge and Bear Ridge.

The Regional District of Nanaimo's "Regional Parks & Trails Plan 2005-2015" (2005) identifies the Lantzville Foothills as a priority for future trail establishment and states that it should "develop a partnership with the District of Lantzville to create a regional trail and side trails through the future

parkland associated with the Foothills Development" (41). The area has also been identified as a prospective site for a natural areas park.

This recreational use has been a priority for the community of Lantzville, as cited in its Official Community Plan, as well as for the Lantzville Foothills Estates Inc. As a result, it has been given as much consideration, and as much land, as residential development. Of the total 1826 acres, 913 acres have been designated as public park and an additional 450-500 acres have been set aside as private open space and will be protected from development under conservation covenants. Areas designated as park will include recreational facilities such as trails, overlook areas and parking. Open space areas are essentially buffer zones with no programmed recreational facilities and will serve to create the desired seamless edge between park and development. The final park layout includes all the prized environmental features and three of the climbing crags (Copley Rock, The Steppes and Cache Stone).

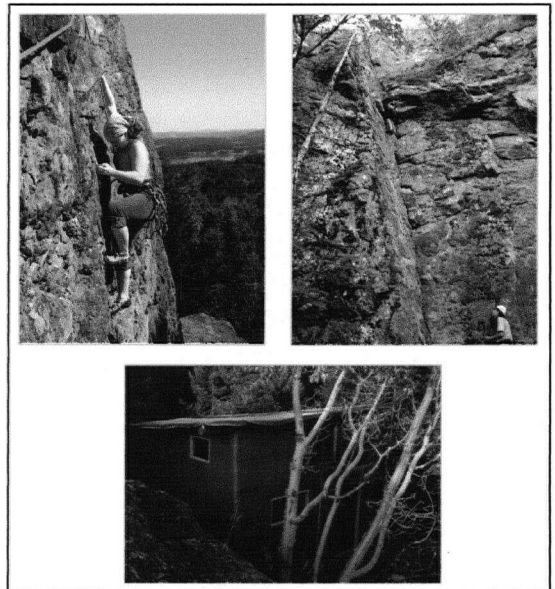


Figure 2.7 Climbing crags on the site are well-known in the Nanaimo area.

**3. Recent intensive logging activity has heavily degraded the site.** First impressions of the site were ones of awe coupled with anger and sadness. Although beautiful, this site is deeply degraded. A history of logging, including a particularly intensive logging operation that was completed in the spring of 2004, has left the lower slopes riddled with clearcuts, logging roads and slash-filled wetlands and streams. Approximately 60% of the site has been cleared (LFEI, 2005). The remaining 40% consists of inaccessible steep slopes and stands of trees with little to no market value, specifically arbutus groves.

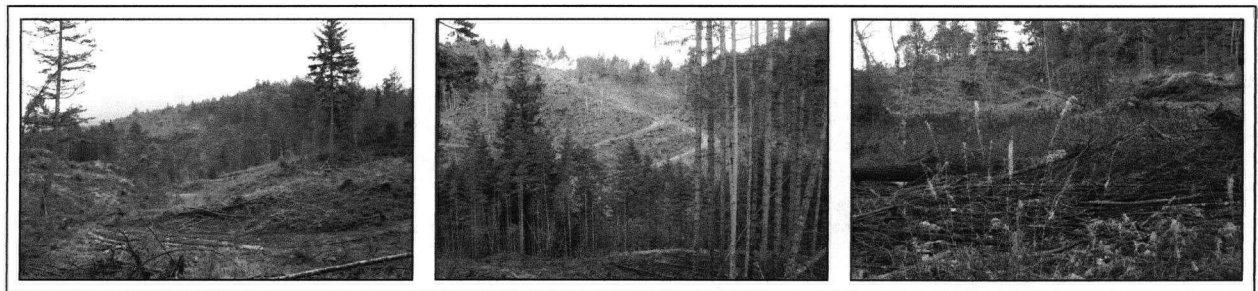


Figure 2.8 An intensive logging operation completed in 2004 has left the site riddled with clearcuts, logging roads and slash-filled wetlands.

### 3.0 PROJECT INTRODUCTION

*Choreographing the visual experience of individuals so the most poignant 'photos' of a particular set of circumstances are revealed gives viewers the opportunity to understand the world around them, not only on an intellectual level but on the more important emotional human level. These emotional responses connect us strongly to the world, and in this memorable way, they open doors for us to feel and love – in essence, they remind us of the gift of cognition ~ James Cutler*

Under the Comprehensive Development Plan, Lantzville Foothills Estates Inc. (LFEI) is responsible for formulating a park master plan that:

- defines areas that warrant special attention; features of scientific and educational significance; a facilities and activities program; the extent and location of all facilities, activity areas and interest areas
- provides a palette of design details for all facilities and provides a landscape design scheme that exercises low impact design and site adaptive facility siting and design
- provides implementation and management plans (LFEI, 2006)

The challenges facing the developers include design in the rough terrain of The Foothills, the amount of restoration work required and the cost of the undertaking. It is the developer's intention, following design and development, to dedicate the 913 acre park to the District of Lantzville. As a result, The Foothills Park will be the largest community park by private donation and the second largest in British Columbia with Stanley Park being the largest at 1,000 acres.

There are numerous challenges facing The District of Lantzville following this dedication. Presently they have only 2.3 hectares of dedicated park. The Foothills Park will add an additional 365 hectares to the District of Lantzville park system, placing an extensive burden on the community's park maintenance and management budgets. As such, the role of volunteers at the park is crucial not only for restoration work, and trail and facility construction in the shorter term, but for long term management and maintenance.

Only those that feel a connection to the landscape will serve as volunteers. As such, the overall goal of this project is to connect park visitors and Foothills residents with the landscape in The Foothills park through engaging design, such that they themselves will feel inspired to become engaged in the restoration, protection and management of the future park, both now and in perpetuity.

#### 3.1 PROJECT OBJECTIVES

The identified goals and objectives of this project include the following:

1. To provide greater definition and evaluation of the character and diversity of the interpretive opportunities in the core area of the park
  - Complete an analysis of walking times within the park
  - Complete an inventory of important nodes and natural features with the park
  - Identify potential facility placement

2. To establish a series of guiding principles for trail design for both route placement and facility development and design
3. To explore potential trail routes within the core area of The Foothills Park
  - ✦ Outline a series of loop connections between the village centre and the park visitor centre that differ in terms of trail type, length and difficulty
  - ✦ Further develop the sequencing of select trails, including appropriate rest points and viewing areas
  - ✦ Evaluate and rank features and routes
4. To use the guiding principles to further design and develop selected trails
  - ✦ Identify appropriate and meaningful experiences, nodes and features
  - ✦ Establish design interventions for visitor use that minimize impacts while allowing for a heightened capacity of wonder and discovery

### 3.2 SITE SELECTION

The Land Use Plan sets out a series of details that provide the given context for the project. These include:

- ✦ The shape of the park: incorporates major recreational features, the majority of the difficult terrain, and includes corridors to the north, south, east and west that connect to greenways and future regional trail routes as well as providing wildlife corridor connections to natural areas to the south and west
- ✦ The location of the main road: Foothills Scenic Drive running north to south through the eastern portion of the site
- ✦ Location of the park visitor centre: located on a relatively flat area next to Heikkila Creek, along Foothills Scenic Drive
- ✦ Location of the village centre: Located at the confluence of Foothills Scenic Drive with the upland road corridor, in the valley beneath Lone Tree and Copley Mountains
- ✦ Location of the majority of residential development: Eighty percent will be located in the Foothills Scenic Corridor Zone in the eastern-most portion of the site.

This development structure focuses the intensity of use on the eastern-most portion of the site, in close proximity to the developed areas of Lantzville and Nanaimo. The project site has been selected such that it incorporates what will be the most intensively used area of the park. As shown in Figure 3.1, the project study site will include the core area located between the park visitor centre and the village centre and will incorporate the lands around Lone Tree Mountain.

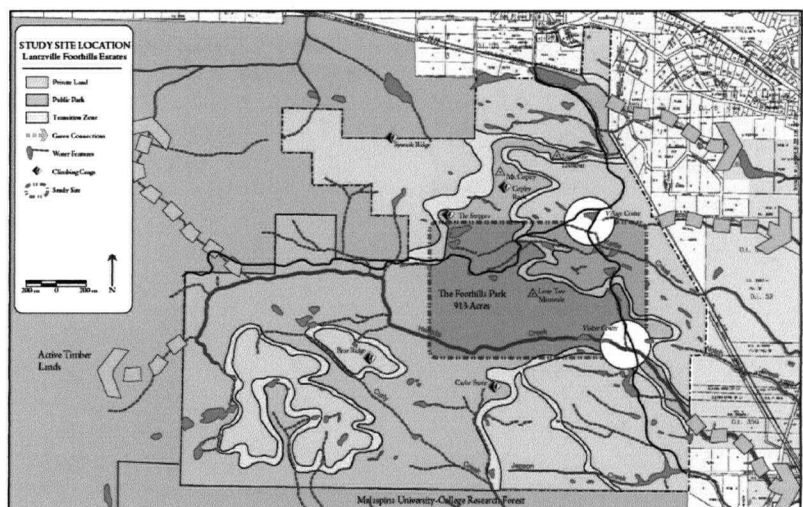


Figure 3.1 The study site is located in what will be the most intensively used portion of the park, closest to the majority of residential development and adjacent to both the park visitor centre and the village centre.



## 4.0 LITERATURE REVIEW

### 4.1 WALKING AS PLACE-MAKING

Sense of place, according to Stedman (2003) is the "meaning and importance of a setting held by an individual based on their experiences within the setting" (822). Relph (1976) states that it refers to the character or personality of a space and involves topography, appearance, economic functions and social activities. The connection to place also comes from the memory of smells, sounds, forms, its dynamics, and qualities of scale. Placemaking, thus involves a personal experiential process that allows for the development of a connection to and an understanding of a particular setting. It is the progression from the foreign to the familiar, through both emotional and cognitive processes. Relph (1976) calls it 'going inside'. He states that "from the inside you experience a place, are surrounded by it and part of it" (49). Connection to a landscape may "come simply with familiarity and ease, with the assurance of nurture and security, with the memory of sounds and smells" (Tuan, 1977, 159).

Lynch (1972) identifies the psychological present as lasting only 2-5 seconds and it is only during this short span of time that "all events seem immediately present" (122). Often, particularly in our auto-centric world, we travel much too quickly to notice the subtleties in what we are experiencing. In comparison, the average pace of walking at a mere 3 miles (4.8 kilometres) an hour, allows ample time to identify the nuances of a place, hear its sounds and smell its smells. Travel in the automobile does not readily allow for this level of exploration and according to Solnit (2000), is faster "than the speed of thought, or thoughtfulness" (10).

Walking at the 'speed of thought' can be a very powerful act simply because we are engaged with the landscape, rather than viewing it through a looking glass or a window. Walking clubs, such as the early Sierra Club and other "Friends of..." groups found all over North America, have proven themselves formidable in terms of inspiring protection legislation and representation (Solnit, 2000). This is because we tend to endow explored landscapes with value, recognizing in them a sense of identity or a sense of history and memory. William Colby, Sierra Club Secretary, in regards to old Sierra Club High Trips that occurred at the turn of the 20th century, states that "an excursion of this sort, if properly conducted, will do an infinite amount of good toward awakening the proper kind of interest in the forests and other natural features of our mountains" (1990).

Walking in the world is an important driver of place-making because the slow, meandering pace allows us to become finitely familiar with the landscape. As stated above, walking allows us to be in the world rather than viewing it through a window or picture frame. While we walk, we can feel the ground beneath our feet, hear the crunch of rocks as we move, smell the pine trees as we brush past. Solnit states that walking "shares with making and working that crucial engagement of the body and the mind with the world, of knowing the world through the body and the body through the world" (29). It is a process of being engaged in the landscape, of paying attention to where you are and where you are going.

#### 4.1.1 Implications for The Foothills

Walking as knowing is important to The Foothills development because the process is a critical component of our connection to place. "To say 'this is home and I care enough to protect it' is the essence of

citizenship, and to act on such words begins to move us from isolation to community" (Forbes, 1999, 4). James Hillman (2004) states that walking allows us to turn space into "a place, a dwelling or territory, a local habitation with a name" (cited in Jacks, 2004). The Foothills, both park and residential lands, in order to maintain itself, will need a community of people, a team of dedicated stewards who will volunteer themselves for a Saturday afternoon broom pull; or a summer night tree-planting gathering. This site needs a community of people who will not only aid in the restoration of this place, but will potentially become voluntary naturalists, or park wardens.

So how do we accomplish this? We need to walk people through the landscape such that they can begin to feel what Tuan (1974) calls 'topophilia': an emotional connection between people and place derived by combining "aesthetic pleasure with scientific curiosity and by mixing landscape appreciation with memory" (161) such that they too feel the 'passion for preservation' and will become a "Friends of The Foothills".

This project identifies the following three key ingredients in connecting people to landscape:

- An enjoyable walking experience with ample places to rest and enjoy the views and features
- Walks of different lengths and different characters that meander through a variety of landcovers and ecosystems and provide people the opportunity to explore the uniqueness of the site
- The availability of interpretive opportunities to satisfy scientific curiosity

In order to accomplish this, it is first necessary to explore how we perceive the world in order to understand what constitutes 'aesthetic pleasure'.

## 4.2 HOW WE PERCEIVE THE WORLD

### 4.2.1 Sight

Vision is the first means through which we experience landscape. It is the most powerful of our senses, according to Smardon et al. (1986), for processing the quantity and complexity of environmental information processed (40). Facts of note include:

- Our field of vision is approximately 208 degrees with 42 degrees of peripheral vision on either side and 124 degrees of binocular vision in the centre (Smardon et al., 1986).
- Typically assume an eye height of 5 feet above ground for pedestrians (Smardon et al., 1986)

According to Litton (1968) there are 5 main factors that affect how we perceive the world: distance, observer position, landscape form, spatial definition and light. Each of these are discussed in further detail below.

1) **Distance:** conventional method of identifying distance is to divide the landscape into three planes: foreground, middle ground and background. Litton (1968) simplifies these zones by designated measurements:

- Foreground: 0 to 1/2 kilometre; maximum perception of detail at close range; observer is able to "sense a scale relationship" with the landscape

- Middleground: 1/2 to 8 kilometres; can see linkage between parts of the landscape; “visual foil for the greater complexity and detail of foreground”; critical because they tend to dominate the view
- Background: beyond 8 kilometres; simplified outlines of distant shapes

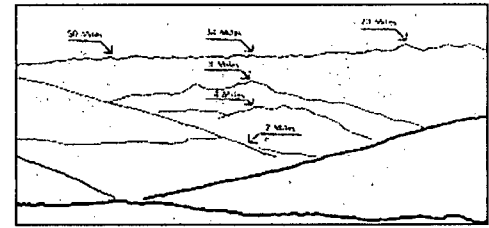


Figure 4.1 Distance creates three planes in the landscape (Litton, 1968)

## 2) Observer Position: description of the observer in relation to visual objective

- Observer inferior: essentially below; most restrictive in terms of closure and distance; “suggests direction of attention to foreground detail, the emphasis of small parts, and the screening of segments” (Litton, 1968, 6)
- Observer normal: “level line of sight generally coincides with the dominating elements of the landscape” (7); “contributes to recognition of space” because it provides overviews as well as enclosed views
- Observer superior: “least restrictive with respect to limitations in enclosure, screening, direction or distance”; minimizes visual blockage

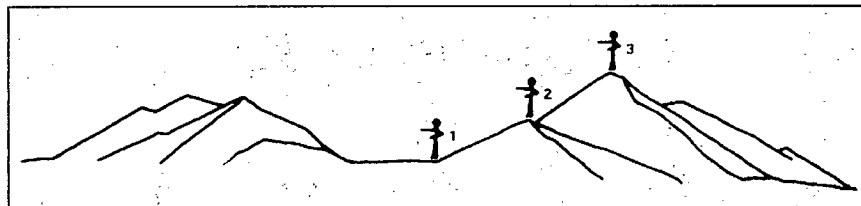


Figure 4.2 Observer Position. 1) Observer Inferior, 2) Observer Normal and 3) Observer Superior (Litton, 1968)

3) **Landscape Form:** three-dimensional convex elements including mountains, hills, crests, ridges, crags and cliffs. Necessary condition is contrast which can result from “isolation, size, contour distinction or silhouette or surface variations (Litton, 1968, 12).

4) **Spatial Definition:** three-dimensional concave elements including valleys, canyons, ravines, pockets, meadows, and swales. Litton (1968) states four sources of variation:

- the proportion of wall-height to floor expanse
- the nature of the enclosing walls and of the floor
- the configuration of the floor as it meets a boundary of trees or earth face
- the difference in absolute sizes

5) **Light:** the colour, distance and direction of light all influence how we see the landscape. This may be influenced by climatic conditions (i.e. light on an overcast day) or by other considerations such as plant foliage or exposure.

### 4.2.2. Our Other Senses

Aesthetic appreciation, although predominantly visual, also comes in from all our other senses including scent, touch and smell. Although we most rely on sight, it is touch that is fundamental to our survival



(Tuan 1974). For instance, those devoid of sight feel their way through the world with the constant tap-tap of their cane. Tuan (1974) also states that we are more moved by what we hear and smell than by what we see. This can be expressed by considering the forest: looking through a window at the trees is not nearly as powerful as the sound, smell and feeling of being within the woods, listening to the rattle of leaves and the twittering of birds, the smell released from fresh pine needles as you brush past.

Perception is effectively comprised of a series of still images that flash through the mind. As our interest in an object or landscape increases, our eyes focus more specifically and images become more vivid (Jackle, 1987). Place, according to Tuan is cued visually and "is whatever stable object catches our attention" (1974, 161). No matter the speed at which we travel, different views or features are prominent and the importance of sequential relationships is therefore paramount. Jackle (1987) states that "as people pass through a landscape, their senses should be continually treated to the unexpected in order to sharpen awareness" (22).

#### **4.2.3 Implications for The Foothills**

At The Foothills, the process of moving visitors through the landscape should allow for sequences and facilities that are derived out of the character and narrative of the landscapes through which they pass. Attempts should be made to design a sensory experience that highlights vision, sound, touch and smell. Examples include:

- Paths that run through the understory such that plants touch our feet as we brush past
- Allowing bent trees to act as places of pause
- Wetland viewing platforms that allow people to drift their hands into the water
- Hilltop viewing shelters that accentuate the sound of the wind
- Designing portions of difficult trails that require placing your hands on the rock for support
- Varying trail surfacing depending on the landscape through which the viewer is travelling and the means by which they are travelling
- Providing opportunities for different observer positions along routes

### **4.3 TRAIL DESIGN**

Most literature regarding trail design tends to focus on the specifics: width, clearance, surfacing, grade and so forth. Although important, standards such as these do nothing to define an experience and although they may serve to make a safe, efficient trail, used on their own they will not necessarily make an interesting trail. Troy Scott Parker, in his book "Natural Surface Trails by Design: Physical and Human Design Elements of Sustainable, Enjoyable Trails" (2004), stresses that the "needs and purposes of visitors are far richer and more diverse than limited standards can accommodate" and "the visitor's experience – the major reason for having recreational trails – is often shortchanged or ignored by using standards".

#### **4.3.1 Route Selection**

"Interesting trails shape their rhythm and flow by playing with sightlines, frequently changing directions, and exposing changing views and viewsheds" (Parker, 2004, 18). Key ideas for route design include the following notions:

- Mystery (Kaplan et al., 1998): trails should curve through landscapes such that they slowly

reveal what follows, enticing people to continue along the trail

- Anchors (Parker, 2004): any distinct vertical feature in the visible area that gives the trail definition; the more the trail reacts to or wraps around a tree, the stronger it is as an anchor
- Edges (Parker, 2004): essentially extended anchors; some of the most engaging trails follow or cross various edges in all kinds of ways
- Gateways (Parker, 2004; Kaplan et al., 1998): places where trail is clearly constrained on two or three sides; creates sense of passage and distance; transition point and place to pause

#### 4.3.2 Way-finding

"When people feel oriented and confident that they can find their way around, their eagerness to explore an area is increased...making it easy for visitors to acquire that knowledge will contribute significantly to the quality of their experiences in a natural setting" (Kaplan et al., 1998). Key ideas for way-finding include the following notions:

- Landmarks (Kaplan et al., 1998): natural or built features visible from a distance that people can use for way-finding
- Keep it simple: Orientation maps and signage should be clear and easy to read; symbols can sometimes be as effective as words; maps located at major trailheads should show only relevant landmarks, "choice points" and regions (Kaplan et al., 1998)
- Hierarchy: for ease of way-finding, trail hierarchy should be made obvious through differences in trail widths or surfacing textures

#### 4.3.3 Naming

The naming of places, trails and things is a fundamental strategy in the making of places. "Naming is a fundamental gesture that marks the symbolic presence in and possession of a place" (Potteiger and Purinton, 1998). Key ideas for naming include the following notions:

- Evoke feeling: names should express character or interest of trail or facility
- Make it memorable: names should be relatively easy to remember

#### 4.3.4 Precedent: Christmas Hill, Victoria BC

Located on a rocky outcrop in the heart of suburban Victoria, this small park provides numerous trail routes, designed to lead people to various rock outcrops and lookouts while minimizing user impacts. Several of the trails located on this site have been designed to lead people through the site in a most gracious way...using the rocks found on site to build steps that meld into the outcrops, and small viewing platforms built in such a way as to provide a wonderful experience of happenstance. One of the major issues with the site, however, is that the rock surfacing in some areas begins to look more like a flagstone garden path, rather than a trail through a natural area.



Figure 4.3 Christmas Hill, Victoria. Staircases are built out of stones found on site and take advantage of their natural setting

#### 4.4 INTERPRETATION

Sequential movement through The Foothills can be seen as the unfolding of a plot, a story, a narrative. Potteiger and Purinton (1998) define narrative as "the fundamental way people shape and make sense of experience and landscapes" and stress that "we come to know a place because we know its stories" (ix). Nature interpretation can play an enormous role in the unfolding of a landscape's story.

Freeman Tilden in his influential book 'Interpreting Our Heritage' (1977) defines interpretation as "an educational activity which aims to reveal meaning and relationships through the use of original objects, by firsthand experience, and by illustrative media, rather than simply to communicate factual information" (8). Successful interpretation should connect visitors to what they are seeing. It should, according to Tilden (1977) "help to translate that which is perceived into that which relates personally and to bring into focus the truths that lie beyond what the eyes see" (xi).

An interpretive program is defined as the overall interpretive effort and includes personnel, facilities and all interpretive activities of the individual area (Sharpe, 1982). The goals of an interpretive program are three-fold (BC MoF, 1995):

- to provide information and encourage discussion
- to encourage thoughtful use and minimize human impacts
- to promote public understanding of management goals and objectives

It can therefore be seen as one of the key links between the visitor, the park's natural features and park management. An interpretive program is therefore integral to the overall park management strategy.

The types of interpretation that can be used are varied and depend on a variety of considerations. Types include both attended and unattended services. Attended services includes personnel operating as interpreters providing information duty at specific locations, conducted tours or group presentations. Unattended services include exhibits at a visitor centre, self-guided trails using audio device tours, permanent signage or other interpretive publications (pamphlets, checklists, etc).

The cost of construction, maintenance and staffing is a key consideration, particularly with attended services. Other considerations include resource protection, site disruption from development and weather and climate.

The key role of interpretation is to provide visitors the opportunities to learn about natural processes occurring on the site. "Knowledge through education of a place's environmental or cultural significance changes our attitudes and the way we experience it" (Hough, 1990, 190). The benefits of a successful, well thought-out interpretive program include:

- Directly contributing to the enrichment of the visitor experience, making visitors aware of their place in the total environment and providing them with a better understanding of the site's complexities
- Broadening visitor's horizons beyond the park boundaries
- Informing the public who are then able to make wise decisions on matters related to natural resource management
- Reducing unnecessary destruction of park property, resulting in lower maintenance costs

- Providing a means of moving people subtly from sensitive areas to sites that can better sustain impact
- Improving public image, establishes public support and instills a sense of pride in visitors
- Helping to preserve a significant area by arousing public concern and may motivate public to take action to protect their environment in a sensible, logical way (Sharpe, 1982)

#### 4.4.1 Precedent: Crosby Arboretum, Mississippi

The land upon which the Crosby Arboretum and the Pinecote Interpretive Centre sits has a history of logging, farming and abandonment. Edward Blake, the landscape architect for the project, lived on the site for four years prior to development, learning to read plant signatures and letting the site reveal itself. The trails present a series of journeys that meander through the different zones and thus tell the story of the region's ecology (Potteiger and Purinton, 1998).



Figure 4.4 The Crosby Arboretum. Trails tell the story of the region's ecology.

#### 4.4.2 Implications for The Foothills

Due to issues with the continual funding of an interpretive program for The Foothills, the interpretive program must pay mind to maintenance costs. Park design by the developer and community participants should include the development of a series of self-guided trails. Facilities for the pick-up and return of interpretive leaflets should be provided at either end of the trail as well as at the visitor centre. A series of laminated sheets could be produced for re-use since paper leaflets can easily be ruined by a day of rain. These self-guided trails should be located in the most intensively used areas of the park, in close proximity to either the visitor centre or the village centre and should be designed for either hikers or cyclists.

Trail design at The Foothills should allow people to experience first-hand what it is that makes this place so special. Trails should explore the various features that are unique to this site including pocket wetlands, glacial scouring, arbutus groves, exposed mossy knolls and rocky crags. In so doing, trails can fulfill one of the key ingredients, namely the availability of interpretive opportunities to satisfy scientific curiosity.

Part of the joy in experiencing a landscape comes from learning on one's own. Interpretive signs can sometimes detract from what is actually being viewed, stating explicitly what the visitor is seeing, rather than merely providing opportunities for experience and curiosity. Part of the goal within trail and facility design at The Foothills is to allow the trails and forms themselves to interpret the nature of the site through the use of an ecological aesthetic and eco-revelatory design.

### 4.5 ECOLOGICAL AESTHETIC AND ECO-REVELATORY DESIGN

The scenic aesthetic is based on a preference for idealized naturalistic scenery and does function well for some park designs. The Foothills Park, however, will be undergoing an active period of restoration and recovery for a significant period of time. As such, the aesthetic values cannot form the primary consid-

eration. Here at The Foothills, we must look beyond the surficial qualities and delve into the realm of ecology. An ecological aesthetic is defined as the pleasure derived from knowing how parts of the landscape relate to the whole and involves understanding the living landscape from within it. As opposed to strictly visual or scenic aesthetic, it demands that we “redefine how we ‘see’ the landscape and our place in it” (Gobster, 1999, 59). It also requires that visitors experience the landscape actively, that they “relate to it as a living landscape” rather than as a pretty picture (Gobster, 1999). Ecological design considers natural processes and relationships, but does not necessarily offer any further knowledge to the viewer.

Thayer (1998) states that there are “millions of ‘ordinary’ landscapes structured by the dominant, operative, contemporary technological paradigms” (119). Often our structures and building design obscure or completely override any natural processes or ecological phenomena. Eco-revelatory design however, is defined as design that “reveals and interprets ecological phenomena, processes and relationships” (Brown et al., 1998). It takes ecological design and adds an educational or interpretive component. Eco-Revelatory Design: Nature Constructed/Nature Revealed states that eco-revelatory design:

- ♦ can educate and illuminate
- ♦ can convey knowledge through direct experience as well as by interpretation
- ♦ can punctuate and enliven our environment and sensitize us to what is known about its interlocking complexities

#### 4.5.1 Precedent: Foothill Mountain Observatory

Terry Harkness’s design entitled “Foothill Mountain Observatory: Reconsidering Golden Mountain” from the Eco-Revelatory Design: Nature Constructed/Nature Revealed exhibition is an example of such a design. “This is not a project that requires much interpretive signage; the forms are revelatory in their own right” (Thayer, 128). Harkness studied the region in great depth and used this analysis to inform the design of the site. The park is designed to “focus the observation and experience of natural and cultural processes at a local scale” (Brown, 1998). Harkness has created the forms such that:

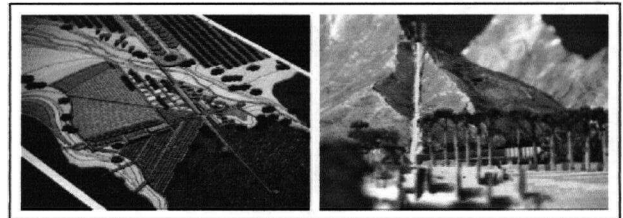


Figure 4.5 Foothill Mountain Observatory. Using forms instead of signs to interpret the region.

Visitor movement and built structures knit mountain range to valley basin, and mountain ridge to canyon below. Geology’s tectonic and fluvial forces are measured by the stability or displacement over time of marking structures adjacent to walks, walls, terraces, tanks and overlooks. The observer is brought to the edge of the interactions of water and erosion, canyon opening and valley alluvial deposition, plant generation, fire destruction and plant renewal

#### 4.5.2 Implications for The Foothills

The coupling of eco-revelatory design along with a naturalistic-interpretive program would provide a powerful learning experience for visitors to The Foothills. Gobster (1995) identifies several management

strategies that are particularly important to the design of The Foothills Park experience. These include:

- Show a “conspicuous experiential quality”
- Use design to “reveal” ecological beauty
- Provide information to interpret ecological processes
- Involve the public

#### 4.6 CRITICAL REGIONALISM

Essentially seen as a thoughtful argument against globalism, critical regionalism’s fundamental strategy is to “mediate the impact of universal civilization with elements derived indirectly from the peculiarities of a particular place” (Frampton, 2002, 82). It therefore requires a careful design response to localized, physical characteristics including topography, lighting characteristics, orientation, climate and vegetation. The sensitivity to specifics included in critical regionalism attempts to “balance the priority according to the image and to counter the Western tendency to interpret the environment in exclusively perspectival terms” (Frampton, 2002, 89). In his work Critical Regionalism: Modern Architecture and Cultural Identity (1992), Frampton cites the following as examples of tactile experiences that should be considered:

- varying levels of illumination
- ambient sensations of heat, cold, humidity and air movement
- varying aromas and sounds given off by different materials
- use of appropriate materials

##### 4.5.1 Precedent: Cutler Anderson Architects

One of the visions of Cutler Anderson Architects is “to learn about new locations and institutions, using that information to create structures that embody not only their function but also their spirit”. They identify their response philosophy as the following:

- reveal the nature of every circumstance
- capture a sense of place through a careful selection of materials and use
- strive to create a poetic response to all the project circumstances

They have worked on numerous residential projects as well as several commercial and public projects.

The idea of this precedent is not one particular building but rather to endeavour to follow their design ethic, to ensure that the construction and details are appropriate to the location and honour the place and chosen materials ([www.cutler-anderson.com](http://www.cutler-anderson.com)).



Figure 4.6 Cutler-Anderson Architects. Embodying the function and the spirit of building materials.

##### 4.5.2 Precedent: Pinecote Pavilion, Mississippi

The Pinecote Pavilion, located within the Crosby Arboretum’s 64-acre plant centre, serves as a place for exhibits, performances and social gatherings as well as serving as a starting place for tours. Designed by E. Fay Jones in 1985, this pavilion dramatically captures the spirit of its place and echos it through its light, shadows and materials. Its structural framework is the very essence of the building. In fact, “every

element performs an essential structural function” (Douglas, 1987, 104). The columns are comprised of native pines and the bracing reflects the branching of the trees outside (Ivy, 1988). The roof form dominates and is “enriched by layering – from beams to joists to purlins to thick shingles, the roof rises, fills out and evanesces into treillage and skylight at the edges” (Ivy, 1988, 144/146).

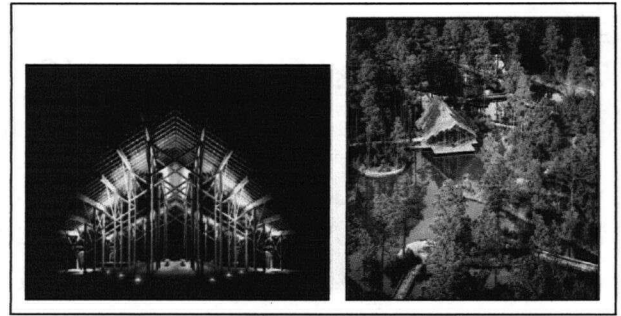


Figure 4.7 Pinecote Pavilion. Capturing the spirit of place through building form.



## 5.0 SYNTHESIS: GUIDING PRINCIPLES FOR DESIGN

The following guiding principles, taken from the various items discussed above, will form the basis through which trail and facility design within the project will be undertaken. These principles may also be used for further design within the remainder of The Foothills Park.

### 5.1 ESTABLISH A SUITABLE HIERARCHY

As stated in the Comprehensive Development Plan, the park trail system will consist of a tiered trail hierarchy in order to minimize user conflicts between pedestrians, cyclists and horseback riders. Trail design, including surfacing should ensure that the hierarchies are visibly different such that users are provided with visual clues when they move from one trail level to the next.

- 1) **Accessible.** Desirable grade is between 0-3 percent with a maximum sustained grade of 5 percent. Maximum grade for short pitches at 8 percent is possible, however, there should be 1.5m of level area every 5m. Any slopes over 5 percent should have smooth handrails for safety. Tread should be 1.75-2m in width with a clearing height of 2.5m. Suitable surfacing material includes well-compacted gravel, asphalt or boardwalk. It is anticipated that trails of this type at The Foothills will be limited to viewing areas close to the visitor centre.
- 2) **Major (Multi-use) Trails.** These trails are for not only pedestrians and cyclists, but for horses as well. They should also be suitable for service and fire protection vehicles. Due to the amount of wear from equestrian use, these trails should be located either in areas of erosion resistant soils, or on existing logging roads, such as that along Heikkila Creek. Desirable grade is between 0-10 percent with a maximum sustained grade of 15 percent. Maximum grade for short pitches is 20 percent up to a maximum distance of 30m. Due to the multi-use nature of these trails and conflicts between users, these trails should be at least 2.5m wide, with passing areas at 3m wide. Potential conflicts can be reduced by providing separate routes in critical areas. Overhead clearance should be 3m. Suitable surfacing material includes well-compacted gravel, asphalt or boardwalk.
- 3) **Secondary Trails.** These trails are limited to pedestrians and bikes and should provide for the greatest range of user abilities because they will be used by "the fit and unfit, by the old and the young [and] by unsupervised children" (Parks Canada, 1978). Desirable grade is between 0-3 percent with a maximum sustained grade of 5 percent. Maximum grade for short pitches is 10 percent up to a maximum distance of 30m. For grades above 10 percent, stairs should be provided. Bike gutters should be provided as an integral part of the staircase design. Due to the multi-use nature of these trails, they should be 1.5-2m wide, with passing areas at 2.5m wide. An overhead clearance of 2.5m should be provided. Suitable surfacing material includes well-compacted gravel, asphalt or boardwalk.
- 4) **Tertiary Trails.** These trails are limited to pedestrians and should be only as wide as required to allow the clear passage of hikers. Single file along these trails is adequate, with wider points for passing located in suitable places along the trail. Desirable grade is between 0-10 percent with a maximum sustained grade of 15 percent. Maximum grade for short pitches is 20 percent up to a maximum distance of 30m. An overhead clearance of 2.5m should be provided. Surfacing should consist of existing soils and organic material, with the addition of addition material only in places to improve wet conditions.



## 5.2 MAKE THE TRAIL SYSTEM LEGIBLE

Trails should ideally be in the form of loop trails where possible. Decision-making nodes should be obvious and well-marked. Out and back trails, or connector trails, should be clearly marked as such at the trailhead. A system of stacked loop trails provides the optimum trail system condition as this provides opportunities for visitors to select a trail length that is suitable to their range of ability and amount of time they wish to spend hiking.

## 5.3 PROVIDE A RANGE OF DIFFICULTIES

Level of difficulty, according to the BC MoF Recreation Manual is a "subjective rating based on many variables, including the fitness and attitude of trail users" and is generally based on the hardest element of a trail. Loop and connector trails should offer a variety of difficulties and thus provide visitors with appropriate information so that they may select a trail that is suitable to their range of ability. Factors in rating difficulty include the length and time required to complete the trail, grade, path surface and number of obstacles.

The following is the trail rating system suggested by the Volkssport Association of British Columbia (VABC) to be used by clubs to indicate the degree of difficulty for a volksmarch (VABC, 2001). These categories are suitable for difficulty rating at The Foothills.

### 1) Easy:

- A. An easy walk on pavement or on well maintained trail with no significant hills.
- B. A moderately easy walk on some pavement or some woodland or open field trails. Or entirely woodland and field trails that may not be well maintained. No significant difficulty with hills.

### 2) Moderate:

- C. A moderate walk in any setting with some difficult terrain, one or two substantial hills and/or steps.

### 3) Difficult:

- D. A more difficult walk, most likely in a natural setting with naturally surfaced paths and steeper or hilly inclines. Participants with certain health problems should take caution.
- E. A very difficult walk, with many steep hills or high altitude trails, or very rough, uneven terrain, steep or unstable inclines. Not suitable for any person who is not in good physical health.

## 5.4 MAKE IT ENJOYABLE

Rest points should be provided at intervals dependent on the difficulty of the trail such that easier trails would have more frequent rest points. Resting points should be located either at features of interest or at the tops of steeper slopes and should take advantage of the appropriate view.

Appropriate spacing for rest points based on the trail's level of difficulty is as follows:

Easy: 80-160 m spacing (1-2 minute walk at average pace)

Moderate: 240-320 m spacing (3-4 minute walk at average pace)

Difficult: 400 m spacing (approximately 5 minutes at average pace)

## **5.5 HIGHLIGHT DIVERSITY**

Part of the experience of The Foothills is the diversity of landcover types due to the site's topographic nature. As such, trails should capitalize on this and highlight this diversity of the site by meandering through a variety of land cover and ecosystem types. For instance, a trail can move from coniferous forest into deciduous forest then into a riparian area then move back through a similar sequence.

## **5.6 CREATE AN EXPERIENTIAL SEQUENCE**

In order to expand the type of viewer experience along the route, trails should move through a variety of characters and dialectic experiences. Examples include compressed/expansive, high/low, open/closed, close views/distant views and sun/shade. At The Foothills, possibilities include moving people from forest to plateau or from the top of a knoll down into a sheltered draw. As an example, a sheltered forest walk with compressed views can move to a rocky outcrop area that provides expansive views over the village centre and can then move back through sheltered forest.

## **5.7 TELL A STORY**

Trails should highlight features that demonstrate uniqueness of site. Landscapes to explore, for instance, include pocket wetlands, glacial scouring, arbutus groves and exposed knolls. Trails can either be routed to explore one type of narrative or, can meander through a variety of these landscapes, thus telling the overall Foothills story. Examples of narratives to be explored at The Foothills include:

- The Fraser Glaciation and its role in shaping the landscape
- Forest regrowth and restoration
- The micro
- Wetland health, recovery and diversity

An interpretation of these trails should be written such that people can learn what they are travelling through. There should be some opportunity for trails within the core area to be self-guided natural trails with appropriate pamphlets created.

## **5.8 CAPITALIZE ON VIEWS**

The Foothills offers some well-known expansive views. However, it also offers unique interior views, such as views down into Heikkila Canyon, shortened views to rock faces, views along ridges and views limited by ridges. These should be explored and should provide a portion of the framework for trail routes and destinations as well as facility placement. Providing a unique perspective on an aspect of The Foothills will add power to the trail's narration. For instance, looking down at a wetland from a small knoll then moving the trail down to beside the wetland provides visitors the chance to see from multiple perspectives.

## **5.9 MINIMIZE IMPACTS**

Trails should be designed in such a way as to minimize impacts. This is especially important in fragile, attractive sites, like rock knobs with lichen/moss communities, wetland pockets and sheltered cliffs. This includes not only appropriate trail location and surfacing but also the actual construction of the surface and how it makes the visitor relate to the landscape. For example, a stone path on a rocky outcrop can either sit at grade, slightly below or slightly above grade. The option of slightly above grade not only makes the pathway clear but sets the hiker in a different relationship, both physically and psychologically, to the

landscape through which they travel. Above grade in this example would be the best example in terms of minimizing impacts. Where appropriate, trail design for Major (Multi-Use) trails and most secondary trails should be on existing logging roads or skid roads to minimize construction impacts. Although the mossy outcrops found on the site are potentially the most alluring and interesting, trails in these sensitive areas should be minimal and should be well defined. Too many feet on these sensitive moss and lichen communities will cause severe degradation over time.

## **5.10 ENSURE THAT IT'S FEASIBLE**

Although a corridor might be selected as an excellent candidate for a trail, due to a high number of features or views, the trail itself should be technically feasible for construction. As an example, rock faces requiring blasting for staircases should be avoided. This will also ensure that the risk factors related to use of the trail will also be minimized.

## **5.11 USE APPROPRIATE MATERIALS**

Materials used throughout the site, both for built facilities and trail surfacing, should either be native to the site, or should mimic the qualities of the site. Construction should be "detailed to reveal the nature of the materials and in so doing, [honour] them" ([www.cutler-anderson.com](http://www.cutler-anderson.com)). Trail surfacing should use appropriate materials that match land cover types. For instance, constructing stone steps on rocky outcrops or corduroy trails through wet areas of cleared areas.

## **5.12 CELEBRATE PLACE**

Facilities should be sited in such a manner that they highlight and emphasize their place within the landscape. Buildings and other built facilities should be site-specific and should relate to their landscape. As an example, a picnic shelter on the top of Lone Tree Mountain should have a very different design than one in a hollow next to Kettle Creek.

## **5.13 CREATE OPPORTUNITIES FOR WONDER**

Restpoints and viewing areas should be designed in such a manner that they reveal the landscapes in which they are located and provide people the opportunity to stop and really take notice. As an example one could design a wetland platform designed to lay on so that you can trail your fingers through the water; or a shelter that celebrates rainwater; or providing a quiet bench on a sheltered knoll.

## **5.14 SHOW PEOPLE THE WAY**

Signage within the park should be unique and something of character. Any signage, including way-finding and interpretive signage, should not detract from the site and should serve as a reminder that one is travelling in The Foothills.

## **5.15 EVOKE FEELINGS**

Names should evoke the special qualities of a trail. These should be able to pique interest in hiking the trail. As an example, compare two names from trails in Banff National Park: Parker Ridge or Plain of the Six Glaciers. The second is clearly more expressive of what one will see along this hike and is small part of the reason that it is such a popular hike. Names should express the quality, the landform or something of special uniqueness that one will encounter on the trail.

## 6.0 SITE ANALYSIS

*Once in his life a man ought to concentrate his mind upon the remembered earth. . . .*

*He ought to give himself up to a particular landscape in his experience, to look at it from as many angles as he can, to wonder about it, to dwell upon it ~ Scott Momaday*

The process of site analysis for this project involved both biophysical and experiential analysis. Biophysical analysis data was obtained from Lantzville Foothills Estates Inc and ground-truthed on the site. Data obtained from Lantzville Foothills Estates Inc. is presented in Appendix 1. Experiential analysis was developed following a succession of site visits where I walked the site, recorded myself as I talked about what I was seeing and experiencing, photographing from all angles and recording the date and place the photo was taken. What follows is the outcome of data acquired from this analysis.

## 6.1 BIOPHYSICAL ANALYSIS

### 6.1.1 Land Cover

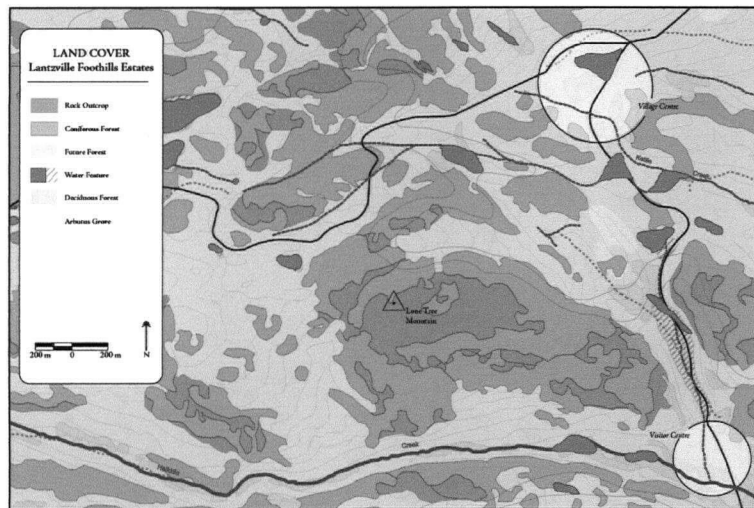


Figure 6.1 Land Cover. Large forest and rocky outcrop areas on Lone Tree Mountain dominate the project site.

1) **Rock Outcrops.** These host xeric-like habitats with little to no soil cover and are covered with lichen and moss communities; grasses and patches of hairy manzanita. These areas are fragile and sensitive to foot traffic. They are numerous throughout the project site with the largest ones occurring on the top of Lone Tree Mountain.

2) **Coniferous Forest.** Predominantly comprised of douglas fir, with some lodgepole pine, western hemlock and western red cedar (in slightly wetter conditions), remaining coniferous forest tends to be located on steep, inaccessible slopes. Arbutus, douglas fir plant association is common on well-drained, shallow soils. Common understorey growth includes salal, dull Oregon grape, and trailing blackberry.

3) **Future Forest.** This landcover refers to clear-cut areas found on the site. The majority are found on gently sloped or low-lying areas. This landcover has been titled future forest as this area once hosted forest and will again following restoration and natural re-growth. Cleared land covers approximately 60% of the entire Foothills site.

4) **Water Features.** This landcover includes streams and wetlands. Major features include Heikkila Creek and Kettle Creek. The hydrology of these features have been greatly impacted by logging operations and will require restoration.

5) **Deciduous Forest.** Located in small pockets within riparian areas along stream corridors and in wetlands. Red alder and bigleaf maple are common species along with willow.

6) **Arbutus Groves.** This landcover refers to sections of land in which the existing plant association prior to logging was arbutus and douglas fir. The douglas fir have been removed leaving behind tall, spindly arbutus trees.

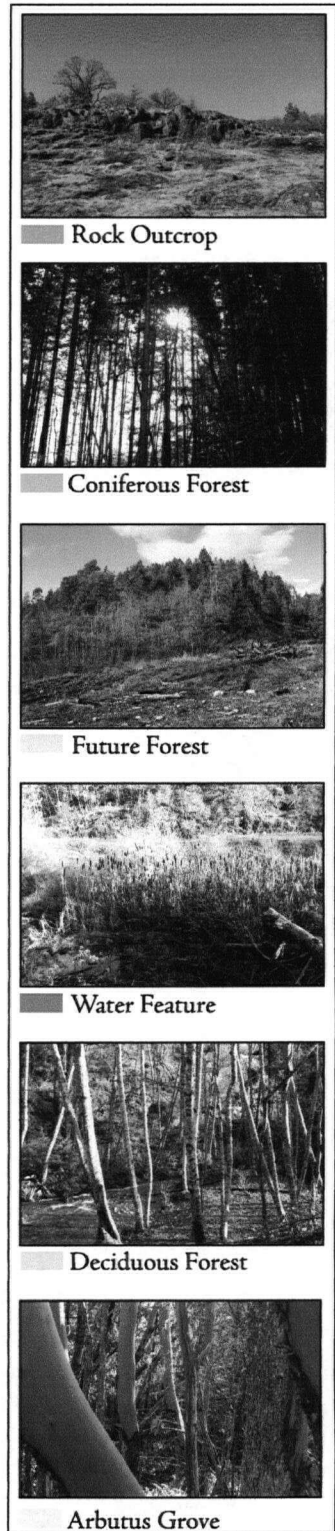


Figure 6.2 Land cover images

## 6.1.2 Land Form

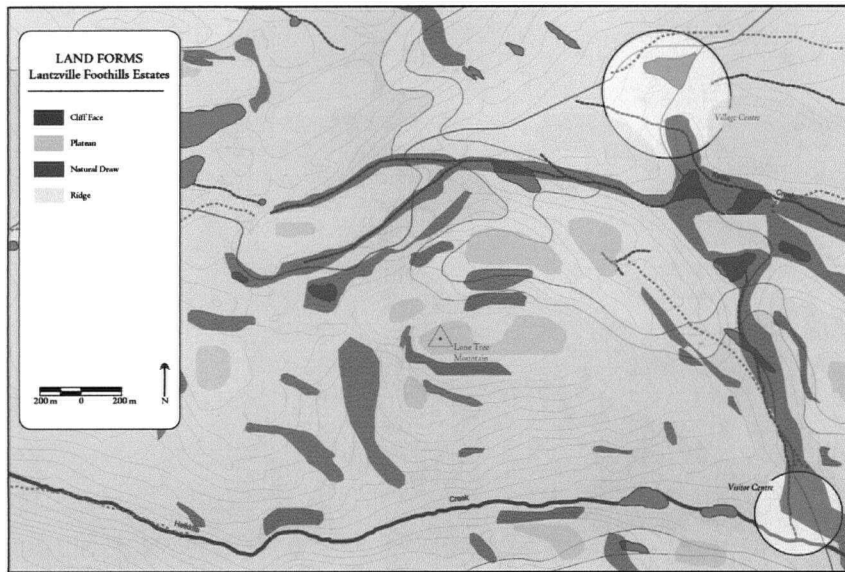


Figure 6.3 Land forms and drainage patterns. Undulating topography into a series of knolls, ridges and draws.

The history of Vancouver Island over the last 375 million years consists of three major periods of volcanism, intermittent with periods of sediment accumulation followed by three periods of glaciation. Each glaciation either scraped away or piled sediment over top of old glacial features. As a result, features that we see today are created by the Fraser Glaciation which began approximately 30,000 years ago, reached its maximum extent 15,000 years ago and retreated to its present extents around 10,000 years ago (Yorath, 2005).

The Foothills site is the outcome of this history. Here, a foundation of ancient volcanic rock protrudes above the surrounding sedimentary rock of the Nanaimo Lowlands. Glaciation has created a surface rough with knobs, cuts, cliffs and hollows. Exposed rocks have been scoured by sediment moving along the bottom of the glacier. As such, the remaining land is as chaotic as parts of the Canadian shield, with an undulating topography of knolls, ridges and draws, all marked with tell-tale glacial scours.

Natural draw areas are found in the Scenic Drive Corridor, along Heikila and Kettle Creeks and to the west of Lone Tree Mountain. Lone Tree Mountain, with an elevation of 324m forms a large ridge in the centre of the project site. There are smaller ridges to the west and north of Lone Tree as well as to the east of Foothills Scenic Drive. Plateau areas are located generally at the top of these ridges. There are numerous cliff faces, the most dramatic being those on the west side of Lone Tree Mountain.

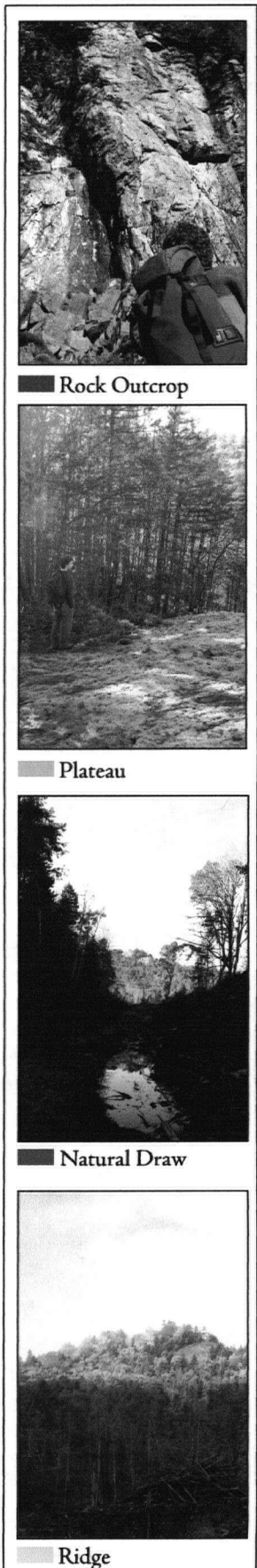


Figure 6.4 Land form images

### 6.1.3 Physiographic Composite



Figure 6.5 Physiographic Composite. Existing land cover predominantly as a result of slope.

Physiography is broadly defined as the study of physical features on the earth's surface. It provides a composite character of a landscape, including its system of landforms, soils, vegetation, hydrology, climate and land use. An understanding of the physiography of a site is integral to land use planning and particularly to the planning and design of trails as it provides an integrated portrayal of the landscape. It paints a clear picture of the opportunities and constraints found on a site as it links systems and therefore portrays the whole as a sum of its parts. Design that responds to the site's physiography inherently will create a much stronger, more evocative network of trails as they will not only function within the landscape but because they are explicitly site-specific, they will present a very clear narrative of the features to be found and explored in the park at The Foothills.

The physiographic composite (Figure 6.5) shows vegetation, slope and hydrology and therefore provides a composite of the landcover and landform mapping (Figures 6.1 and 6.3). Soils are shown indirectly through the identification of land cover (i.e. rock outcrops have little to no soil cover). As expected, coniferous forest cover tends to be associated with steep slopes. Most of the cleared areas have low to minimal slopes. Many of the plateau areas are devoid of tree cover and instead are predominately covered by mosses, lichens and grasses. Deciduous cover predominates in low-lying valleys, in particular along Heikkila Creek and the Foothills Scenic Drive. The park edge is delineated as are the development pods. Of note for trail design in this portion of the park include those pods within the village centre and those along the north side of Lone Tree Mountain.



## 6.1.4 Key Features

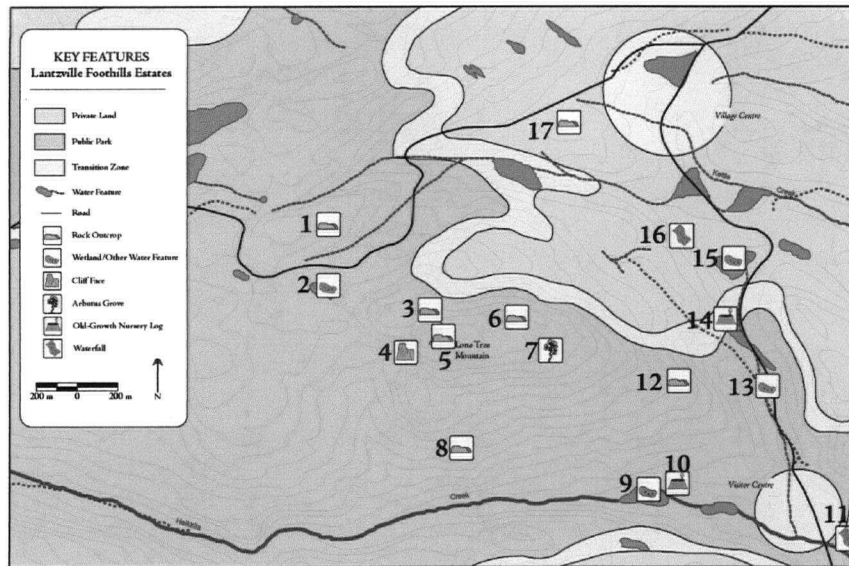


Figure 6.6 Key features in the study site. The majority of features are located on or around the periphery of Lone Tree Mountain.

Linking key features with trails will provide rich walking experiences and will ensure that park visitors see the key features of The Foothills. The area around Lone Tree Mountain has numerous features identified as distinctive.

**1) Rock Outcrops.** These along with their plant communities are perhaps the most distinctive feature of The Foothills. The most distinctive within the project site, due to their size and complexity include those near the summit of Lone Tree Mountain (Features 3, 5, 6). There are also several smaller outcrops on the eastern ridge (12), along the slope facing Heikkila Canyon (8). Minor outcrops include those along the upland road corridor (1, 17).

**2) Water Features.** The most distinctive within the project site include Heikkila Creek (9), and two small ponds: one located near Foothills Scenic Drive (15) and one located just off the upland road corridor (2). Other features include Kettle Creek, and a small wetland that runs parallel to Foothills Scenic Drive.

**3) Cliff Face:** The west side of Lone Tree Mountain hosts the only cliff face within the project site (4). This is distinct from other outcrops due to the height of the rock face. This cliff is dramatically higher than other outcrops within the project site.

**4) Arbutus Grove.** The most dramatic arbutus grove in the project site is located near the top of Lone Tree Mountain (7). This is identified as a key

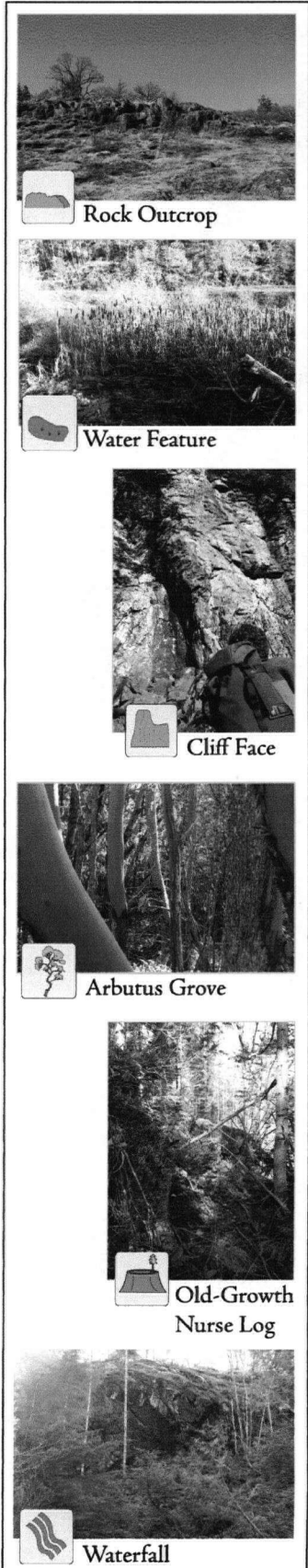


Figure 6.7 Feature Images



feature because travelling through an arbutus grove is distinctly different than travelling through either a coniferous or a deciduous forest due to the quality of light, from the leaves as well as from the bark.

**5) Old-growth Nursery Log.** These have been identified as key features as they are dramatic reminders of the history of the site. The two largest include one located just north of Heikkila Creek (10) and one along the slope of Lone Tree by Foothills Scenic Drive (14).

**6) Waterfall.** Two waterfalls have been identified within the project site. Heikkila Falls, just to the east of Foothills Scenic Drive (11) is the most dramatic. There is a small, ephemeral waterfall that flows off the lower plateau area of Lone Tree Mountain (16).

The majority of features are found on Lone Tree Mountain and within the draw areas to the east and west. These upland features tend to be the most dramatic within the study site and Lone Tree hosts the only arbutus grove, the only cliff face and the biggest rock outcrop area.

Features in lower areas have been identified as lowland features and consists of numerous water features including wetlands and small streams. The most dramatic of these include Heikkila Creek, Kettle Creek and the small pond located just off Foothills Scenic Drive.

Based on the key features identified, it is possible to define these into upland or lowland characteristics. Those features considered upland would include arbutus groves, rock outcrops, cliff faces while lowland features would include old-growth nursery logs, and streams, waterfalls and other water features. Trails could be predominantly upland, predominantly lowland, or could explore the qualities of both.

## 6.2 EXPERIENTIAL ANALYSIS

### 6.2.1 Site Visits

A series of site visits were completed, each focusing on coverage of a different area of the site. Firstly, a full exploration of the area with photo, video and audiotape note-taking was undertaken. Secondly, possible corridor routes were explored, noting difficulty and length of time required. The following experiential analysis comes out of these site visits.

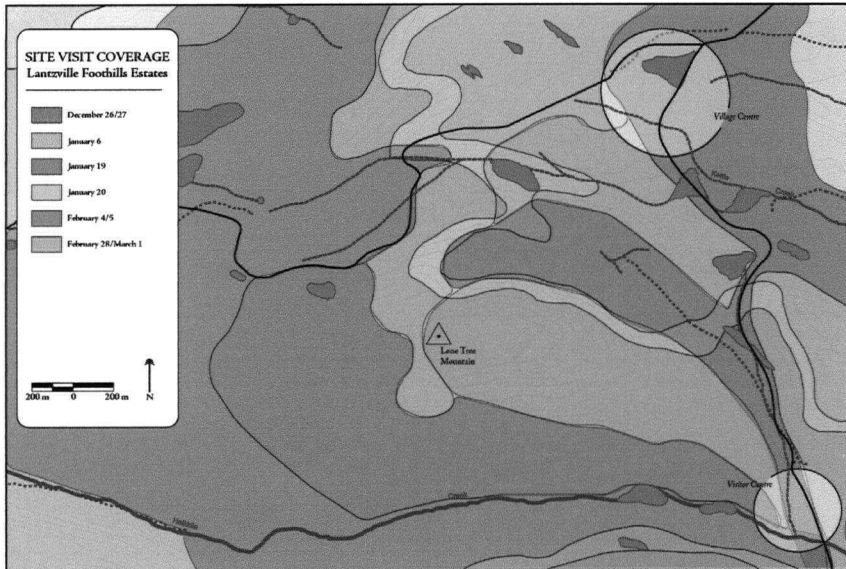


Figure 6.8 Site visit coverage. Different areas explored in depth on different visits.

### 6.2.2 Walking Times

Within the study site, the longest loop identified was approximately 1 hour and 35 minutes at an average walking pace (orange route in Figure 6.9). This route explores the length of Heikkila Creek and then meets up with Upland Drive for return to the village, followed by another 15 minute walk along Scenic Drive back to the village centre. A mid-way route through the draw to the west of Lone Tree (magenta route in Figure 6.9) takes approximately 45 minutes to the Village Centre.

Travel from the proposed village centre up and over Lone Tree Mountain and then connecting to the village centre (teal route in Figure 6.9) takes approximately 1 hour 10 minutes. There are two possible short-length connections between the visitor centre and village centre (green and red routes in Figure 6.9), each approximately 15-20 minutes in length.

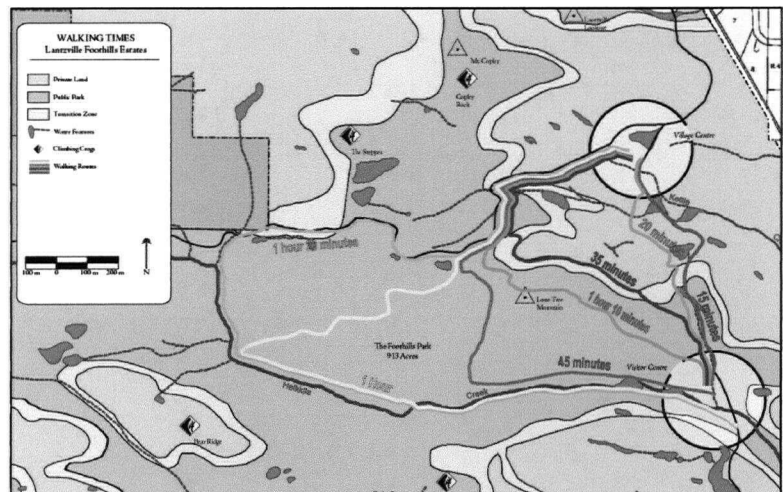


Figure 6.9 Walking times. Walking at an average pace through the Foothills Park.

### 6.2.3 Spatial Analysis

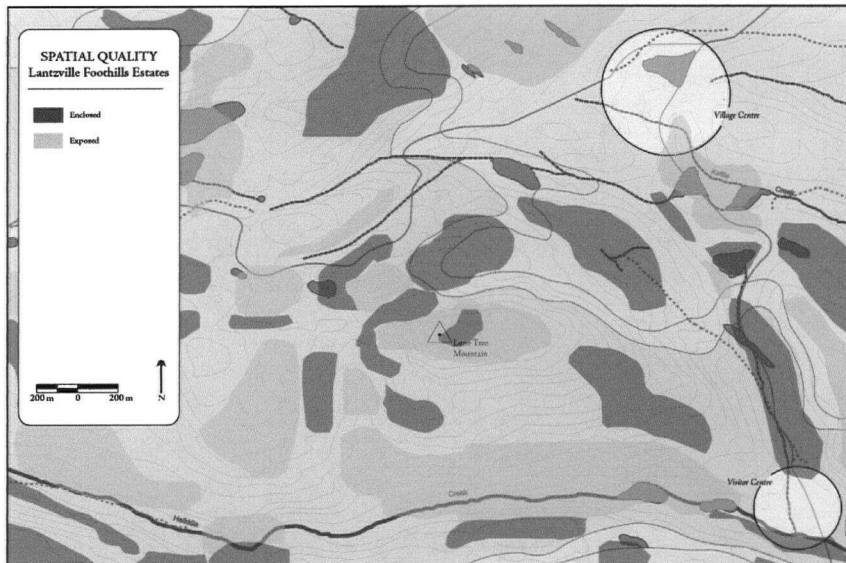


Figure 6.10 Spatial quality. Enclosed areas correlate with either forest cover or natural draw areas.

This map shows the spatial qualities of the site. This includes feelings of enclosed/exposed and compressed/expansive. Enclosed areas generally correlate with either forested areas or convex land-form shapes (i.e. natural draws or other low areas). Exposed areas correlate with rocky outcrops as well as cut slopes.

The most dramatic exposures occur on the summit of Lone Tree Mountain and on the high plateau just west of the true summit. The most dramatic enclosed areas include the section of Foothills Scenic Drive between the visitor centre and the small pond. Other sections of note include the lower plateau area, just above the village centre.

It is assumed that over time, the exposed experiences on lower, flatter slopes will become less dramatic as the forest grows back. For instance, over time the Heikkila Creek corridor will evolve from its present partially exposed character to an enclosed, compressive character.

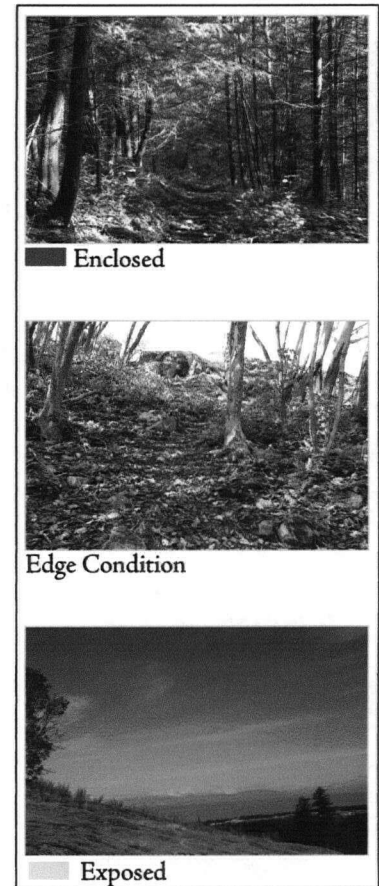


Figure 6.11 Spatial quality images

#### 6.2.4 Views

The most dramatic, distant views are from Lone Tree Mountain at various points along the plateau area at the top. These offer grand, expansive views both westward to the Beaufort Range and North and East to Mt. Copley, the Georgia Straight and the City of Nanaimo.

There are also numerous smaller or framed views offering both interior and exterior views. These include shortened views in forested areas or along valleys. There are also several minor plateau areas that offer middle ground views.

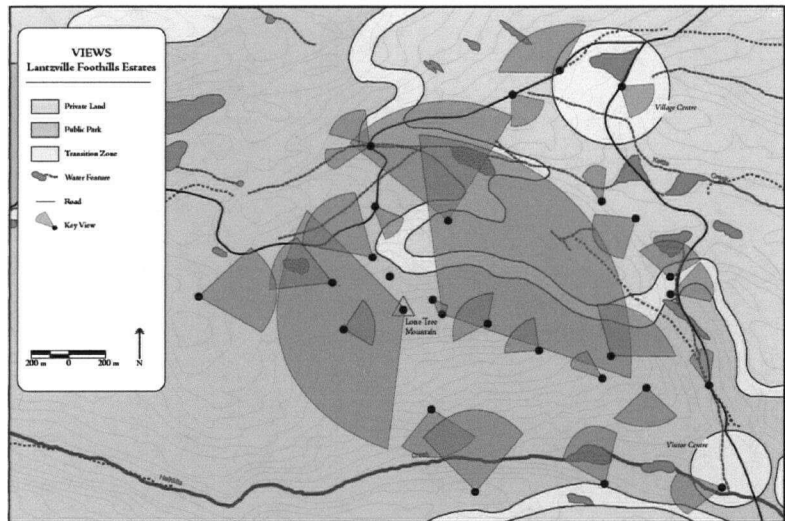


Figure 6.12 Views. Views on the site are either external or internal views. External views are found from the tops of higher landforms.



Figure 6.13 Expansive view looking west from Lone Tree Mountain.

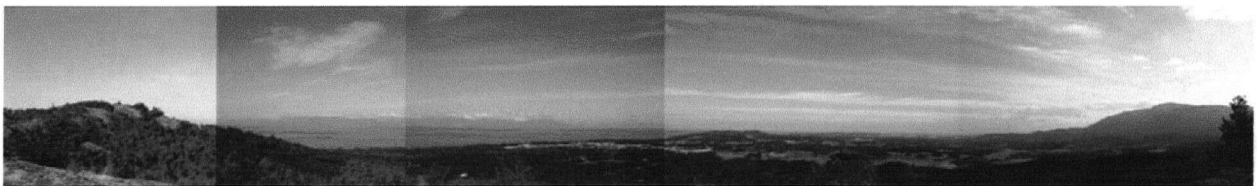


Figure 6.14 Expansive view looking north and east from Lone Tree Mountain.

## 7.0 CONCEPTUAL DESIGN

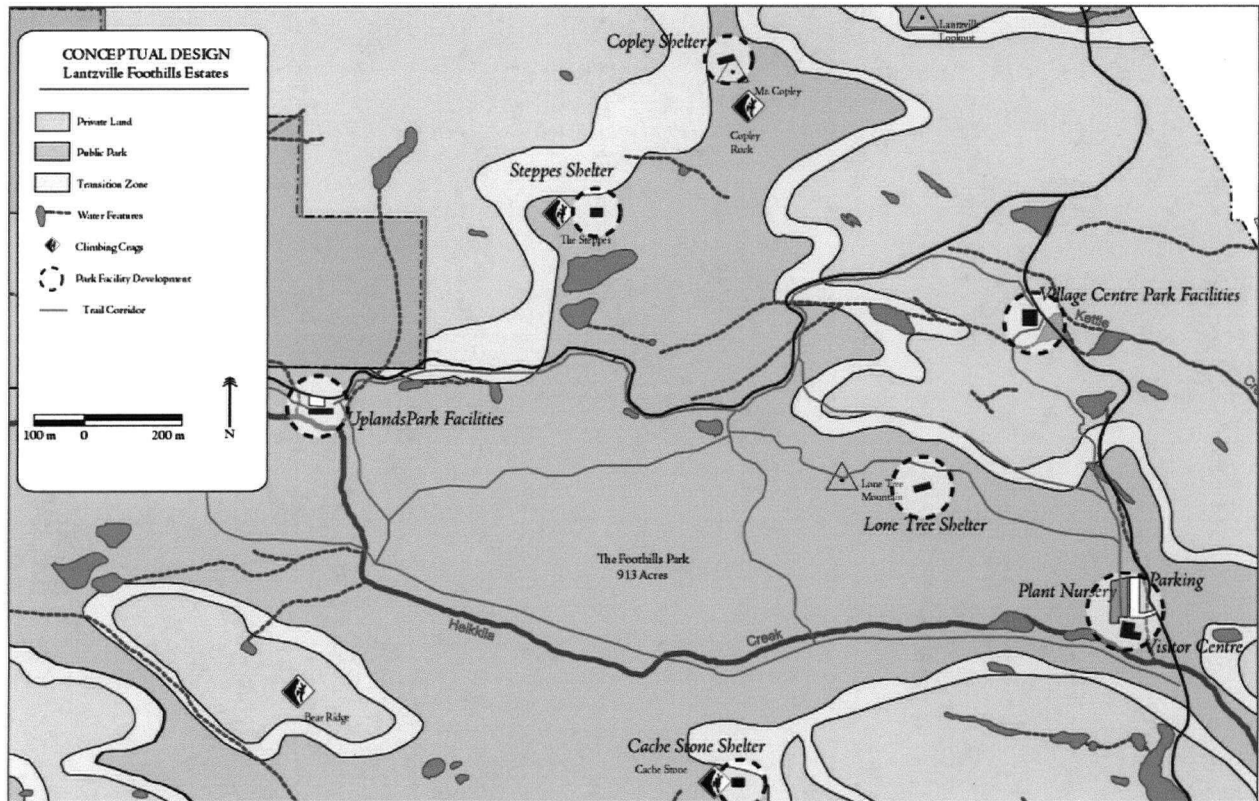


Figure 7.1 Conceptual map showing location of destination facilities and other park facilities.

The Park Plan within the Comprehensive Development Plan (CDP) calls for, not only a Main Entrance and Visitor Centre, but Secondary Entry Sites. The CDP also outlines the need for destination facilities at key points within the park. Figure 7.1 above shows a conceptual design for the core area of The Foothills Park, including possible trail corridors and facility development areas. Possible facility development includes:

**Visitor Centre and Main Entrance:** The intersection of lower Heikkila Canyon and Foothills Scenic Drive has been selected as the park's main entrance. This area will serve as the park gateway and should include a visitor's centre, a parking area, washrooms and trail information for the park. As part of the Restoration Framework Plan, a plant nursery is also planned at this site. This could become a component of the trail systems, providing education and awareness towards The Foothills restoration program (LFEI, 2005). The visitor's centre should be a building of character that emphasizes its strategic relationship to Heikkila Creek and canyon, provides space for collections and meetings and provides viewing areas to Heikkila Canyon and Lone Tree Mountain.

**Village Centre Park Facilities:** The Foothills Village is planned for a site at the junction of Foothills Scenic Drive, Kettle Creek and Uplands Drive. It will be a major destination for residents and visitors to The Foothills and will provide an important access point to the park. Facilities at this location should include parking, trail information and a public washroom. This entrance point along with its access to the trail system should be tied into the planning and design of the village centre.

**Uplands Park Facilities:** Located on Uplands Drive, close to Heikkila Creek in Upper Heikkila Canyon. It lies 2.1 km from the main entrance via Heikkila Canyon. This facility should provide parking, trail information and a public washroom.

**Copley Shelter:** Mt. Copley is one of the prize environmental features located in The Foothills. It is located close to the village centre and is a popular hiking destination as well as a popular climbing crag. Due to the numbers of park users that will access this location an enclosed picnic area along with an outdoor seating area should be provided at, or near, the summit. Facilities for climbers at the Copley Rock crag could consist of benches and a simple shelter for shade.

**Steppes Shelter:** The Steppes is an area heavily used by climbers. There are 4 walls that provide approximately 30 climbing routes on exposed rock faces. There is an existing hut on site however, its location on the top of a sensitive rocky outcrop is less than ideal. A new facility should be constructed, in the area at the foot of the climbing area. Facilities could include a composting toilet, a rainwater capturing system to provide water for climbers and several benches for viewing.

**Lone Tree Shelter:** Lone Tree Mountain is one of the key environmental features in the core area of the park. The summit is comprised of sensitive yet stunning outcrop land covers including moss and lichen communities; grasses and exposed, glacially scoured rocks. This mountain forms the back drop for the park entrance and visitor centre and will therefore be a popular hiking destination. Located at, or near, the summit of Lone Tree Mountain, an enclosed picnic area along with an outdoor seating area should be provided.

**Cache Stone Shelter:** The Cache Stone Crag is small climbing area. There are approximately 5 routes located on one wall and one other steep, overhanging cliff face. This area should provide simple facilities for climbers to reduce overall impacts on The Foothills Park. Facilities for climbers could include benches and a composting toilet.

This project is aimed at trail connections within the core area of the park. As such, field work identified several corridors as possible locations for trails. These are identified in Figure 7.1 by red lines. These corridors were based on the distance to the village centre from the park visitor centre, difficulty and technical feasibility. Four of these corridors are within the study area of this project and are looked at in further detail in the following section of this report (Section 8).



## 8.0 CORRIDOR SELECTION

Based on the project objectives, site analysis and guiding principles, four trail corridors within the study site have been delineated as possible locations for trail development. All corridors are designed to connect the main park entrance area and Heikkila Canyon to Uplands Drive and/or the village centre. The main objective is to provide a trail system comprised of a series of stacked loops that provides walks of different lengths, qualities and levels of walking difficulties. As shown in Figure 8.1 below, these include: Backside Corridor, Lone Tree Corridor, Hidden Plateau Corridor and Scenic Drive Corridor. These are each further discussed below.

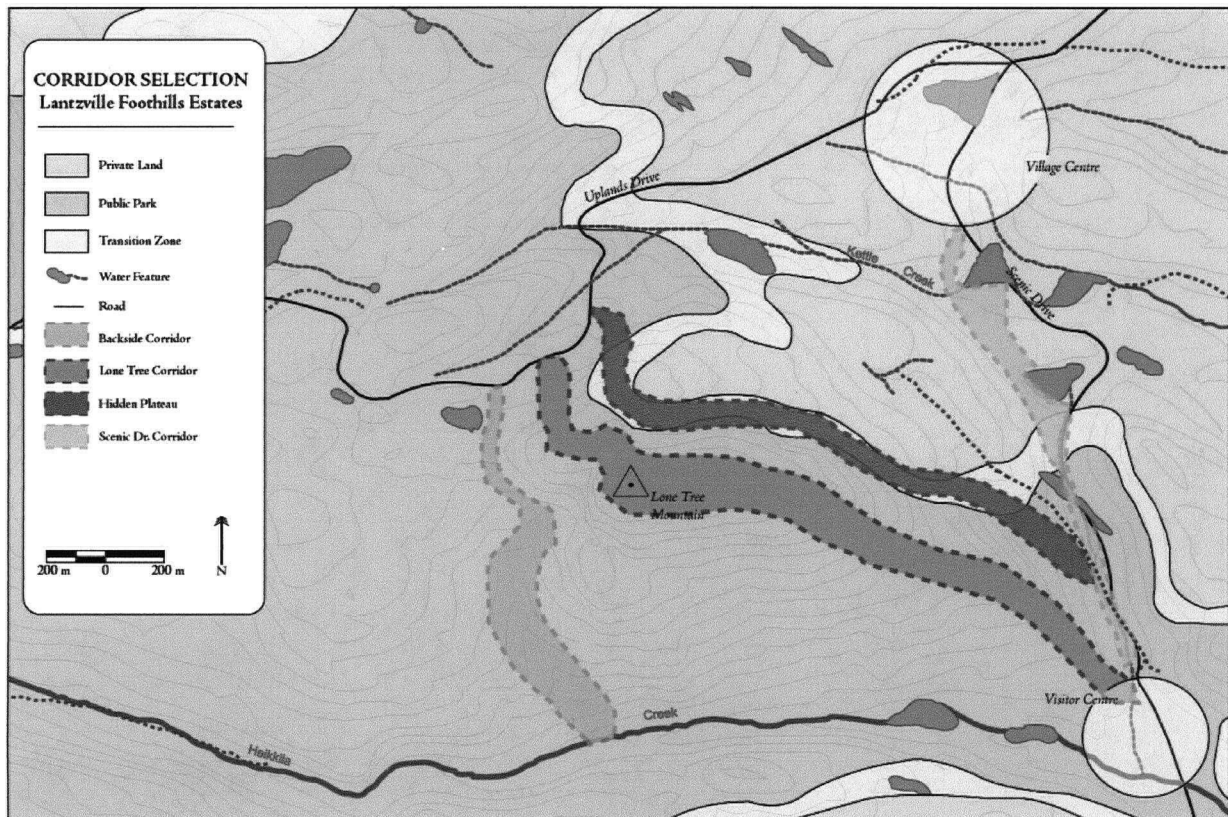


Figure 8.1. Possible corridors for trail design based on site analysis, project objectives and guiding principles.

**1) Backside Corridor.** This corridor is selected as an option for a moderate, secondary trail connector from Heikkila Creek to Upland Drive creating the longest loop trail from the visitor centre to the village centre by connecting with the Heikkila Creek Trail and the Upland Drive Trail. It provides opportunities to see the steep crags of Lone Tree Mountain and for wetland viewing areas. The corridor follows a natural draw which received runoff from side slopes. Constraints include water management issues, limited space for trail design and several instances of relatively steep grades. This corridor would require pedestrian facilities at both termini, at Heikkila Creek and at Uplands Drive.

**2) Lone Tree Corridor.** This corridor is selected as an option for a difficult, tertiary trail connector to Upland Drive. It provides a long loop between the visitor and village centres. Trail difficulty is based on the length of the ascent from the visitor centre, as well as a short, steep descent to Uplands Drive. Lone Tree Mountain is one of the dominant features within the core of the park and this corridor provides

opportunities for grand vistas as well as to explore numerous rocky outcrops, including the plateau area at the top of Lone Tree Mountain. There is also a relatively dense second-growth douglas fir forest located in the upper reaches of the slope. Constraints include a difficult connection to Upland Drive that will require the construction of stairs.

**3) Hidden Plateau Corridor.** This corridor is selected as an option for a moderate, medium-length, secondary trail connector between the visitor centre and Uplands Drive. Opportunities include views to the rocky crags of Lone Tree Mountain. Major constraints include the presence of private developable land units and the lack of external views.

**4) Scenic Drive Corridor.** This corridor is selected as an option for a short, easy, and relatively direct secondary trail connector between the visitor and village centres. Opportunities include numerous wetland features, two old-growth nursery stumps, a small rock knoll and a seasonal waterfall. Constraints include boardwalk and bridge construction and the proximity to Scenic Drive.

All of these corridors are suitable for trail development, they all provide access to interesting attractions and they all satisfy the objective of providing a loop system between the park entrance and the village centre. Out of these corridors, two will be selected for further study and design. Each corridor possesses different strengths in relation to the guiding principles. Ideally, final corridor selection should allow for exploration of all types of Foothills Park experiences including rocky outcrops, wetland areas, arbutus groves, deciduous and coniferous forests and access to important views. In addition, the corridor should reveal the character of the Foothills landscape to its greatest advantage. As such, the following selection criteria have been identified:

- 1) one upland and one lowland corridor (based on convex or concave land form)
- 2) high diversity of landcover types and high number of features within the corridor

	Predominant Terrain	Land Cover Types	Key Features
BACKSIDE CORRIDOR	Lowland	<ul style="list-style-type: none"> <li>• Cleared</li> <li>• Coniferous Forest</li> <li>• Deciduous/Riparian</li> </ul>	<ul style="list-style-type: none"> <li>• Rock face</li> <li>• Wetland</li> </ul>
LONE TREE CORRIDOR	Upland	<ul style="list-style-type: none"> <li>• Cleared</li> <li>• Deciduous Forest</li> <li>• Coniferous Forest</li> <li>• Rock Outcrop</li> <li>• Arbutus</li> </ul>	<ul style="list-style-type: none"> <li>• Two small rock outcrops</li> <li>• One large rock outcrop at summit</li> <li>• Arbutus grove</li> <li>• Douglas fir forest</li> <li>• Expansive views</li> </ul>
HIDDEN PLATEAU CORRIDOR	Upland	<ul style="list-style-type: none"> <li>• Cleared</li> <li>• Coniferous</li> <li>• Deciduous</li> </ul>	<ul style="list-style-type: none"> <li>• Views to Mt. Copley</li> <li>• Rock wall</li> </ul>
SCENIC DRIVE CORRIDOR	Lowland	<ul style="list-style-type: none"> <li>• Deciduous/riparian</li> <li>• Cleared</li> <li>• Coniferous Forest</li> </ul>	<ul style="list-style-type: none"> <li>• Old-growth nurse log</li> <li>• Two wetland ponds</li> <li>• Kettle Creek</li> <li>• Waterfall Rock</li> </ul>

Table 8.1 Corridor Selection



Two of the four corridors meet the lowland requirement. These include:

**Backside Corridor:** This corridor has a low number of features and a relatively low number of land covers. It travels predominantly through cleared forest but does offer spectacular views to the rock faces of Lone Tree Mountain.

**Scenic Drive Corridor:** This corridor, although it has a relatively low number of landcovers, has a high number of identified features associated with its lowland character. These include several small wetland ponds, an ephemeral waterfall and Kettle Creek.

As both corridors have similar land cover conditions, selection is based on the number of features that are lowland in character. The Scenic Drive Corridor has a higher number of features, particularly those lowland in character (wetlands, waterfalls and creeks) and it was selected to study in further detail.

Two of the four corridors meet the upland requirement. These include:

**Hidden Plateau Corridor:** This corridor has a relatively low number of land cover types and few key features of interest. Key features identified are upland in character but do not well represent the diversity of upland areas in The Foothills as there are no vegetated rock outcrop areas.

**Lone Tree Corridor:** This corridor has a high number of landcover types and features. Key features located in this corridor represent a wide range of upland features including several rock outcrops of various sizes, an arbutus grove and expansive views.

Based on the criteria above, particularly that of 'high diversity of landcover types and high number of features within the corridor', Lone Tree Corridor was selected to study in further detail.

The selection of these two corridors, Scenic Drive and Lone Tree Corridors, will also allow the study of the distinction between secondary and tertiary trails, as well as between easy and difficult trails. As such, the exploration of trail design and development within these two corridors will provide the greatest range of information for possible use for further trail design within The Foothills Park.

## 9.0 LONE TREE TRAIL

### 9.1 Sequence Development

In order to develop a trail that meets all criteria included in the guiding principles, the Lone Tree Corridor (Figure 9.1) was analyzed in terms of land cover, land form and spatial quality.

1) **Land Cover.** (Figure 9.2) The corridor begins in a cleared area, travels through a deciduous area and past a wetland area. It then proceeds up the slope through coniferous forest with rock outcrops scattered throughout. As it reaches the plateau area, it moves through an arbutus grove and then out onto a large outcrop area. There is a small douglas fir copse with an ephemeral wetland in the centre of the large outcrop area at the summit of Lone Tree Mountain. The corridor then descends through coniferous forest with one small rock outcrop area and then through a small cleared section at the edge of Upland Drive. The corridor therefore covers all the major land covers found on the site with major sections of coniferous and rock outcrop covers.

2) **Land Form.** (Figure 9.3) The corridor begins in a natural draw area and as it progresses up the slope encounters a minor draw area and ridge/edge conditions. Depending on the specific route to be established, ridge conditions may be experienced throughout the ascent. There is a large plateau area at the top of Lone Tree Mountain and a secondary plateau area slightly beyond. The trail eventually meets Upland Drive in a minor draw area. The corridor therefore covers most landforms, particularly ridge and plateau areas.

3) **Spatial Quality.** (Figure 9.4) The corridor begins in an exposed area. This is a result of the present clearing. In time however, as forest restoration takes place, this section will become enclosed. As the corridor ascends the slope, it has primarily an enclosed spatial quality. There is a large edge condition where you can see the plateau area ahead but are still within the forest. Exposed conditions occur all along the

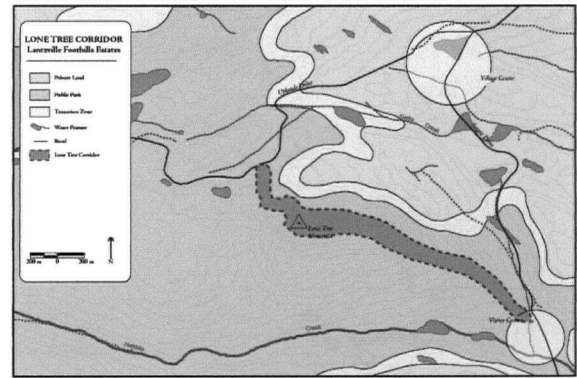


Figure 9.1 Lone Tree Corridor Location Map

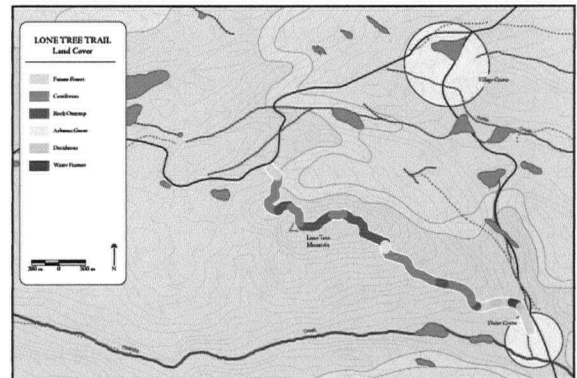


Figure 9.2 Land cover sequence within the corridor.

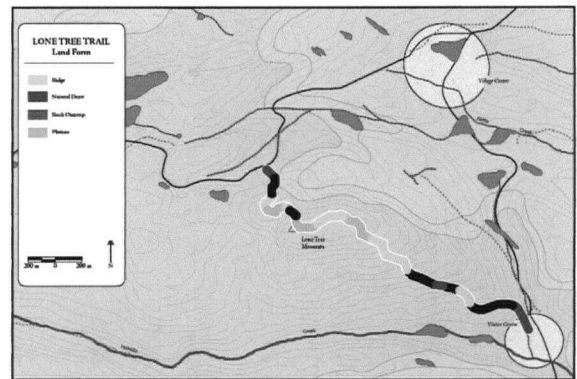


Figure 9.3 Land form sequence within the corridor.

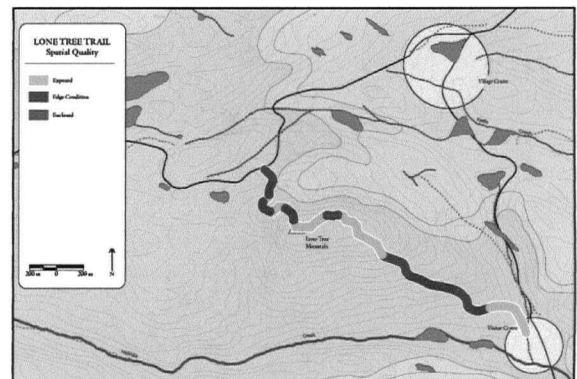


Figure 9.4 Spatial quality sequence within the corridor.

summit plateau area. The descent to Upland Drive is predominantly enclosed but has several small exposed areas on the small plateau areas.

## 9.2 Trail Design

This sequencing information along with an on-site exploration was used to determine possible trail locations within the corridor. The trail, shown below in Figure 9.5, captures all the criteria for trail placement within the guiding principles and responds to the sequencing of land cover, land form and spatial quality. Some portions of the trail, including the descent to the upland road as well as the middle portion of the primary ascent are existing trail routes. However in some instances the trail has been re-routed either to capture an appropriate narrative sequence or to reduce user impacts. This trail is designed to be a moderate to difficult hike along a tertiary trail. As such, the trail surfacing is native soils whenever possible. A detailed sequence of the trail follows.

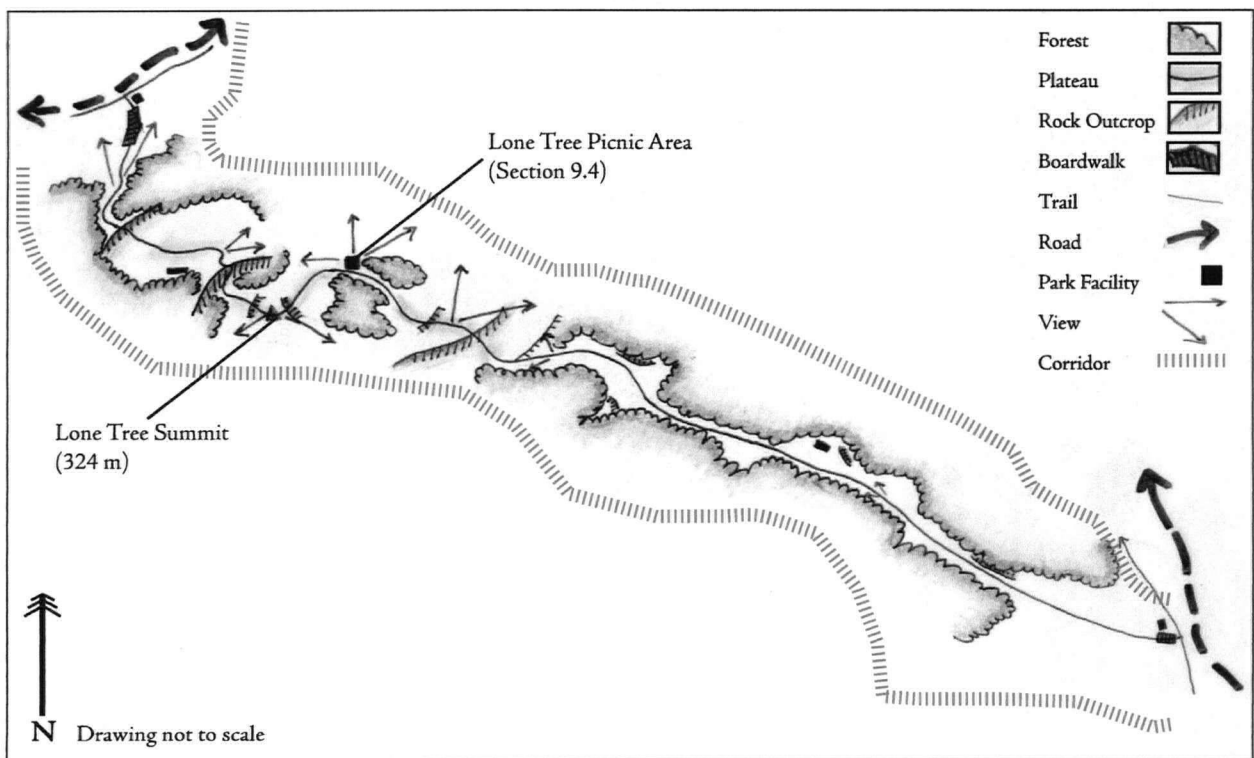


Figure 9.5 Lone Tree Trail Plan View. This trail explores both douglas fir forests and outcrop viewpoints.

## 9.3 Trail Description

Departing from the visitor centre, the trail travels through the plant nursery (Figure 9.6). High fences protect the nursery, but trees have been planted to not only buffer the view to the fences but to form an allee through which people walk. Starting a trail experience through the nursery will serve to highlight and raise awareness towards the restoration program at The Foothills. A sign could be posted showing the types of things growing, or perhaps a calendar that shows when planting events are happening in order to interest visitors in attending the events.

The Lone Tree Trail separates from the primary trail and a sign post is stationed at the intersection (Figure 9.7). The trail sign should state the total distance, the trail difficulty and the time required (Figure 9.8). At the ground plane, the trail is delineated by a small concrete sleeper embedded in the ground

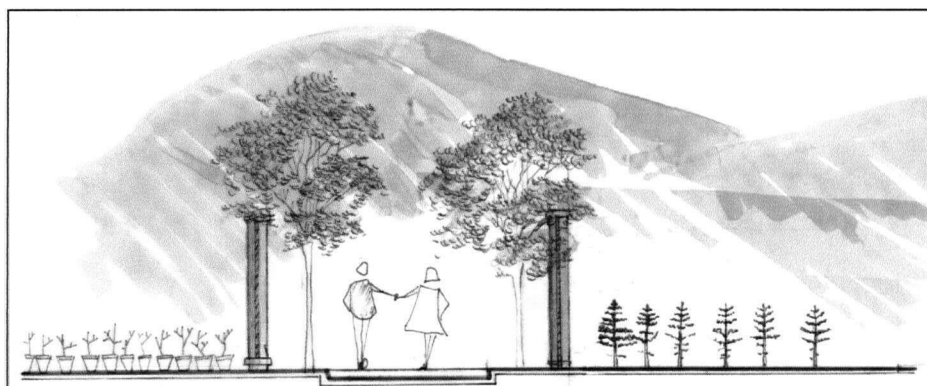


Figure 9.6 Travelling through the plant nursery, highlighting The Foothills restoration program.

which serves as a visual cue to separate this trail from the other trail following along Scenic Drive.

The trail then begins a gradual ascent through second-growth Douglas fir forest and offers filtered views to numerous moss covered outcrops (Figure 9.9). The undergrowth is predominantly salal and the light is heavily filtered. This part of the trail feels enclosed and views are directed along the trail, with occasional glimpses to rocky outcrops on the periphery of the corridor. Although, the trail does explore one of these minor rock outcrops, the majority are only viewed from the trail due to their extremely fragile nature. There are several benches found along the way for those needing a rest on the steady, but relatively short ascent.

The trail switchbacks through an arbutus grove and then gives way to the large outcrop near the summit of Lone Tree Mountain (Figure 9.10). The feeling at this point is one of a large spatial release. After fifteen minutes spent in filtered light through the forest, the movement on to the moss and lichen covered rock outcrop feels like a grand expansion. Views open up to a small ridge of rock capped on one end by a beautiful arbutus tree (Figure 9.11). The trail ascends the ridge via a stone staircase and opens to panoramic views to Mt. Copley, the Coast Mountain and the Nanaimo Lowlands. Stone paths and staircases slightly raised above grade have been constructed over fragile moss and lichen communities to minimize impacts of people hiking through this sensitive area.

Continuing along, the trail passes through a small copse of Douglas fir and salal. In winter months, the depression between exposed rocks becomes a small wetland area. This section compresses the

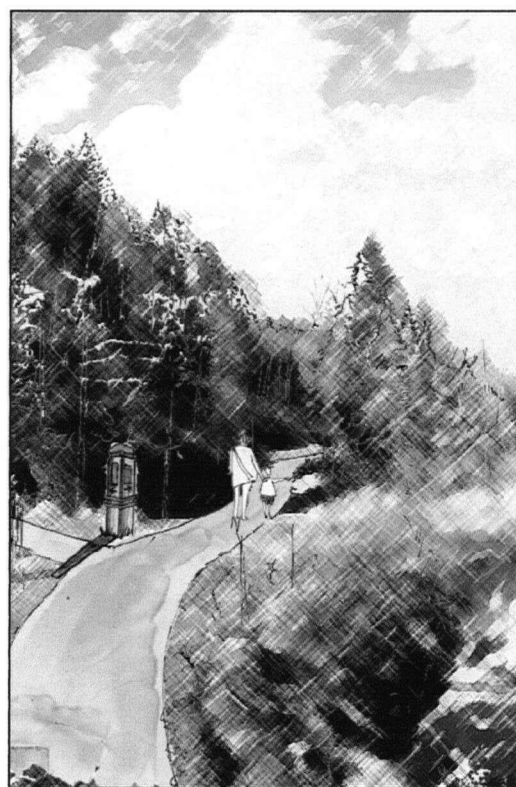


Figure 9.7 The Lone Tree trail head marker located at an imageable position beside a wetland pond.

walker again, creates filtered views to the true summit just beyond and acts as a gateway to the remainder of the trail. This area provides the backdrop for the Lone Tree Picnic Area which is outlined in the following section. A constructed stone pathway winds its way over exposed rocks to the true summit of Lone Tree mountain and then beyond, past an old, lone arbutus tree.

The trail begins to descend along a gentle rock bluff, winding its way back down through arbutus and hairy manzanita. There is a small ridge that will require the construction of a simple set of stairs to descend. The trail then skirts along the edge of another moss-covered outcrop (Figure 9.12) before winding its way through a final small section of douglas firs before exiting on to Upland Drive (Figure 9.13). Turning right from this location it is possible to reach the village centre and then to return to the visitor centre via Foothills Scenic Drive.

The trail from the visitor centre to the summit is 950 m in length and takes approximately twenty minutes to complete. This section is rated as moderate due to the primary ascent. The second portion of the trail, from the summit to Upland Drive is an additional 300 m and is rated as difficult due to a staircase and one other slightly steep descent. Although shorter, this section of the trail is more difficult and therefore takes approximately fifteen minutes. The distance to the village from the trail is approximately 550 m and takes about 10 minutes. The route from visitor centre to village centre using this trail would take approximately 45-50 minutes.



Figure 9.8 Lone Tree trail marker.



Figure 9.9 Forest seating offering filtered light and views to rock outcrops on the periphery of the trail corridor.

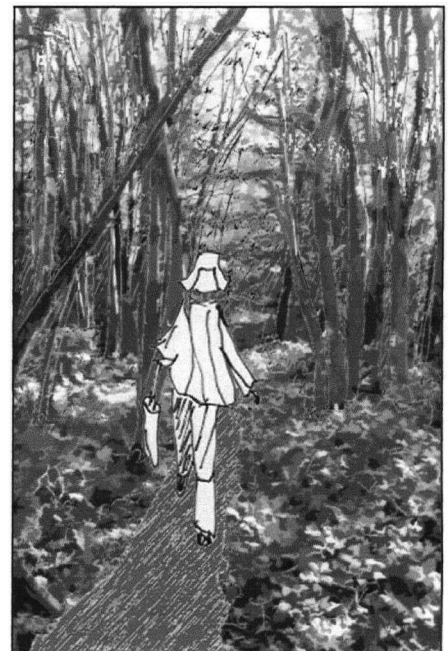


Figure 9.10 The trail through an arbutus grove.



Figure 9.11 Stone pathways and staircases winding over small rock outcrops and sensitive moss and lichen communities.



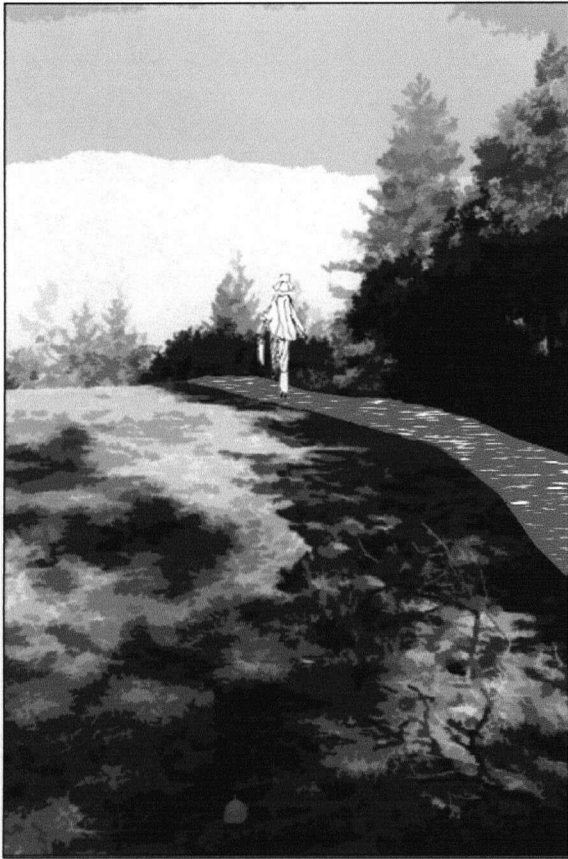


Figure 9.12 The trail travels along side a smaller plateau area.



Figure 9.13 The trail, meandering through second-growth douglas fir.

#### 9.4 Lone Tree Picnic Area

Lone Tree Mountain, as a main visitor attraction of the park at The Foothills, should host a destination facility. Three options were selected as possible locations. These options included development of a destination facility on either a rock outcrop, within the wooded section or a location on the edge between the two conditions. As shown in Table 9.1, the outcrop site has limitations due to the sensitive nature of its plant communities. The wooded location has limitations, primarily due to views, the major reason people will hike to the summit of Lone Tree. A position between the two was selected such that construction and use impacts would be minimized while providing optimum views. The selected area provides a range of views, including middleground views to Mt. Copley, background views to the Georgia Strait and the Coast Mountains as well as foreground views to the true summit of Lone Tree and into the small wood copse.

	A: Outcrop	B: Wood	C: Edge Configuration
TOPOGRAPHY	Relatively flat; situated on plateau area; large rock outcrops;	Flat; depression to centre.	Gently sloping plateau
LAND COVER	Rocky with numerous outcrops over a cover of sensitive moss and lichens	Small trees, salal ground cover; minimal soil	Combination of A and B
VIEWS	Western views; Mt. Copley	Mt. Copley; internal views	internal views; Mt. Copley, actual summit of Lone Tree; Georgia Strait and Coast Mountains; Nanaimo Lowlands
SETTING	Outcrop	Wood Copse	Edge between outcrop and wood copse

Table 9.1. Picnic Area Location.

Lone Tree Mountain, as it exists presently is a wonderful place to ponder the world, a place with engaging simplicity in the undulating nature of its rock and moss communities. Any facilities constructed should not mar the natural beauty of the site nor make the trail stand out as an overly developed trail.

As shown in Figure 9.14 the picnic area is visible from the main trail but hikers must make a conscious decision to access it. In this way, hikers can make a decision to head there without having to retrace their steps to the access trail, or more likely, cutting across the sensitive rock outcrop. They can also choose to continue hiking without being disturbed by other picnickers.

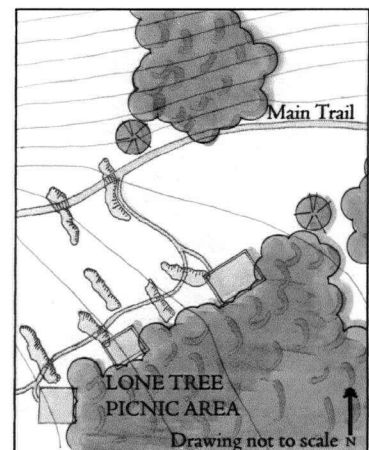


Figure 9.14 Lone Tree Picnic Area. Located at the edge between outcrop and forest.



The program for the picnic area will include seating and tables for four to five families along with garbage facilities. Due to the intimate, personal qualities of Lone Tree Mountain the design accommodates this number of people through a series of two shelters and one outdoor picnic area (Figure 9.15). In this way, one or two families can occupy each shelter, thus minimizing any crowding effects.

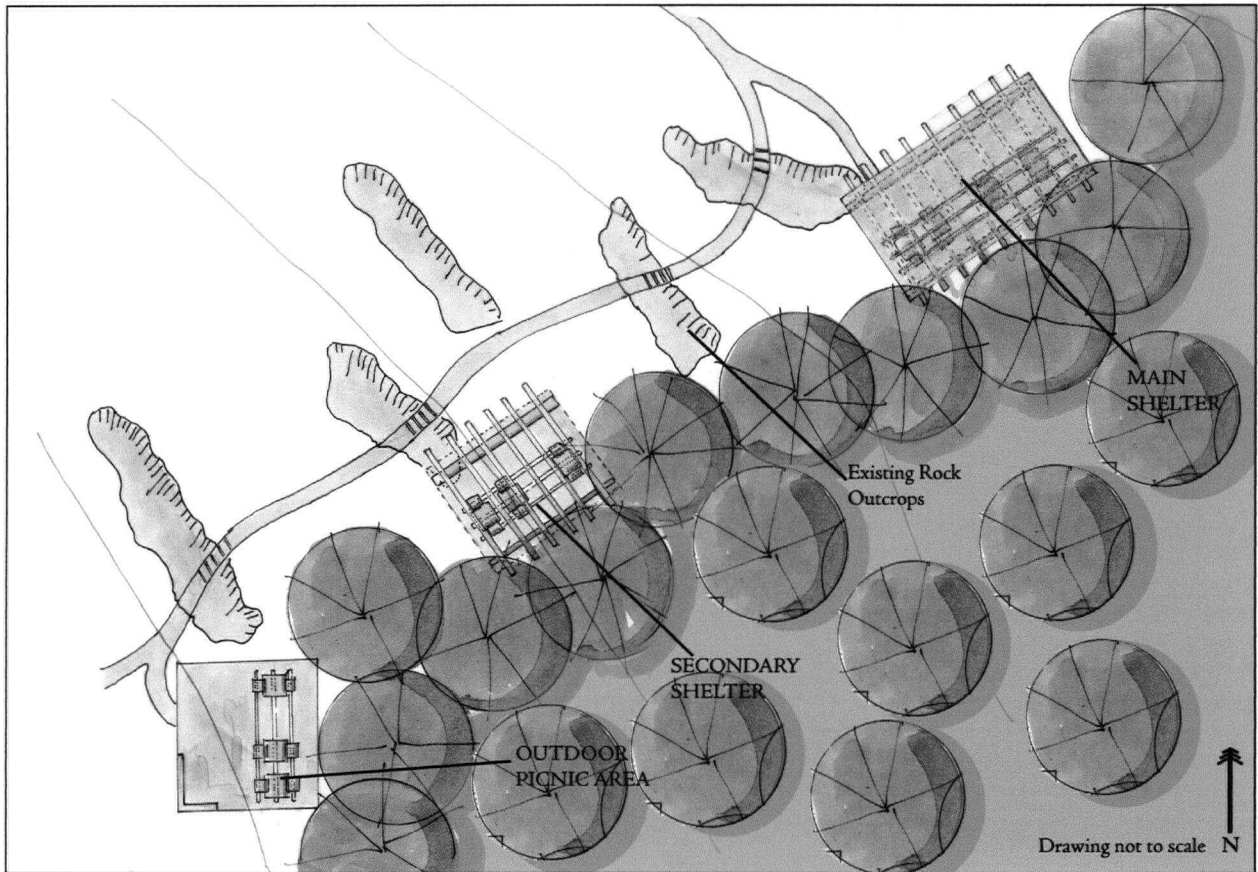


Figure 9.15 Picnic Area Design. A progression of shelters that offer a variety of choices to the user.

The shelters (Figures 9.16 and 9.17) are designed to mimic the woods which form their backdrop. Support pillars, constructed of douglas fir, along the back of the shelters are smaller in size and more frequent in number than the support beams in the front of the shelter. The back posts also have cross-bracing designed to mimic the branching of trees. Roof lines have been angled upwards toward the rocky outcrop area, in order to accentuate views. In order to emphasize their placement within the landscape, several support beams are directly anchored to rock outcrops, and the rocks flow into the flooring of the shelter.

The main shelter provides seating and tables for two to three families and has a glass roof to allow views up into the trees and will provide a unique experience when rain falls on the roof. The secondary shelter, slightly smaller than the main shelter, provides seating for one to two families within a simple, open-roof structure. The outdoor picnic area has tables for one to two families as well as further seating along rock walls. Flooring in all three structures and the rock wall construction are constructed of Rhyolite, rock native to, and found on the site.

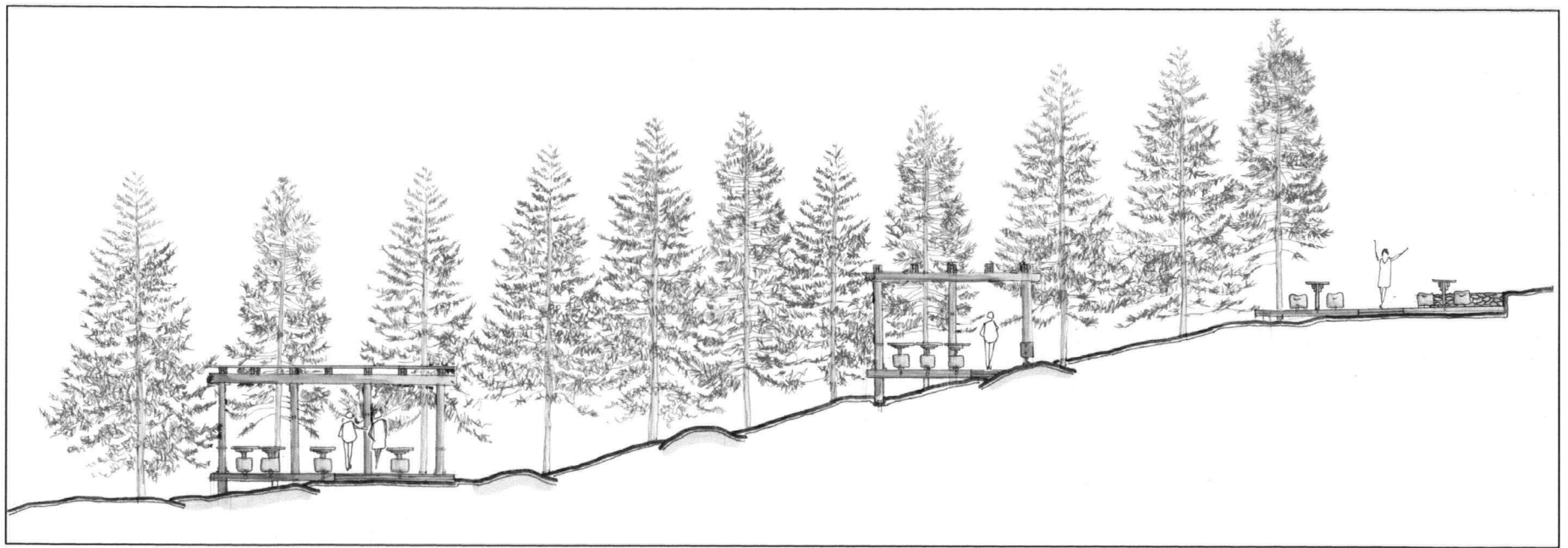


Figure 9.16 Elevation drawing of the Lone Tree Picnic Area. Small shelters nestled against the woods.

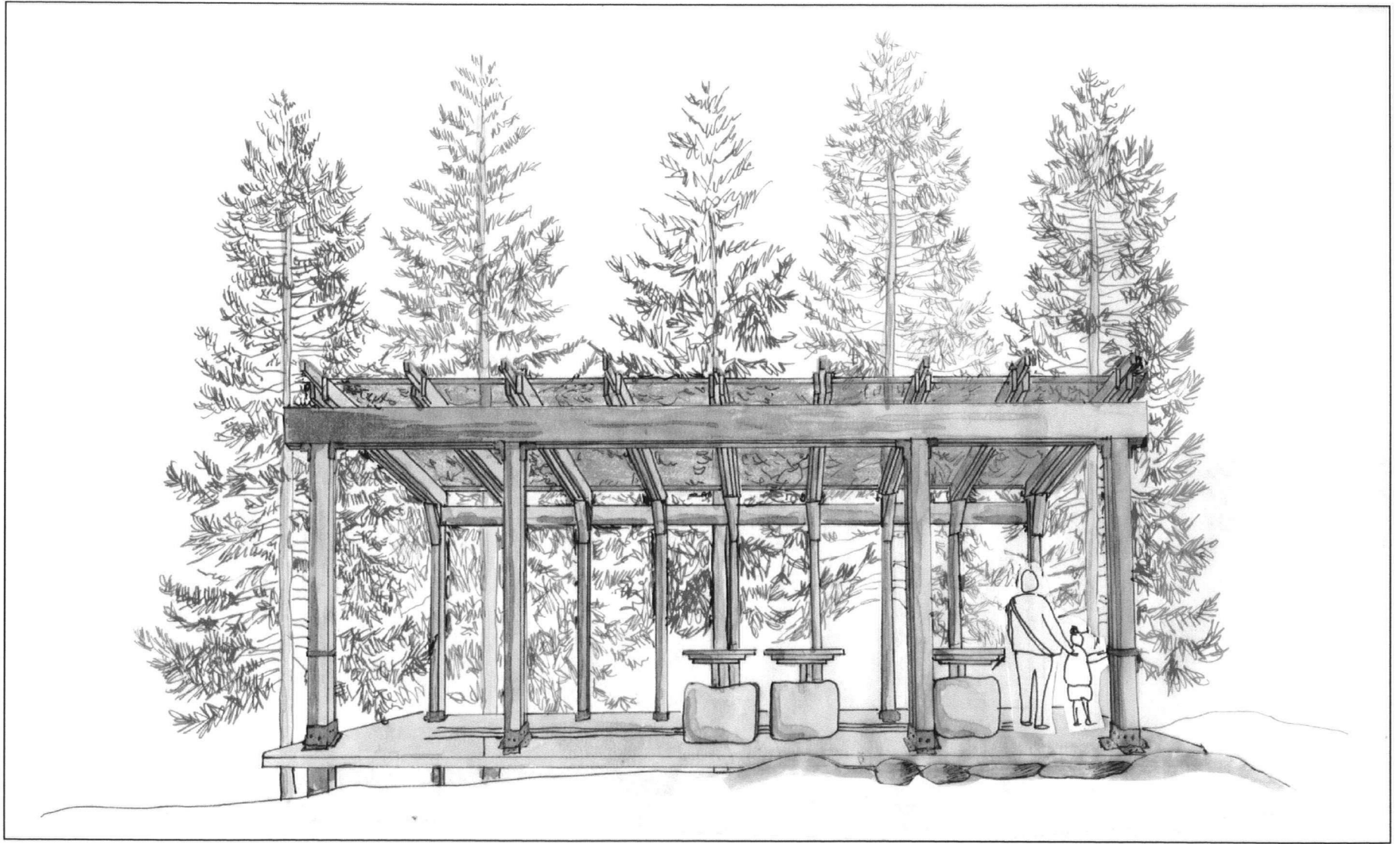


Figure 9.17 The main picnic shelter at Lone Tree Mountain. Pillars designed to mimic the forest backdrop with flooring and shelter hooked into its surrounding landscape.

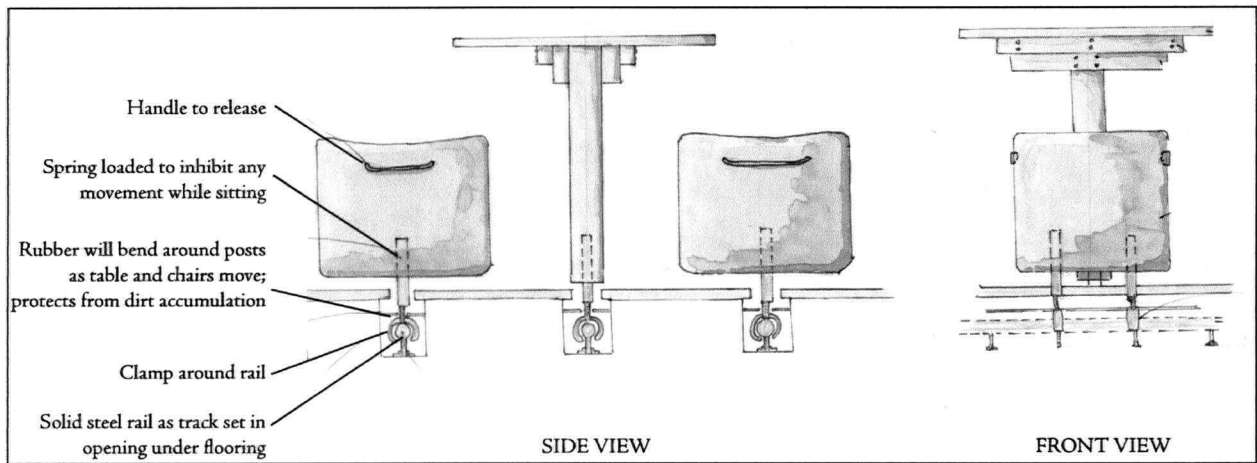


Figure 9.18 Movable table design provides a range in options for the picnic facility user.

The tables in all three structures are permanent, however, they are movable along tracks set into the stone flooring (Figure 9.18). Individual tables are designed to sit two people but can slide together to accommodate tables for up to eight people (depending on the shelter). Seating is provided on small cubes constructed of ground, sealed douglas fir. Tables and chairs are both spring loaded, so that one must lift them slightly in order to move them along the track. This will ensure that both seating and tables will be stable on the track when in use. The tracks themselves are set below the floor and are designed to mimic glacial scours. This system provides a highly adjustable facility for user groups while creating a park feature that is distinct to The Foothills and to its particular site.

## 10.0 WETLAND WALK

### 10.1 Sequence Development

In order to develop a trail that meets all criteria included in the guiding principles, while providing an easy connection from the park visitor centre to the village centre, the Scenic Drive Corridor was analyzed in terms of land cover, land form and spatial quality.

1) **Land Cover.** The corridor begins in a cleared area and then goes through deciduous forest cover. There is a small wetland feature that runs along this portion of the corridor. It passes through another cleared section. The corridor then goes through another deciduous forest area and then descends a small knoll to a wetland area. The corridor travels through another cleared area, across Kettle Creek, through more cleared land and then exits onto Foothills Scenic Drive.

2) **Land Form.** The first half of the corridor goes through a natural draw area, that gets continually narrower as the corridor progresses. The corridor then passes a small rock outcrop and minor plateau area before descending back into another natural draw where there is a wetland pond, and further beyond, Kettle Creek.

3) **Spatial Quality.** The corridor begins in an exposed area. This is a result of the present clearing. In time however, as forest restoration takes place, this section will become enclosed. It then travels through a long section of enclosure, alongside Foothills Scenic Drive. There is a small exposed section as the corridor extends over a small knoll. The corridor descends into another enclosed section. The final portion of the corridor as it exits onto the Village Centre is an exposed area presently, but again, this is primarily due to its present land cover situation. With time, this section will also feel enclosed.

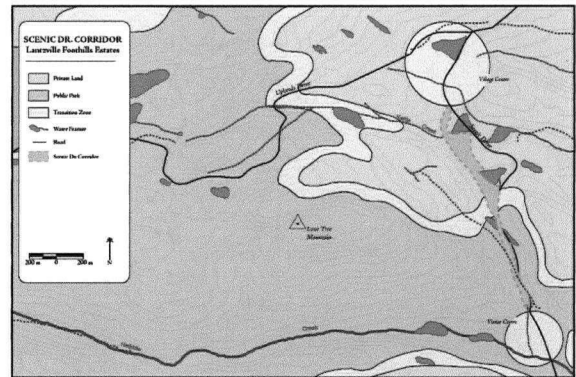


Figure 10.1 Scenic Drive Corridor Location Map

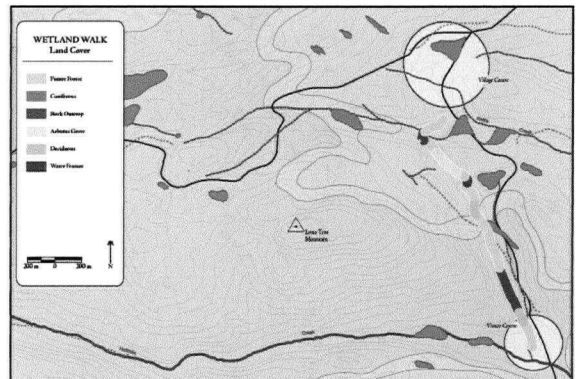


Figure 10.2 Land cover sequence within the corridor.

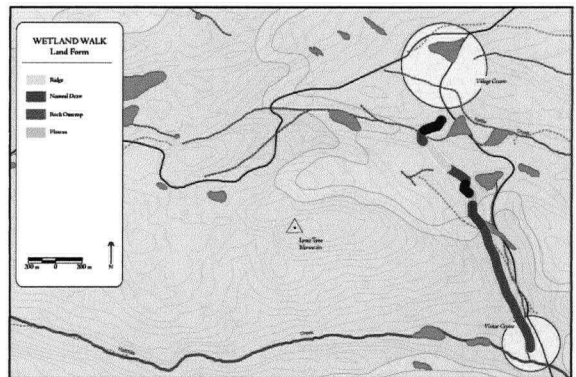


Figure 10.3 Land form sequence within the corridor.

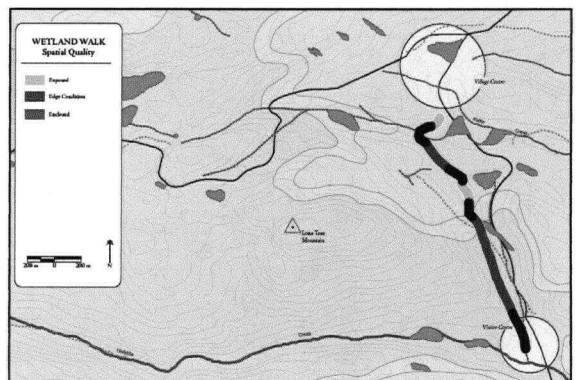


Figure 10.4 Spatial quality sequence within the corridor.



## 10.2 Trail Design

This sequencing information along with an on-site exploration suggests the following as a possible configuration for the Wetland Walk. The trail, shown below in Figure 10.5, captures all the criteria for trail placement within the guiding principles and responds to the sequencing of land cover, land form and spatial quality. This trail is designed to be an easy connection to the village centre for both pedestrians and cyclists. A detailed sequence of the trail follows.

## 10.3 Trail Description

Departing from the visitor centre, the trail begins in the same location as the Lone Tree Trail and travels through the plant nursery (Figure 9.6). As stated previously, beginning a trail experience through the nursery will serve to highlight and raise awareness towards the restoration program at The Foothills.

The trail continues straight following the intersection with Lone Tree Trail (Figure 9.7) and is marked with a simple trail marker (Figure 10.6)

The trail, travelling parallel and within sight of the Foothills Scenic Drive travels through deciduous forest and alongside a narrow wetland. A boardwalk experience moves people through this section (Figure 10.7, Figure 10.8) and allows viewing opportunities and rest points at the wetland. This section is detailed further in Section 10.4.

Following the boardwalk, the trail ascends a slight rise to the top of a small rock outcrop, providing views to arbutus covered ridges on the opposite side of Foothills Scenic Drive. The trail, staying at this elevation, travels through a short section of coniferous forest before releasing onto a small grassy knoll.

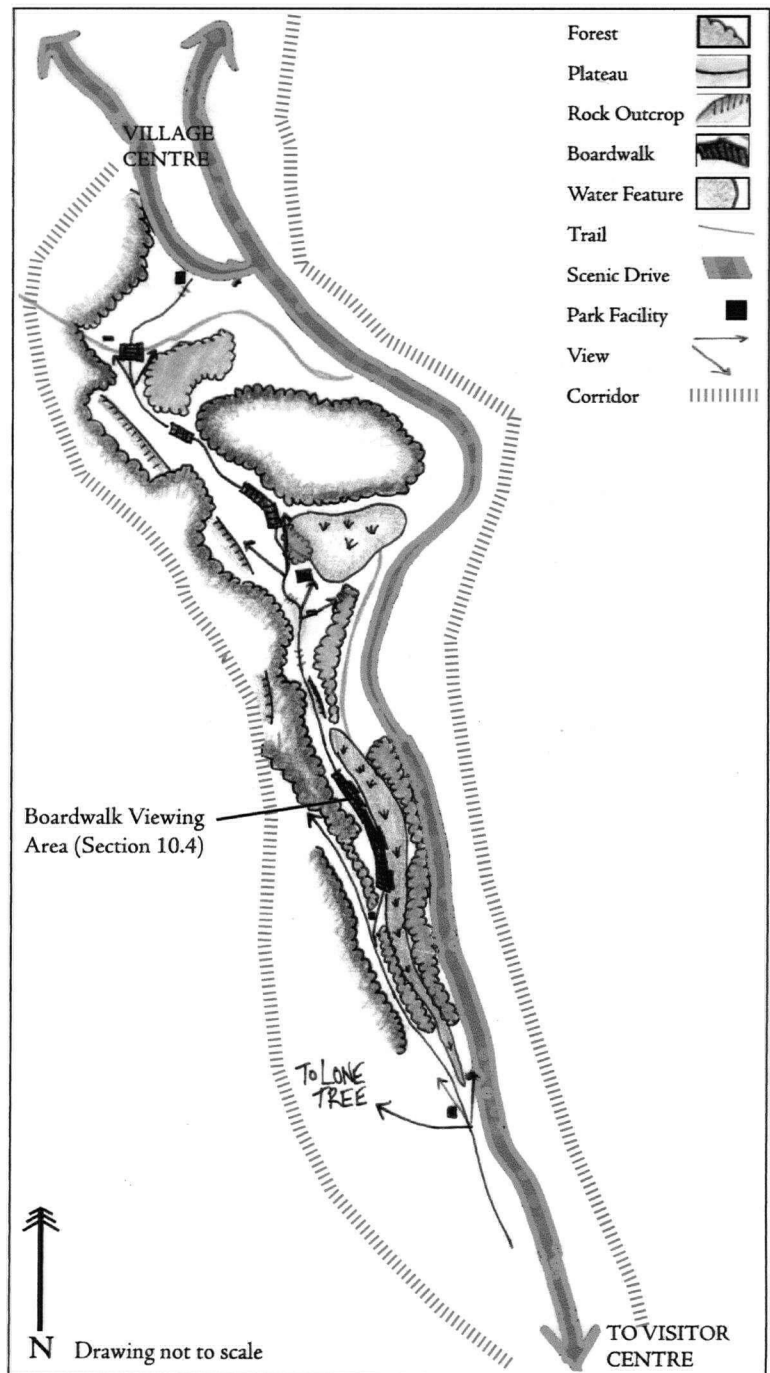


Figure 10.5 Wetland Walk Plan View. This trail explores the low-lying lands of The Foothills, and passes through a sequence of wetlands and natural draws.

The knoll provides framed views through the valley to Mt. Copley (Figure 10.9) as well as providing an observer-superior position from which to view a small wetland pond below. A small set of stairs are provided to descend the small knoll. There is a gutter on one side for bikes, a system which allows bicyclists to easily walk their bike down the stairs. The staircase is designed with wide treads, low risers to make it easier to navigate. There is a small viewing area beside this lower pond with seating provided (Figure 10.10).

The trail continues to travel through a sheltered valley. There are views to rock outcrops on the left of the trail. One of these, Waterfall Rock, hosts a small, ephemeral waterfall, typically flowing during the wetter, winter months. There are a series of small boardwalks through this area, taking the trail over wet areas (Figure 10.11). Concrete sleepers are laid into the ground 50m before and after the boardwalk as well as abutting next to the boardwalk. This creates a visible cue to the changing materials as a warning for cyclists. However, the boardwalks are constructed at grade so there is minimal issue with a grade change for bicyclists.

The trail crosses a small bridge, complete with a small seating area, over Kettle Creek. The trail then veers and exits onto Foothills Scenic Drive and into the village.

The trail between the visitor and village centres is 860m and takes approximately fifteen to twenty minutes to complete. The trail is rated easy but does have one small staircase. The narrative of the trail is predominantly about wetland areas and would be a good candidate for a self-guided nature trail. Pamphlets could be picked up and dropped off at trail-head kiosks located at either ends of the trail.



Figure 10.6 Wetland Walk trail marker.



Figure 10.7 A boardwalk experience in the Foothills Scenic Corridor.



Figure 10.8 Wetland Viewing Platform.

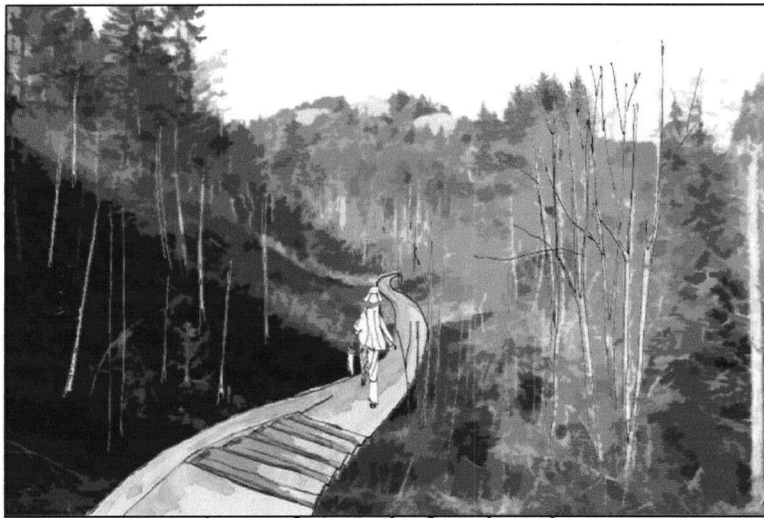


Figure 10.9 Framed views of Mt. Copley from the trail.



Figure 10.10 Lower wetland rest stop.

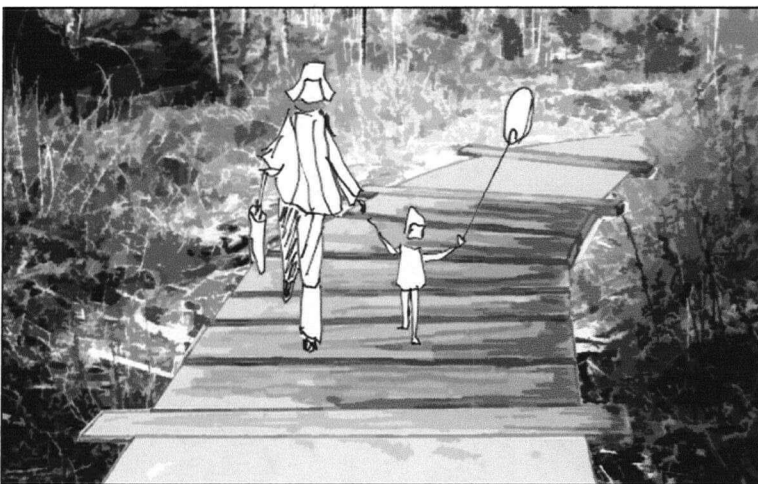


Figure 10.11 Small, simple boardwalk construction over seasonally wet areas. Visual cues to material change provide by concrete bands.



#### 10.4 Boardwalk Viewing Area

The boardwalk section was selected to design in further detail as its final form would create details that could be carried throughout the trail. The site was selected based on the width of the low-lying flat area between the possible trail and Foothills Scenic Drive and on the necessity for boardwalk construction to move people through the area. The Wetland Walk trail is designed to be used by both pedestrians and cyclists and will be one of the most intensively used paths in the park due to its short, easy connection to the village centre. Boardwalk construction and design must therefore respond to these conditions.

The boardwalk detail (Figure 10.12) below is designed to meander through the trees, responding to existing trees and moving around them. The sequence is inspired by the idea of water expanding and contracting at different points as it moves. Thus, the boardwalk flows in, out and around; expanding and contracting; creating unique trail sequences and viewing platforms (Figures 10.13, 10.14 and 10.15).

Viewing platforms extend outside these trees and provide resting points for wetland viewing.

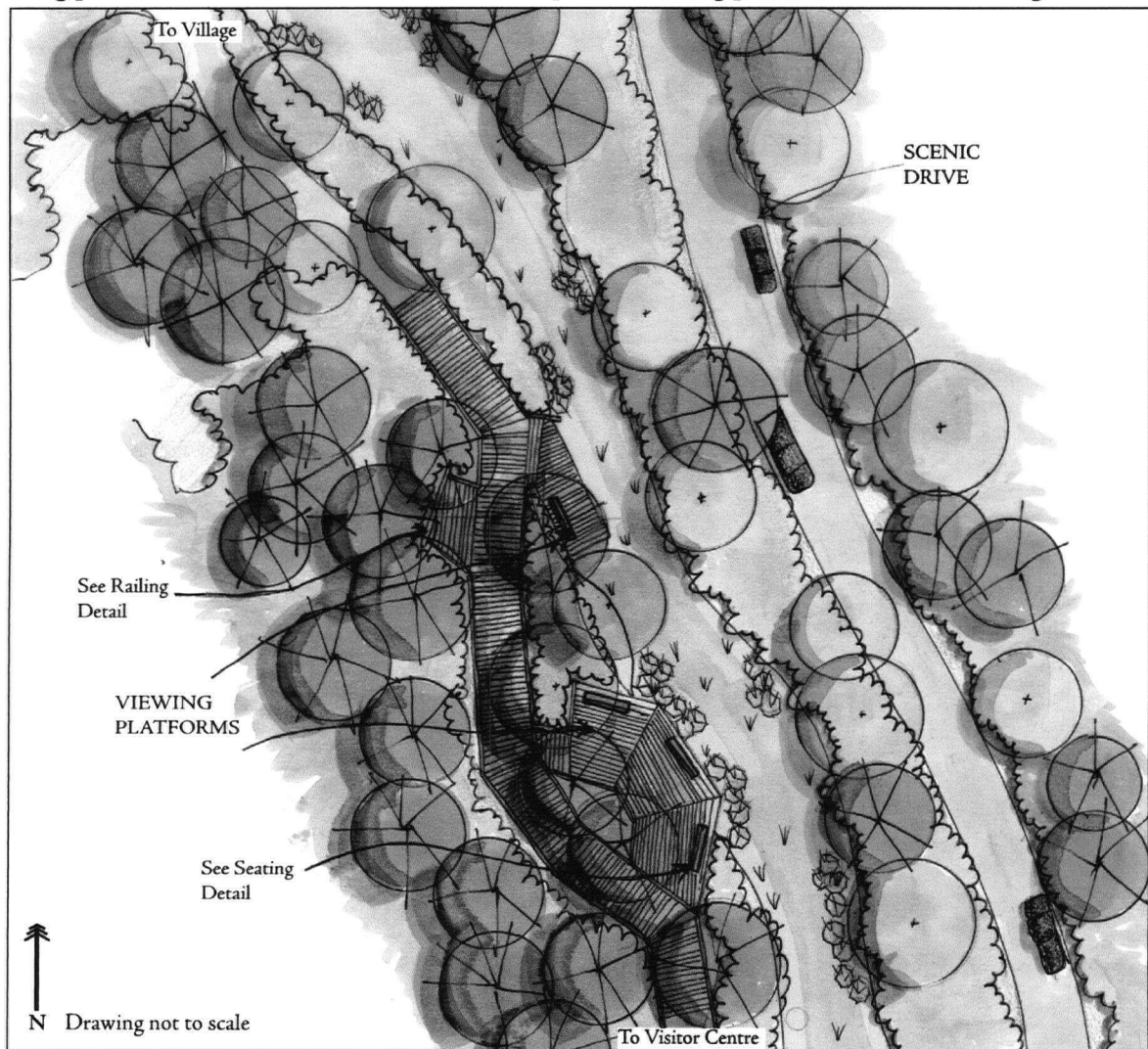


Figure 10.12 Wetland Walk boardwalk viewing area. Designed to meander through the trees while creating several small viewing platforms.

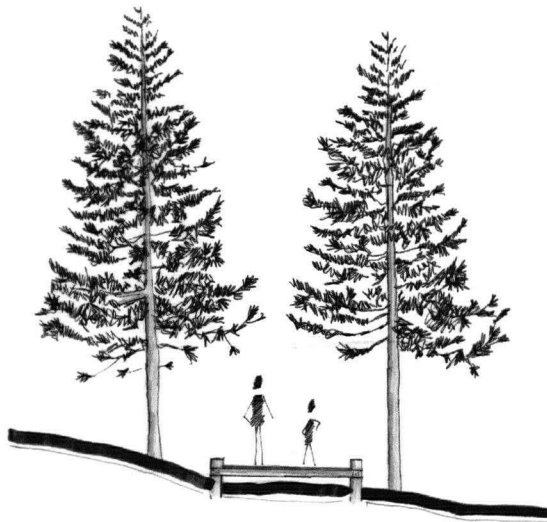


Figure 10.13 Sectional view showing compressed section of boardwalk. Trail at these points is 2 m wide.

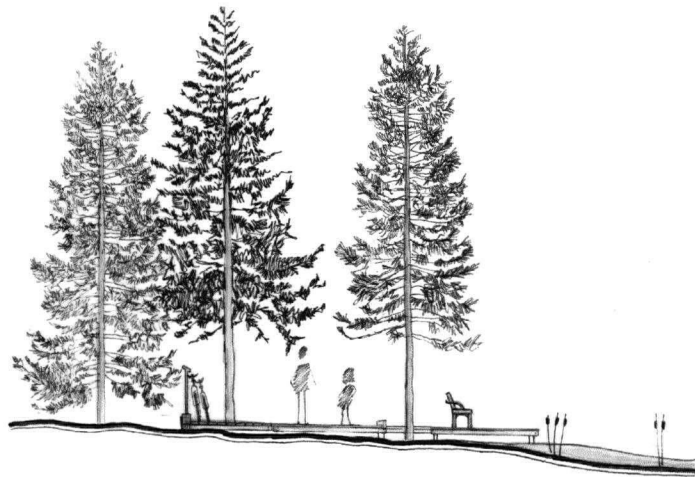


Figure 10.14 Sectional view of boardwalk detail showing railing for leaning bikes and a small viewing platform.



Figure 10.15 Sectional view showing large viewing platform separated from main trail.

The boardwalk is constructed with bikes in mind: the boards run perpendicular to travel direction such that there is no ruts for tires to get stuck in. There is also a pull-out area located off the trail and out of the way of the viewing platforms that provides a railing for leaning bikes against. These can also be used as a place to stretch for those running along the trail.

Details are inspired by the cattails found in the wetland. The railing is detailed in Figure 10.16 and extends beyond the edges of the pull-out area strongly connecting the boardwalk to its site. The benches found along the trail (Figure 10.17) also carry this detail. The backs are angled back for comfort and the arm rests extend beyond the back and act as a hook for hanging a backpack or umbrella while sitting and enjoying the scenery of The Foothills.

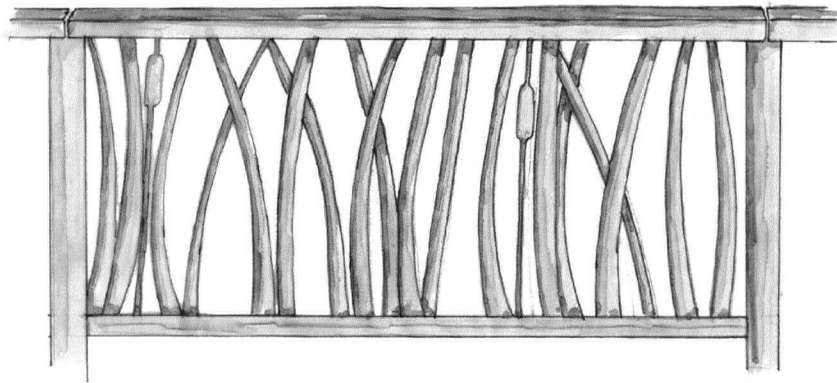


Figure 10.16 Wetland Walk railing detail. Inspired by the cattails, a simple wooden railing design.

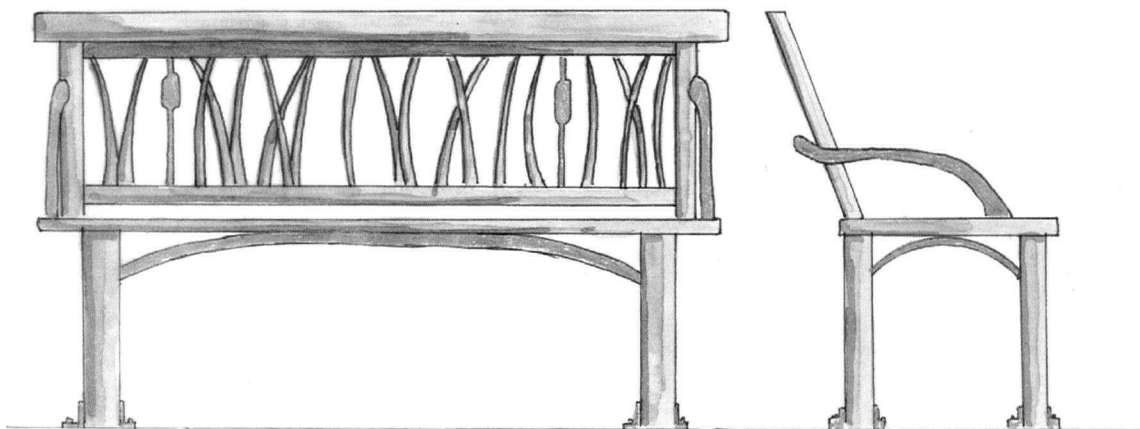


Figure 10.17 Wetland Walk bench detail. Continued cattail inspiration in a simple bench.

## 11.0 CONCLUDING REMARKS

Through a combined process of field work, GIS analysis and inventory, and a substantial literature review, Discovering Home attempts to define a model for trail design to be used in the rest of the park at The Foothills. This report presents one future concept for the core area of The Foothills Park. Designs presented explore the fundamental facets of trail siting and design in the eastern portion of the park at The Foothills. This includes the exploration of both upland and lowland features, secondary versus tertiary trails as well as easy versus difficult trails. This project therefore portray a broad range of design ideas for future park development.

The use of the guiding principles has allowed for design interventions that minimize user impacts while creating opportunities for wonder and discovery. Linking key features of the study site with appropriate trail sequencing, as expressed in the development of Lone Tree Trail and the Wetland Walk, serves to create trails that speak to the uniqueness of the site. This in turn will serve to connect people to this place, such that they will become a "Friends of The Foothills" and will help with the restoration and future management of this beautiful, damaged landscape.

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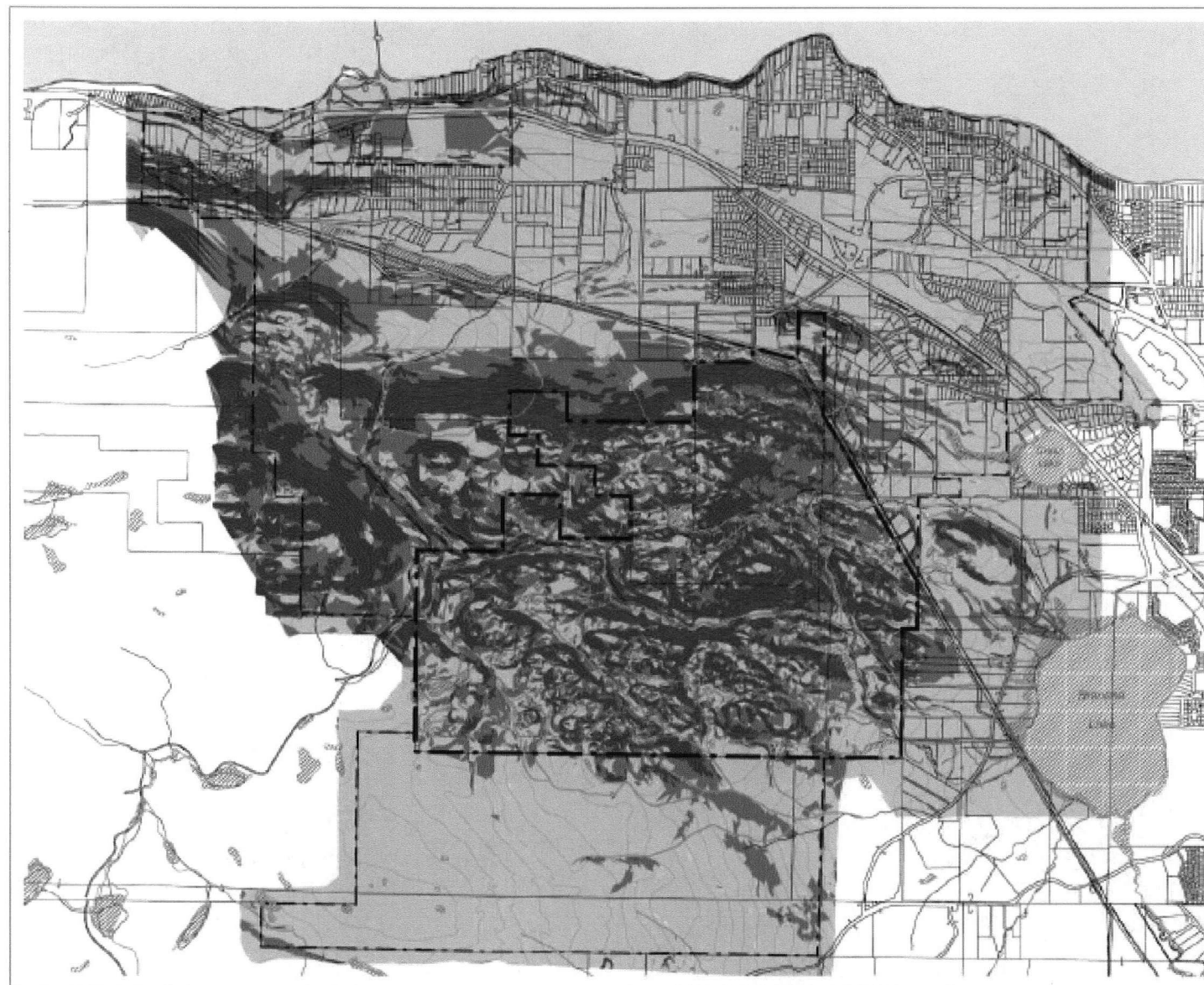
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**APPENDIX A:**  
**Comprehensive Development Plan: Biophysical Inventory**





  
The Foothills

## SLOPE CLASSIFICATION

Date: July 19, 2004  
Drawing No.: 2004-009-08  
Revision: 1  
Drawn by: pd

### LEGEND:

-  steep slopes  
(over 20% slope)
-  moderate slopes  
(slopes from 20% to 10%)
-  gently sloping to flat  
(slopes from 15% to 0%)
-  wetlands and water features  
(includes wet meadows, wetlands,  
ponds and similar hydrologic features)
-  Lantzville Foothills property



10 m contour interval

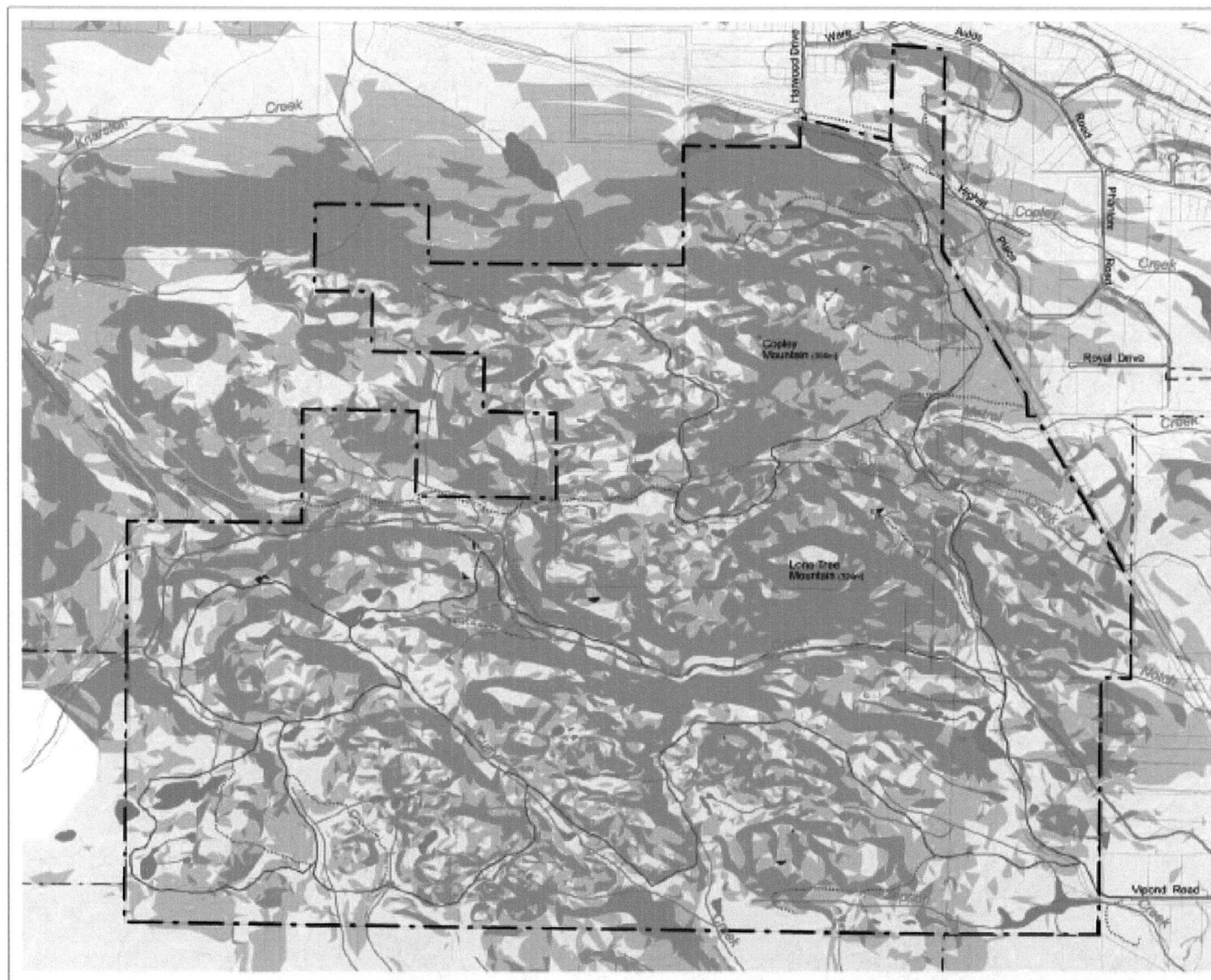


Note: This plan is for general purposes only and is not  
suitable for detailed mapping.

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## SLOPE CLASSIFICATION

Date: July 20, 2004  
Drawing No.: 2004-C09-10  
Revision: 1  
Drawn by: pd.

### LEGEND:

-  steep slopes  
(over 30% slopes)
-  moderate slopes  
(slopes from 30% to 15%)
-  gently sloping to flat  
(slopes from 15% to 0%)
-  wetlands and water features  
(includes wet meadows, wetlands,  
ponds and similar hydrologic features)
-  Lentzville Foothills property

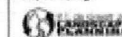


10 m contour interval

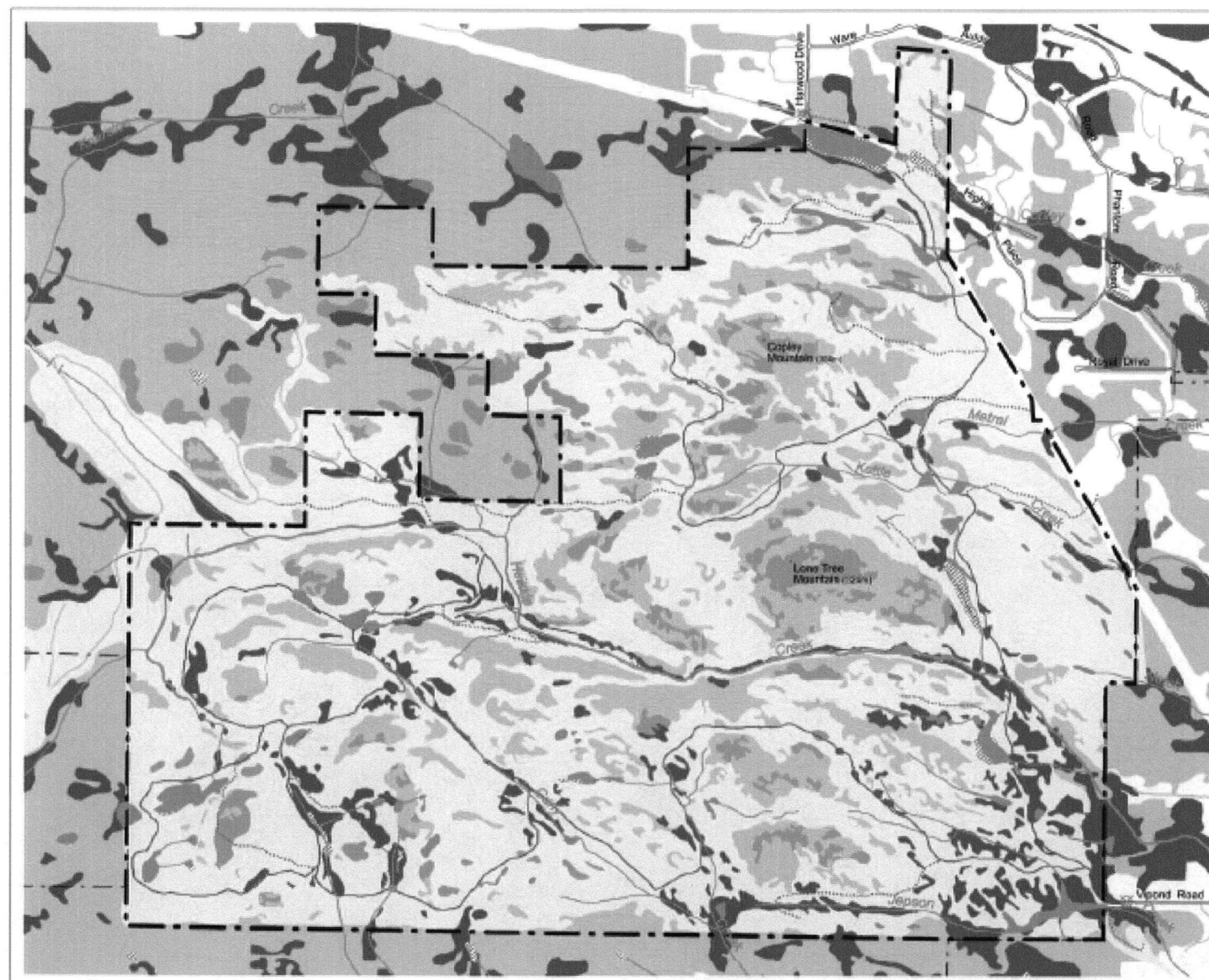


Note: This map is for graphic purposes only and is not suitable for detailed mapping.

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The Foothills

## GENERAL LANDCOVER TYPES

Date: July 19, 2004  
Drawing No.: 2004-009-11  
Revision: 1  
Drawn by: pd.

### LEGEND:

-  deciduous cover  
(predominantly deciduous forest and shrub cover)
-  water features  
(includes creeks, wet areas, wetlands, ponds and similar hydrologic features)
-  coniferous cover  
(forest cover consisting predominantly of coniferous trees)
-  rock outcrops  
(rock outcrops and naturally sparse vegetated areas)
-  recently cut areas  
(areas logged within last 10 yrs.)
-  Lantzville Foothills property



10 m contour interval

Scale  
0 0.1 0.2 0.3 0.4 0.5 km

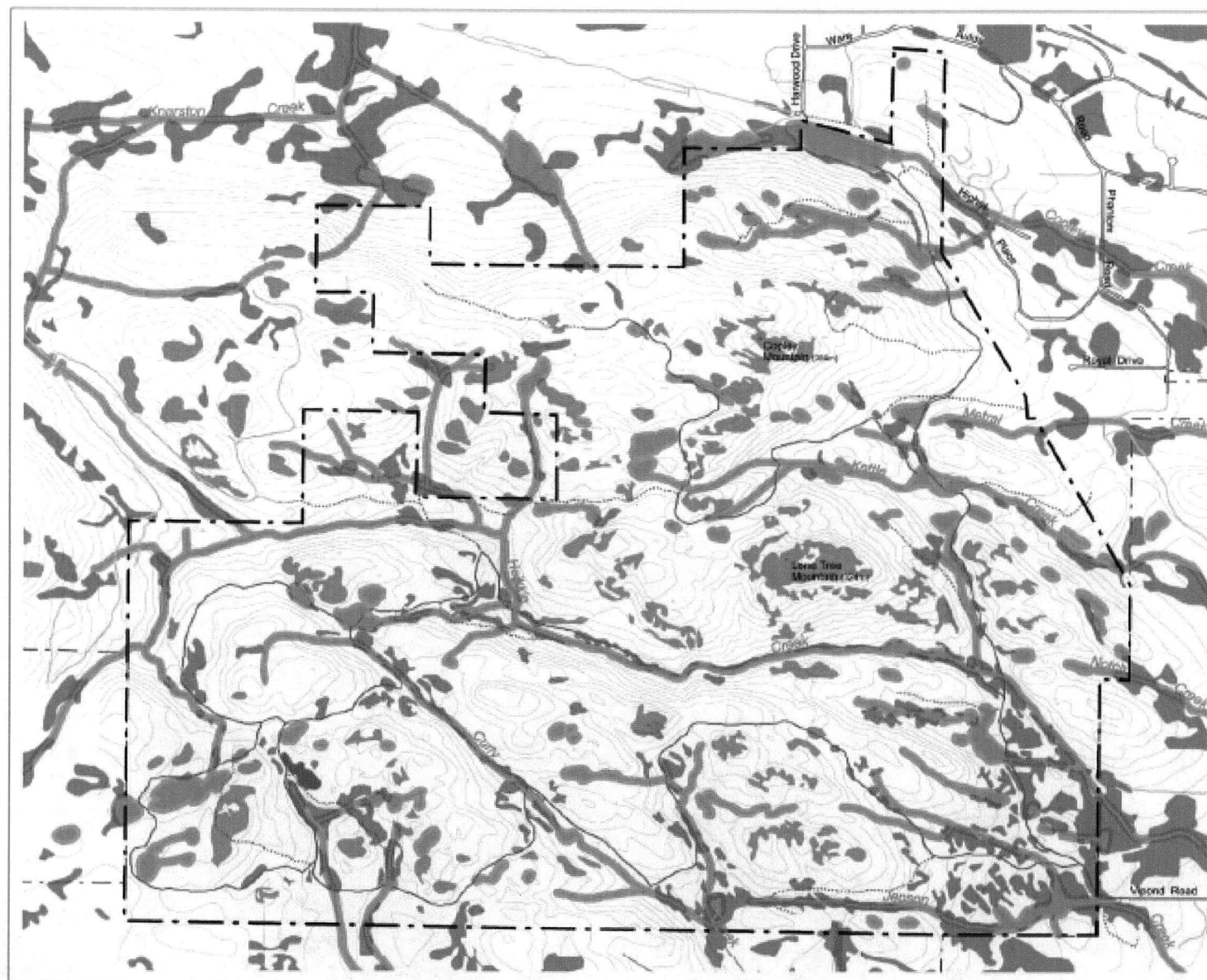
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## SITE AS AN ECOLOGICAL SYSTEM

Date: July 21, 2004  
Drawing No.: 2004-009-18  
Revision: 1  
Drawn by: pd.

**LEGEND:**

ECOLOGICAL ATTRIBUTES:

- **deciduous cover**  
(predominantly deciduous forest and shrub cover)
- **rock outcrops**  
(rock outcrops and naturally scarce vegetated areas)
- **riparian buffers**  
(15m riparian area buffers)
- **wetlands and water features**  
(includes wet seepages, not reeds, ponds and similar hydrologic features)

Lentzville Foothills property



10 m contour interval

Scale

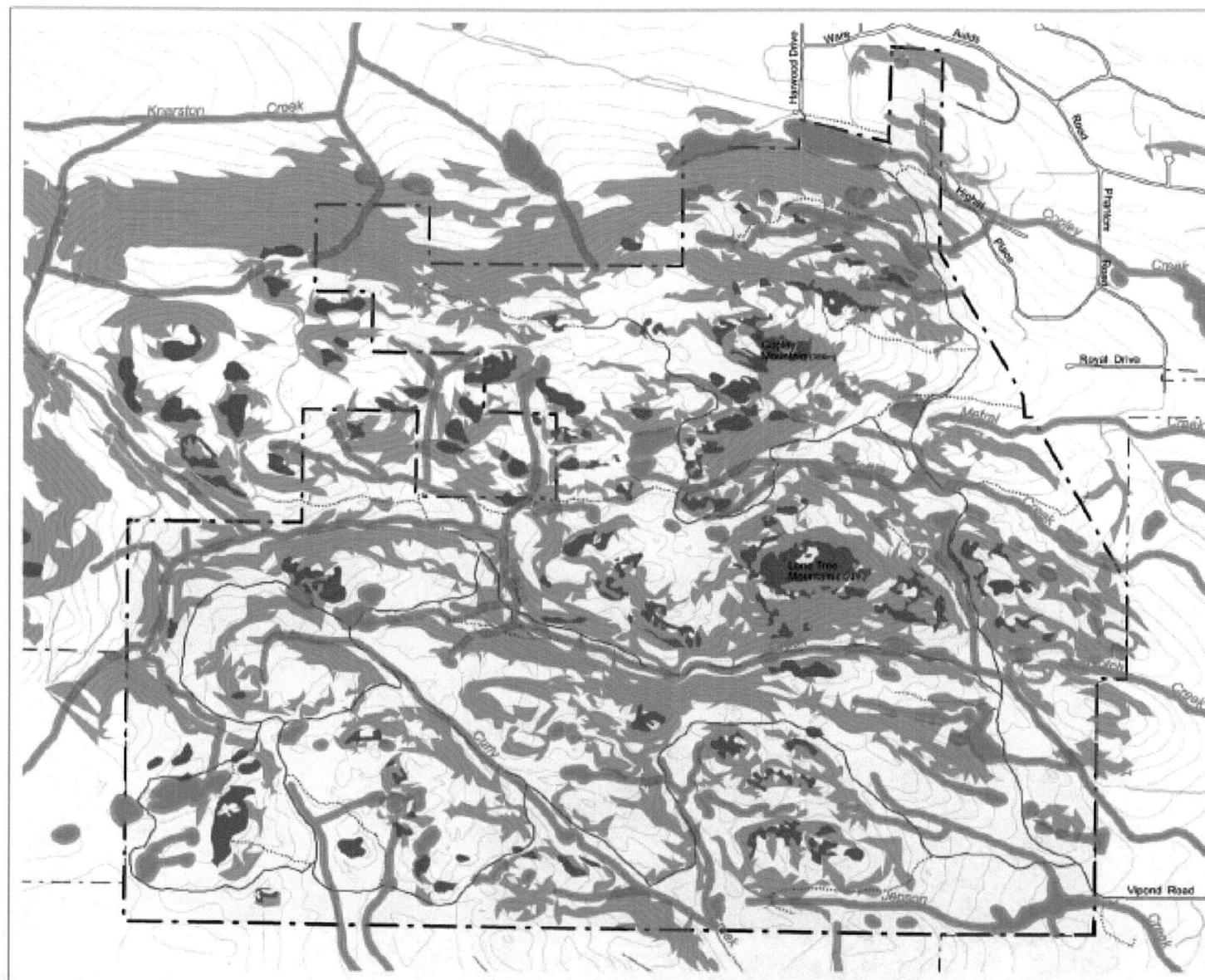


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## SIGNIFICANT CONSTRAINTS COMPOSITE

Date: July 21, 2004  
Drawing No.: 2004-009-13  
Revision: 1  
Drawn by: pd

### LEGEND:

-  steep slopes  
(over 30% slopes)
-  riparian buffers  
(10m riparian area buffers)
-  rock outcrops  
(rock outcrops and naturally sparse  
vegetated areas)
-  wetlands and water features  
(includes wet meadows, wetlands,  
ponds and similar hydrologic features)
-  Lantzville Foothills property



10 m contour interval

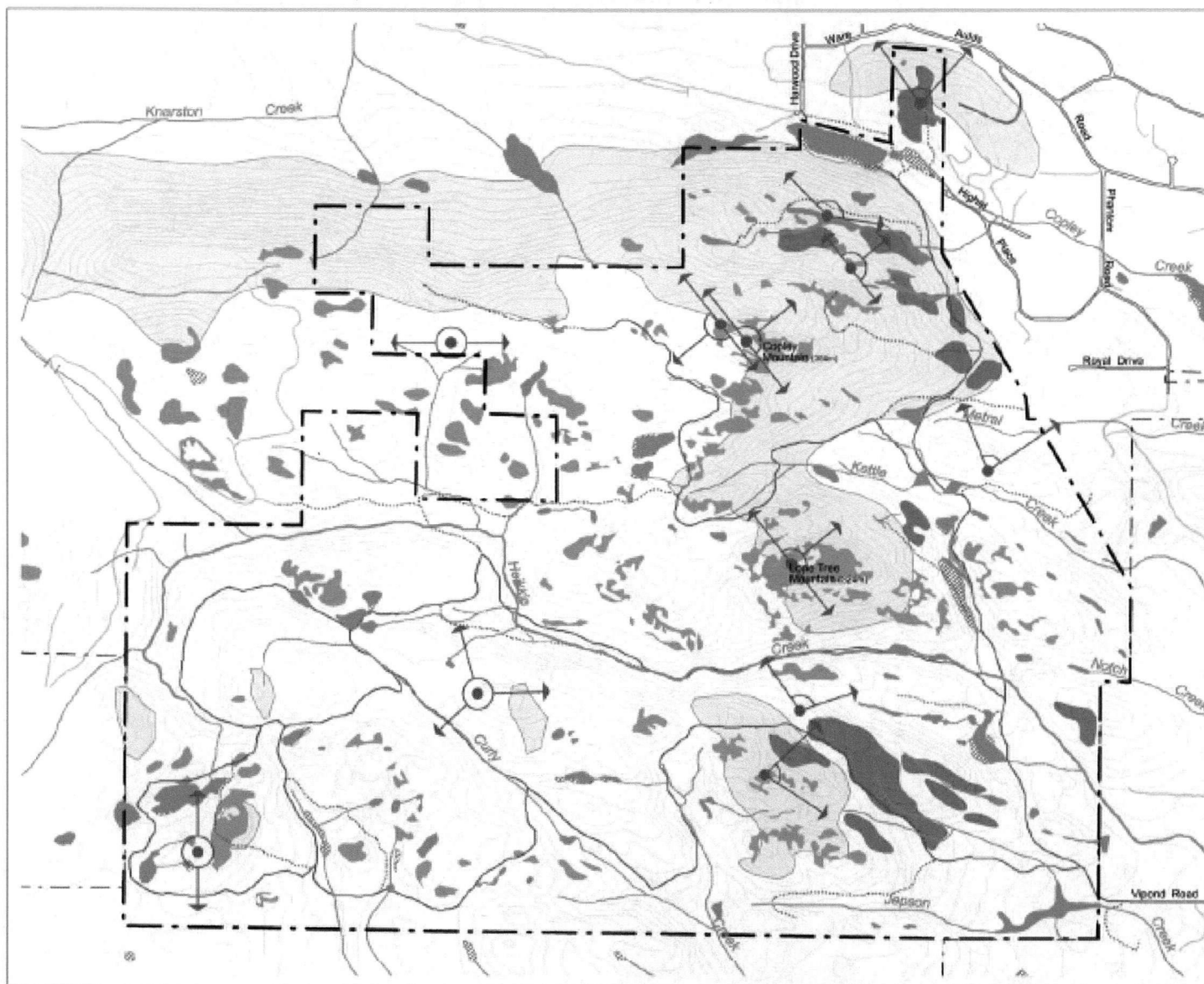
Scale  
0 0.1 0.2 0.3 0.4 0.5 km

Note: This map is for planning purposes only and is not  
suitable for detailed design.

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## AESTHETIC VALUES COMPOSITE

Date: July 20, 2004  
Drawing No.: 2004-008-14  
Revision: 1  
Drawn by: pd.

### LEGEND:

-  visible slopes  
(slopes visible from key observer view points)
-  rock outcrops  
(rock outcrops and naturally scenic vegetated areas)
-  arbutus groves  
(mature arbutus stands)
-  wetlands and water features  
(includes wet meadows, wetlands, ponds and similar hydrologic features)
-  significant view point
-  Lantzville Foothills property



10 m contour interval

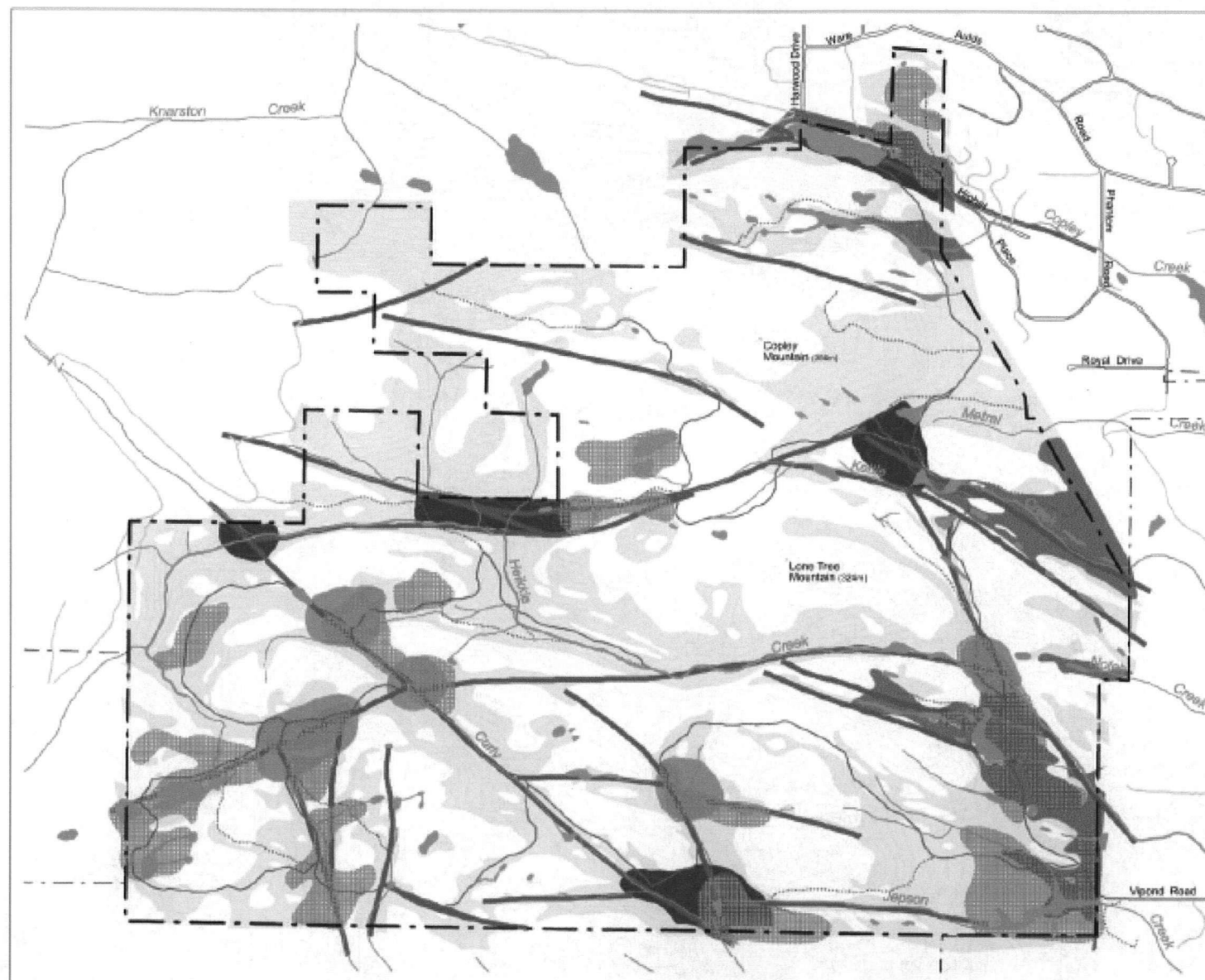
Scale  
0 0.1 0.2 0.3 0.4 0.5 km

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## GEOPHYSICAL RESOURCE COMPOSITE

Date: July 21, 2004  
Drawing No.: 2004-009-15  
Revision: 1  
Drawn by: pd

### LEGEND:

-  primary groundwater targets  
(primary rock fracture aquifer potential)
-  secondary groundwater targets  
(slopes between 30% to 10%)
-  primary lineaments  
(primary rock fault/fracture lines - targets)
-  soil covered areas  
(excludes areas of rock and near  
soil over rock and fluvial soils)
-  areas >5 acres & <15% slope  
(corridors areas with slopes less than  
15% and greater than 5 acres in size)
-  fluvial / glaciofluvial  
(canon with sorted soil materials -  
potential gravel and sand resources)
-  wetlands and water features  
(includes wet seepages, water rich  
ponds and similar hydrologic features)
-  Lantzville Foothills property



10 m contour interval

Scale  
0 0.1 0.2 0.3 0.4 0.5 km

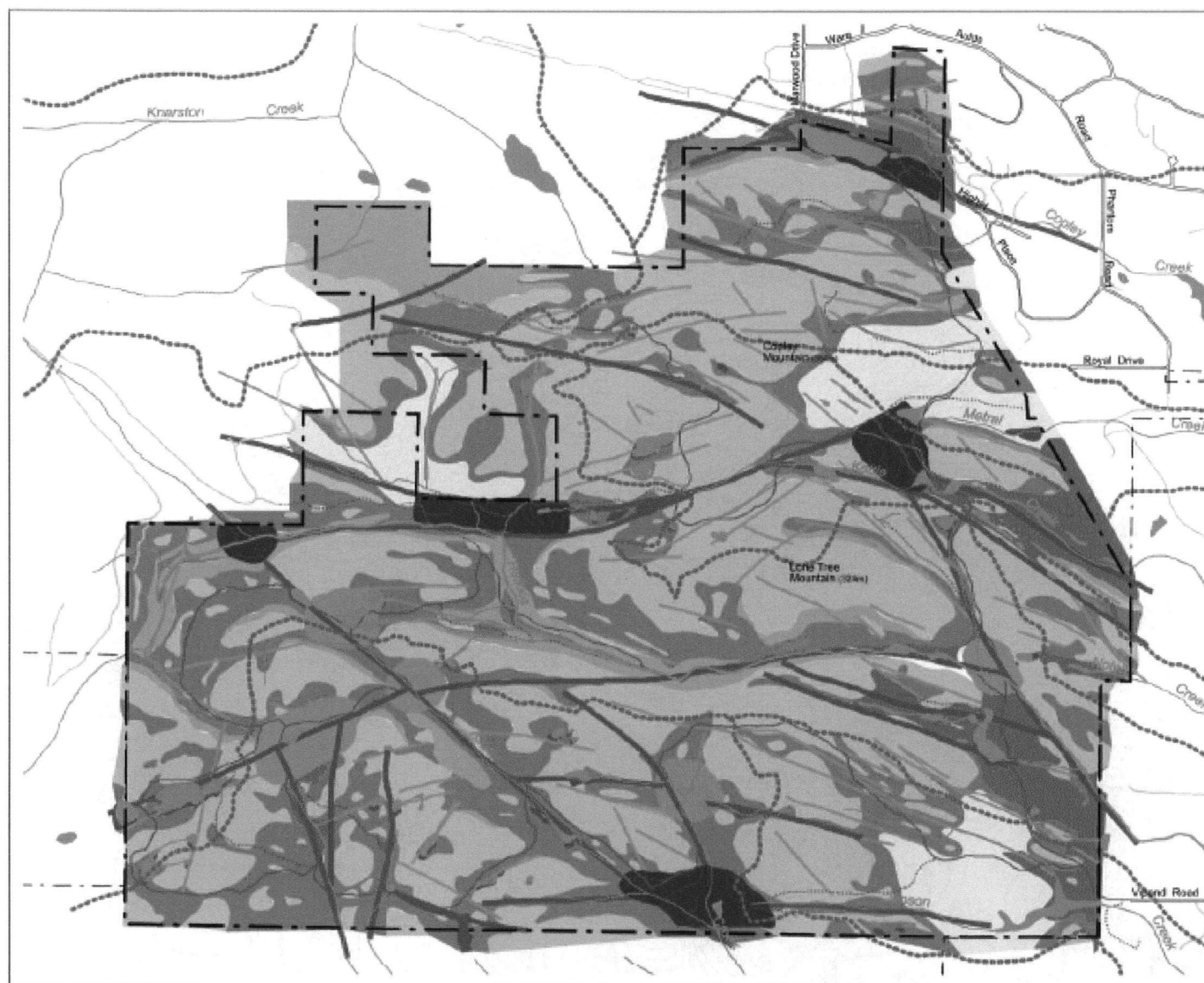
Note: This plan is for general purposes only and is not  
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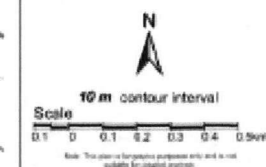
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## SOILS & GROUNDWATER RESOURCES

Date: July 20, 2004  
Drawing No.: 2004-009-12  
Revision: 1  
Drawn by: pd.

### LEGEND:

- primary groundwater targets  
(primary rock fracture aquifer potential)
- secondary groundwater targets  
(secondary rock fracture aquifer potential)
- primary lineaments  
(primary rock fault / fracture lines - groundwater targets)
- watershed boundaries
- fluvial / glaciofluvial  
(areas with sorted soil materials - potential gravel and sand resources)
- glacial till (moraine)  
(silt - unsorted, compacted, silty, in varying depths over bedrock)
- colluvial  
(loosely sorted, products of mass wasting, range of particle sizes)
- rock & thin veneer soils  
(rock outcrop and soils less than 0.5m)
- Lantzville Foothills property
- moraine veneers
- secondary lineaments



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