

**GARIBALDI AT SQUAMISH
PROJECT**

CASP Master Plan

**EAO Additional Information
Requirements**

Volume 1

Executive Summary

Prepared for:

Land and Water British Columbia Inc.
200 – 10428 153rd Street
Surrey, B.C.
V3R 1E1

Environmental Assessment Office
4th Floor, 836 Yates Street
Victoria, BC
V8V 1X4

Prepared By:

ENKON Environmental Limited
Suite 201 – 2430 King George Highway
Surrey, BC V4P 1H8
Phone (604)-536-2947
Fax (604)-536-2948
e-mail: enkon@telus.net
Web page: www.enkon.com

Project No. 1196-002

April 2003

Table of Contents

TABLE OF CONTENTS	I
INTRODUCTION	1
1.1 Report Organization	1
1.2 Project Goals and Objectives	2
1.2.1 Meeting CASP and GASAD Requirements	2
1.3 Study Area Boundary	3
1.4 Site Mapping	4
1.5 Prior Rights	4
VOLUME 2 - MOUNTAIN MASTER PLAN	6
2.1 Summary of Mountain Facilities	6
VOLUME 3 - RESORT BASE AREA	11
VOLUME 4 - WASTE MANAGEMENT, ENERGY AND WATER SUPPLY	17
4.1 Energy Supply-Electrical	17
4.2 Energy Supply-Gas	18
4.3 Waste Management	18
4.3.1 Solid Waste	18
4.4 Liquid Waste Management (Sewage)	19
4.4.1 Introduction	19
4.4.2 Evaluation of Options	20
4.4.3 Recommendations	21
4.5 Water Supply	21
VOLUME 5 – ROAD DESIGN, ACCESS AND TRAFFIC IMPACTS	24
VOLUME 6 - GEOTECHNICAL ASSESSMENT	26
VOLUME 7 – ENVIRONMENTAL IMPACT ASSESSMENT	27
7.1 Baseline Resources	27
7.1.1 Surface Water Quantity and Quality	27
7.1.2 Primary and Secondary Productivity	27
7.1.3 Fisheries Resources	28
7.1.4 Vegetation	30
7.1.5 Wildlife	31
7.1.5.1 Mountain Goats	32
7.1.5.2 Deer	35
7.1.5.3 Black Bears	37
7.1.5.4 Grizzly Bears	37
7.1.5.5 Bobcat, Cougar, Coyote and Wolf	37
7.1.5.6 Wolverine	38
7.1.5.7 Small Mammals	38
7.1.5.8 Birds	38
7.1.5.9 Marbled Murrelet	39

Table of Contents

7.1.5.10	Harlequin Duck	39
7.1.5.11	Amphibians and Reptiles	39
7.1.5.12	Coastal Tailed Frog	39
7.1.5.13	Habitat Suitability Mapping	39
7.2	Potential Impacts and Mitigation	39
7.2.1	Approach	39
7.2.2	Hydrology	40
7.2.3	Water Quality	41
7.2.3.1	Impacts during Construction	41
7.2.3.2	Impacts during Operation.....	41
7.2.4	Fish Habitat	42
7.2.4.1	Development Setbacks	42
7.2.4.2	Stream Crossings.....	43
7.2.4.3	Water Withdrawals.....	44
7.2.5	Vegetation.....	44
7.2.6	Wildlife.....	45
7.2.7	Air Quality.....	45
7.2.8	Cumulative Impacts.....	46
7.3	Environmental Management Plans	47
VOLUME 8 - SOCIO-ECONOMIC IMPACT ASSESSMENT.....		48
VOLUME 9 - GARIBALDI PROVINCIAL PARK ISSUES.....		51
VOLUME 10 - TRADITIONAL USE STUDY.....		55
10.1	Current Community Information	55
10.2	Impacts on Traditional Use of Nch'kay	57
VOLUME 11 – ARCHAEOLOGICAL IMPACT ASSESSMENT.....		61
11.1	Archaeological Overview Assessment.....	61
11.2	Archaeological Impact Assessment	62
VOLUME 12 - PUBLIC, STAKEHOLDER AND FIRST NATIONS CONSULTATION.....		64

Appendices

Appendix 1	Report Volumes and Associated Consultant Responsibilities
------------	---

List of Figures

Figure IV-1	Garibaldi at Squamish Mountain Master Plan	7
Exhibit A	Key Map.....	14
Exhibit B	Phasing Plan.....	16
Figure 18-1	Diversion Points.....	22
Figure 5.0-1	Garibaldi Resort Road Network Plan	25
Figure 5-6	Results of Mountain Goat Surveys by MELP, Don Blood & Assoc., and Keystone Environmental.....	33
Figure 5-8	ENKON Goat Survey Results.....	34
Figure 5-22	Black-tailed Deer Winter Habitat Suitability.....	36

List of Tables

Table 2-1	Garibaldi Resort Mountain Master Plan Lift Specifications – Phase 1A	9
Table 2-2	Garibaldi Resort Mountain Master Plan Lift Specifications – Phase 1B.....	9
Table 2-3	Garibaldi Resort Mountain Master Plan - Lift Specifications – Phase 1C	9
Table 3-1	Calculation of Allowable Bed Units for a Destination Resort.....	13
Table 3-2	Garibaldi at Squamish Project Phasing.....	15
Table 7-1	Proposed Setbacks for Different Development Activities	43
Table 8-1	Garibaldi at Squamish - Summary of Economic and Social Impacts	48
Table 12-1	Summary of Meetings and Correspondence with the Government Agencies and Stakeholders Associated with the Garibaldi Resort Project.....	65
Table 12-2	Summary of Meetings and Correspondence with the Squamish Nation Associated with the Garibaldi Resort Project	77

INTRODUCTION

1.1 Report Organization

The Land & Water British Columbia (LWBC) Master Plan report and Environmental Assessment Office (EAO) Additional Information Requirements report are organized into 13 volumes included in five binders as follows:

Binder 1

Volume 1 Executive Summary ENKON/GAS Inc.

Binder 2

Volume 2 Mountain Master Plan SE Group

Volume 3 Resort Base Master Plan Perkins Design

Volume 4 Waste Management Energy & Water Supply Urban/Shaflik

Volume 5 Road Design, Access and Traffic Impacts McElhanney

Volume 6 Geotechnical Assessment Thurber

Binder 3

Volume 7 Environmental Impact Assessment ENKON

Binder 4

Volume 8 Socio-Economic Impact Assessment Grant Thornton

Volume 9 Garibaldi Provincial Park Issues IRIS

Volume 10 Traditional Use Study First Heritage

Volume 11 Archaeological Impact Assessment ARCAS

Volume 12 Public, Stakeholder and First Nations Consultation ENKON

Binder 5

Volume 13 Financial and Market Analysis Garibaldi at Squamish
Inc./ W. Barry Lyon
Consultants Limited

The compilation of information provided in the 13 volumes fulfills the requirements of the LWBC Commercial Alpine Ski Policy Master Plan Terms of Reference dated April 2002 and the EAO Final Project Report Specifications for the Garibaldi at Squamish Project dated July 1998 and amended November 1999.

A summary of each terms of reference/specifications and the associated volume/consultant report is included in Appendix 1-1.

1.2 Project Goals and Objectives

As a supporter of recreational development within the Province of British Columbia, the Ministry of Lands, Environment and Parks adopted and subsequently amended the *Commercial Alpine Skiing Policy (CASP)*. CASP is intended to “provide for orderly, rational development and use of Crown land for commercial alpine ski purposes.” CASP sets forth the procedure a proponent or prospective applicant must follow to receive approval from the Ministry to proceed in the development of a recreational resort on Crown land. The policy is further supported by *Guidelines to Alpine Ski Area Development in British Columbia* (the Guidelines), a document that details acceptable standards for designing and balancing recreational and resort functions in a winter-oriented resort community.

The intent of this project is to create a year-round destination recreational resort community on Brohm Ridge near Mount Garibaldi to be known as Garibaldi at Squamish (Garibaldi Resort). Throughout the process, the proponent’s design team has and continues to use the Province’s CASP document and associated Guidelines, together with aesthetic and environmentally sensitive design philosophies, in creating and testing the concepts, master plans and infrastructure designs prepared for Garibaldi Resort. The calculations and subsequent numbers contained in this document are derived from the planning parameters provided in the Ministry’s Policy and Guidelines.

1.2.1 Meeting CASP and GASAD Requirements

Garibaldi Resort meets the criteria for a Destination Resort as defined in the CASP Guidelines, Section I.7.5 documents as follows:

1. Garibaldi Resort is intended to serve local, regional and destination skiers with emphasis on catering to destination needs and services through its range of year-round recreational opportunities, visitor amenities and accommodations;
2. Garibaldi Resort will offer a unique and truly special skiing experience, not only because of the majesty of its natural terrain and long distance views of Howe Sound, but also because the Proponent intends to provide high speed, high capacity lifts in order to offer guests the optimum recreational experience (short lift lines, fast lift trips). At the same time Garibaldi Resort will be at the forefront of the industry in lift and trail management.

3. Garibaldi Resort is proposing a CCC of 15,250. The Guidelines indicates that a destination resort requires a CCC of “+/- 5,000 to 12,000 plus skiers per day” as stated in Section I.7.5. Hence the proposed Garibaldi Resort CCC is above the requirement for a destination resort.
4. Garibaldi Resort is proposing to install lifts ranging from fixed grip double chairs to high-speed surface lifts, high-speed detachable chairlifts, and detachable gondolas, representing the full range of lift types appropriate for a destination resort.
5. The area proposed to encompass the skiing/snowboarding terrain covers 1,850 hectares within a parent parcel totaling 4,900 hectares as stipulated in the guidelines (Section I.7.5).
6. Total vertical drop from the top of Lift Q (highest elevation) to the base of Lift A is 1,215 metres (3,986 feet), which is within the range suggested in the guidelines (“+/- 700 to 1,500 metres plus,” Section I.7.5).
7. Garibaldi Resort is approximately one hour from Vancouver, British Columbia, and approximately four hours from Seattle, Washington, which puts the resort well within the suggested driving distances from its user markets. (The Guidelines, Section I.7.5 indicates a driving time from the market for destination resorts of from 2 to 6 hours.)
8. Vancouver International Airport is an hour and a half from Garibaldi Resort, and consequently, well within the CASP Guidelines (2 to 3 hours as indicated in the Guidelines, Section I.7.5).
9. Over the proposed fifteen-year project development, Garibaldi Resort will construct accommodations totaling 22,846 bed units.

1.3 Study Area Boundary

The change in majority shareholders in 2002 necessitated a change in the resort base area and ski area planners to meet the vision of an all seasons resort with associated recreation amenities to ensure the financial success of the resort. To accommodate this new vision, the study area was expanded to approximately 4,901 hectares (12,112 acres) to include two golf courses adjacent to the southern study area boundary. It should also be noted that the LWBC Master Plan terms of reference acknowledged that the study area in “*the proponents application covers 3,500 hectares while the study area as outlined in “the Interim Agreement covered approximately 2,550 hectares”*”. It is also recognized that the Commercial Recreation Area (CRA) will be considerably smaller than the total study area.

The new Master Plan development concept includes approximately 1,850 ha (4,571 acres) of skiable terrain, 130 ski/snowboard trails, 25 lifts, a network of multi-use trails, and 3 on-mountain guest service facilities. It also includes hotel/resort and

commercial/resort services, multi-family and single family residential and two 18-hole golf courses.

In summary, since submission of the March 1996 Expression of Interest by Garibaldi Alpen Resorts (1987) Ltd., the vision of the resort has been continuously refined to reflect current trends in the skier market and to provide essential elements of a "four seasons resort" that ensures the long-term economic viability of the resort development. Furthermore, even though GAS Inc. has proposed that the study area be expanded to reflect the four season amenities, the amount of potential developable land to be purchased fee simple has decreased from the December 1997 EOA submission.

1.4 Site Mapping

The Mountain Master Plan was generated from 1:5,000 scale topographic mapping with a 5-metre contour interval. The base are mapping of the village was completed with a 1 m contour interval.

1.5 Prior Rights

Two tenures are recreational. The Black Tusk Snowmobile Club holds a License of Occupation for the use of 0.78 hectares and buildings in the west-central portion of the project study area. This tenure has been renewed annually. Discussions with representatives of the Black Tusk Snowmobile Club have resulted in identification of potential tenure conflicts and discussions around potential conflict resolution. Discussions are ongoing.

The second recreational tenure, in the form of a Lease for a Recreational Cottage Site, encompasses 0.9712 hectares in the north-western portion of the study area. This tenure expires on January 31, 1999 but has been renewed annually. Meetings with Don Worthington, the lease holder concluded with Garibaldi at Squamish Inc. (GAS Inc.) sending a letter to Don Worthington stating that "at this point in the planning process, GAS Inc. does not see any conflict of your tenure area in relation to our proposed mountain and base resort facilities and use assuming we can come to some mutually agreeable mode and location of access."

There is a mineral lease along the Brohm Ridge. DL 7904, staked in 1995, is a talus stone quarry located at the north end of the proposed village and includes part of proposed novice lift N. The mineral lease is owned by Donald Garfield Fraser under mining lease tenure # 365797. The lease extends for 30 years to 2028. Typically, Mr. Fraser (Northwest Landscape Supply) removes surface stones with excavators 1-2 times per year over a 2-3 week period. During 2002 the stone was removed once in June and again in November. Mr. Fraser stated that the stone supply from this operation may only last another 10-15 years.

Discussion with Mr. Donald Garfield Fraser on April 22, 2003 indicated that he does not perceive a conflict between the mountain/resort development and his mining operation. Presently, he supplies the stone to home builders in Whistler which is used primarily for

outside surface treatments. It was suggested to Mr. Fraser that it is the intent of GAS Inc. to meet with Mr. Fraser to discuss his mineral lease workings and accommodate his mining activity within the resort development. It was also acknowledged that access will continue to be provided to his mining lease throughout the development of Phase 1 and beyond, unless some other arrangement is agreed to between both parties. This arrangement was acceptable to Mr. Fraser.

VOLUME 2 - MOUNTAIN MASTER PLAN

2.1 Summary of Mountain Facilities

The mountain development will occur entirely on Crown lands (Figure IV-1). Of the 4,901 hectares (12,112 acres) Garibaldi Resort Study area, approximately 1,850 hectares (4,571 acres) are required for establishment of the proposed ski area. Total skiable area is estimated to be between 1,000 and 1,200 hectares. The 124 developed ski trails proposed in this master plan account for total of 675 hectares (1,668 acres). The remaining terrain is made up of open bowls and tree skiing areas. The remaining Garibaldi Resort Controlled Recreation Area will be used for commercial and real estate development as well as other resort recreational amenities (e.g., golf, trail networks, etc.).

Proposed lifts include 2 enclosed gondolas, 1 cabriolet gondola, 12 detachable chairlifts, 5 fixed grip chairlifts, 3 real estate fixed grip access lifts and 2 surface lifts. The proposed lift system will provide a total vertical drop of approximately 1,215 metres (3,986 feet) and will support a comfortable carrying capacity of 15,250 skiers.

In addition to alpine skiing, the mountain development area will be used for Nordic skiing and snowshoeing in the winter, and lift rides, hiking, interpretive trails, site-seeing, mountain biking, horseback riding, dining, festivals and events, etc. during the summer. Trail networks include loops on the top of the mountain, taking advantage of the scenic views and gentle slopes of Brohm Ridge. These trails will be staged from the North Summit at the top of the gondola (Lift L). In addition, more challenging routes are provided up and down the mountain, taking advantage of the mountain work roads network. These trails may be used for hiking, horseback trail riding, and mountain biking. The on-mountain routes are connected to a multi-use trail, which accesses the village and all residential areas.

There will be 2 base area day lodges providing all ski-related guest services. The village facility will be between 8,549 and 10,842 sq. m., and includes a 2,131 seat restaurant. The guest services at the day skier base area will be between 4,480 and 5,688 m², and will include a 343 seat restaurant. A small staging area, providing tickets and rest rooms, will be located at the base of Lift R for the convenience of guests staying in adjacent real estate.

Insert Figure IV-1 from SE Group

Figure IV-1 Garibaldi at Squamish Mountain Master Plan

There will also be 3 on-mountain lodges, at North Summit, South Summit and North Brohm Ridge. The lodge at North Summit will include a 1,218 seat restaurant, rest rooms, retail, and a ski school registration desk, and will be between 2,812 and 3,436 sq. m. The lodge at South Summit will include a 984 seat restaurant, rest rooms, retail, and a ski school registration desk, and will be between 2,272 and 2,777 m². The North Brohm Ridge lodge will include a 559 seat restaurant, rest rooms and retail, and will be between 1,432 and 1,810 m².

Garibaldi Resort will have five on-mountain ski patrol facilities. The ski patrol headquarters will be located at North Summit. Duty stations will be located at South Summit, North Brohm Ridge and at the top of Lift K and Lift D. There will be first aid facilities located at the village and the day skier base area.

The build-out plan for Garibaldi Resort's snowmaking system provides coverage for approximately 120 hectares of alpine terrain. The emphasis of the snowmaking program will be coverage for low elevation trails, coverage for critical trails that return to the resort village, high use/critical connections, and coverage for the terrain that provides return routes from each of the mountain top restaurants.

Garibaldi Resort's mountain maintenance facility (1,000 sq. m.) is located near the intersection of trails G12, G14 and B7 (see Figure IV-1), a location with all weather road access and snow frontage. In addition, a 550 sq. m. on-mountain maintenance facility will be located south of trail B7 at the 1,435 m elevation.

Installation and maintenance of most of the lift terminals and all of the on-mountain guest service facilities at Garibaldi Resort will necessitate the construction of access routes. A total of 17.5 km of existing logging roads, providing access to the North and South summits, will be improved and used for construction and on-going maintenance. In addition, 17.9 km of new mountain work roads will be created; 8.4 km of these proposed roads will be along skiways.

The Mountain Master Plan (Figure IV-1) was generated from 1:5,000 scale topographic mapping with a 5-metre contour interval.

Throughout the development process, expansion of the resort must be carefully coordinated to maintain balance among skier demand and the mountain capacity (e.g., lifts and trails). In addition, the development plan must ensure that adequate support equipment and facilities (e.g., day lodge services and facilities, grooming machines, utility infrastructure, and parking) accompany the mountain development at each phase of construction. A carefully balanced mountain and support facility development program will ensure a sustainable resort operation – helping resort management safeguard the financial performance of Garibaldi Resort.

It is anticipated that Garibaldi Resort would be developed in three initial phases followed by longer-term build-out of the resort (see Tables 2-1 to 2-3). This schedule is predicated upon resort operations that allow for the realization of the resort's visitation and budget projections. Economic constraints, or yet to be identified business development

opportunities, may lengthen or accelerate the phasing of improvements. It is most likely that subsequent phases of development will be triggered when the resort achieves a utilization rate ranging from 35 to 40 percent.

**Table 2-1 Garibaldi Resort Mountain Master Plan
Lift Specifications – Phase 1A**

Map Reference	Lift Type	Top Elev. (m)	Bot Elev. (m)	Vert. Rise (m)	Horiz. Length (m)	Slope Length (m)	Avg. Grade (%)	Hourly Capacity (persons/hr)
M	DC6	1,558	1,011	547	5,187	2,283	25%	1,200
N	C3	1,112	1,044	68	428	438	16%	600
O	DC6	1,740	1,475	265	998	1,050	27%	1,200
R	DC4	1,556	1,148	408	2,184	2,259	19%	1,200
W	C3	1,282	1,020	262	1,260	1,312	21%	1,800

**Table 2-2 Garibaldi Resort Mountain Master Plan
Lift Specifications – Phase 1B**

Map Reference	Lift Type	Top Elev. (m.)	Bot. Elev. (m.)	Vert. Rise (m.)	Horiz. Length (m.)	Slope Length (m.)	Avg. Grade (%)	Hourly Capacity (persons/hr)
G	DC4	1,521	890	631	1,883	2,016	34%	1,800
H	DC4	1,740	1,475	265	1,250	1,278	19%	1,800
M	DC6	1,558	1,011	547	2,187	2,283	25%	1,800
N	C3	1,112	1,044	68	428	438	16%	1,200
O	DC6	1,740	1,475	265	998	1,050	27%	2,400
R	DC4	1,556	1,148	408	2,184	2,259	19%	1,800
W	C3	1,282	1,020	262	1,260	1,312	21%	1,800

**Table 2-3 Garibaldi Resort Mountain Master Plan -
Lift Specifications – Phase 1C**

Map Reference	Lift Type	Top Elev. (m.)	Bot. Elev. (m.)	Vert. Rise (m.)	Horiz. Length (m.)	Slope Length (m.)	Avg. Grade (%)	Hourly Capacity (persons/hr)
E	DC4	1,728	1,137	591	1,539	1,681	38%	1,800
G	DC4	1,521	890	631	1,883	2,016	34%	2,400
H	DC4	1,740	1,475	265	1,250	1,278	19%	2,400
K	DC4	1,782	1,608	175	761	786	23%	2,400
M	DC6	1,558	1,011	547	2,187	2,283	25%	2,600
N	C3	1,112	1,044	68	428	438	16%	1,200
O	DC6	1,740	1,475	265	998	1,050	27%	2,600
P	C3	1,481	1,175	306	767	855	40%	1,800
R	DC4	1,556	1,148	408	2,184	2,259	19%	2,400
T	C3	1,143	1,038	104	661	678	16%	1,800
U	C3	1,200	1,041	159	436	486	36%	1,800
W	C3	1,282	1,020	262	1,260	1,312	21%	1,800

Source: SE Group

The recommended development sequence is designed to maintain a balance among all of the resort's components, while at the same time meeting the future, year-round, recreational needs of the public. Each phase features built-in flexibility, which provides management with the option of extending the implementation period to reflect key market and financial conditions. Accordingly, the components of any particular phase may be completed over a one- to three-year time frame, or longer if necessary. Additionally, certain components of the improvement program may be initiated outside of the proposed phasing sequence.

VOLUME 3 - RESORT BASE AREA

The Garibaldi resort base development is proposed as a state of the art world-class destination resort with year around recreational opportunities, full service guest amenities, a range of private and public accommodation choices, and supporting retail commercial services. The Garibaldi resort base development has a prime location that is centrally located within the Sea to Sky Country and southwestern British Columbia. It will be sensitively planned and developed to take advantage of the great natural beauty found on the site and within the surrounding region. The Garibaldi resort base development is intended to be a sustainable development that carefully balances environmental, economic, and social values.

The Garibaldi resort base development is will provide a full range of recreational activities, attractions, and services to its guests and residents. These include wintertime activities such as skiing, snow boarding, Nordic skiing, ice-skating, snowshoeing, and various other snow play activities. At build-out the ski area will have the capacity to comfortably handle over 15,000 users at one time on a varied trail network. Wintertime on-snow activities will be the initial attraction to Garibaldi at Squamish, however, the development of a true destination resort experience requires a rich and full complement of recreational activities will be provided during summer and shoulder seasons. The proposed Master Plan anticipates the development of numerous summertime activities including golf, biking, hiking, fishing, rock climbing, camping, equestrian activities, racquet sports, and more. Two championship golf courses and associated practice facilities are proposed to be located on either side of Highway 99. The golf courses will be an important focus of summertime recreational activity within the resort and provide further “critical mass” to the development of the Squamish area as a viable golf destination. The Cat Lake recreational area lies within the proposed Study Area for the resort. It will remain as a public day use and overnight camping facility and enhanced by improvements to parking and access. Within the Village Centre a Cultural/Recreational Area has been designated for the development of a wide range of possible outdoor cultural venues and recreational activities. These include a mountain amphitheatre, aqua center, fishing pond, putting course, alpine slide, climbing rock/walls, children’s play area, to name just a few. In addition, an Adventure Centre would be established in the resort to provide organized recreational activities and outings for both individuals and groups. The Adventure Centre would utilize on-site recreational facilities as well as the numerous recreational opportunities within the entire Sea to Sky Country.

These activities are further enhanced by on site retail/commercial uses including dining establishments, bars, and clubs that will provide goods and services for resort guests. A total of approximately 41,800 square metres of retail, commercial and guest services facilities are proposed. Additional commercial uses will be provided in hotel lobbies, as well as space for meetings and conferences. Two primary commercial/retail locations have been designated at Garibaldi at Squamish. One at the resort entrance from Highway

99 will offer highway-oriented services, a variety of resort guest services such as real estate sales, and a proposed Squamish Nation Cultural Centre. The greatest concentration of retail/commercial and guest services, as well as accommodation units, will be located in the proposed Village Centre that is located on a large south facing bench at about 1,100 metres in elevation. The Village Centre will be the focus of community life at the Garibaldi resort base development. It provides easy and convenient access to all of the mountain recreational activities. The Village Centre will include a wide variety of retail/commercial uses oriented along the numerous street frontages, pedestrian walks, and plaza spaces. It will have a large number of dining establishments of all types, many with outdoor terraces and decks. The plaza areas will offer possible venues for events, cultural activities and programmed entertainment. Public art displays, water features both natural and manmade, site furnishings and attractive and colourful landscape will enliven Village Centre areas. The Village Centre will be an active, busy, entertaining, experience year around. In addition to on-site commercial amenities, resort guests and residents will have available to them the many commercial opportunities that abound in the entire Sea to Sky Country.

The Garibaldi resort base development will include numerous residential neighbourhoods each with a unique character and focus (see Exhibit A). Most neighbourhoods are oriented to recreational activities and local natural features. Many of the residential units will be ski-to, ski-from or be located immediately adjacent to golf fairways. They will include a mix of residential units; single-family homes built on individual lots; clusters of multi family duplexes, townhomes and row houses; units within resort condominium buildings that include a range of guest amenities; and hotel rooms and suites within full service hotels. As currently proposed, the Master Plan for Garibaldi resort base development anticipates the construction of 1,480 single-family homes, 825 multi family units, 1,717 resort condominiums, and 1,717 hotel rooms. These represent a total of 22,478 total bed units at build-out. It is expected that all the hotel rooms and a large proportion of the resort condominium units will be available as 'warm beds' that are available on a daily or weekly rental basis for destination visitors. Bed units will be phased to with the development of resort facilities like the ski lifts and golf courses to insure a balance throughout the development process.

Table 3-1 outlines the ranking of Garibaldi in terms of allowable bed units for the resort. This ranking is based on the Bed Unit Calculation Model included in the GASAD.

Table 3-1 Calculation of Allowable Bed Units for a Destination Resort

FACTOR	RANKING	NUMERIC RANK
Ski Terrain	Close to Ideal	3
Skier Density per Hectare	30-40/ha	4
Accessibility	Less than 3 Hours from Market	6
Ski Area Access	Average	2
Population within 250 km	500,000	5
Unique Qualities	National Attraction	2
Year-round Experience (within 30 minutes)	Excellent	4
Potential Length of Season	130 to 150 Days	3
Type of Snow	Dry 50 to 75% of Season	3
Weather Conditions	1,500 to 2,000 Hours of Sun	3
Express Lifts	Less than 50% of Total	2
Need for Employee Housing	25% Beds within 15 Minutes	3
Total Ranking		40

According to the CASP Guidelines Bed Unit Calculation Model, a ranking of 40 will allow for development of up to 130% of the Comfortable Carrying Capacity for a Destination Resort. This equates to 19,825 bed units. In addition, the development of the other major amenities at the resort such as commercial activities, golf courses, equestrian facilities, non-skiing outdoor recreation facilities and programs, conference facilities, trails, etc., justify an additional “other visitor/guest” increase of 15% for a total allowable bed unit count of 22,798.

Architectural and design character at the Garibaldi resort base development will be maintained by Design Guidelines to be developed in a collaborative process prior to the initiation of the first phase of development. These Guidelines will address, site development, landscape, architectural style and character, signage, and lighting, within the resort. The Guidelines will strongly encourage design and materials that complement the rugged environment and the history and culture of the region. The intent is to provide design direction without compromising design creativity.

The Garibaldi resort base development will provide a diverse range of opportunities for guests and residents. It will celebrate and enhance the local and regional environment. The detailed Master Plan describes a project that is intended to be sustainable, flexible and able to meet the challenges and changes of 21st century life and leisure.

Insert Exhibit A from Perkins

Exhibit A Key Map

Phasing of resort infrastructure and development at Garibaldi at Squamish will be carefully and continually evaluated to ensure a balance between ski area capacity, measured by lifts, trails and facilities, and bed unit development including the various residential unit types. Initial phases of development such as Phase 1A (Exhibit B) may employ temporary facilities for day use guests that will be replaced in later phases as permanent facilities in another location, (for example in Area 9, the Village Centre). Initially residential development will be heavily weighted in favour of single-family lots and homes appealing to recreationally-oriented second homeowners and some permanent residents. Later infill phases will see the development of higher density multi-family, resort condo and hotel units, as the resort expands, develops a growing reputation, and attracts greater numbers of destination guests. In addition to basic guest services, retail and commercial uses will be phased to meet actual demand. Employee housing will be developed as the resort grows. Initial employee housing demand will be limited to seasonal demands of the ski area operations but will grow with the development of year around activities and destination type accommodations and services. The phasing shown in Table 3-2 is for discussion purposes at this time and may change as development of Garibaldi at Squamish progresses, and as costs, market conditions, and product demand, are better known.

Table 3-2 Garibaldi at Squamish Project Phasing

NAME	YEAR	LIFTS	DEVELOPMENTPODS	CCC	BU's
Phase 1A	1	R, O, W, N	11, 10B		
	2	M	Infill 11, 10B, Start 9		
Phase 1B	3	G	Start Area 13, Infill 9, 11, Start 8		
	4	H	Infill 13, Start 1, Infill 8, 9		
Phase 1C	5-8	U, E, K, P, T	Infill 1, 9, Start 10A		
			Subtotal of Phase 1	9,500	14,203
Phase 2	9-15	Balance of Lifts	Balance of Areas 2,3,4,5,6,7 & Infill Rest		
			Total	15,250	22,478

INSERT Perkins Exhibit B

Exhibit B Phasing Plan

VOLUME 4 - WASTE MANAGEMENT, ENERGY AND WATER SUPPLY

4.1 Energy Supply-Electrical

In determining the principal source of electrical energy for the Garibaldi at Squamish Resort, several options were considered as alternatives to utilizing B.C. Hydro. These options included the contemplation of “alternate energy sources” such as a private hydroelectric generation facility, a wind-farm power generation facility and other “green power” alternative concepts.

After a careful review of each of the alternatives it was determined that, given the anticipated electrical demands, issues of reliability related to the electrical source and the economic feasibility of each, B.C. Hydro was the only viable solution for a primary source of electrical energy for the Garibaldi Resort development. It should be noted that the resources of the area offer opportunities to consider developing an “Independent Power Producer” (IPP) option as a supplemental source of electrical energy but not as the principal source.

The B.C. Hydro primary feed to the development site will originate from their Cheekye substation in North Brackendale. It will service the site through a high voltage overhead transmission feeder within an existing B.C. Hydro right-of-way. The residential and commercial development sites will be serviced from a main distribution trunk that will parallel the main connector road through the resort. Individual development nodes will be serviced through under-ground distribution networks tapped off the main distribution trunk. The transmission and distribution systems described above will be owned operated and maintained by B.C. Hydro.

The mountain operations facilities will be serviced through dedicated taps off the main distribution trunk. This system will be comprised of a high voltage under-ground distribution network and grade level pad mounted equipment. Routing of the network cable paths will be dictated by workable terrain, proposed ski run clearing and the location of the systems to be powered. This high voltage network will be owned operated and maintained by the Garibaldi Resort group.

A strong “power smart” / “energy conscience” theme will prevail in the detailed design of the individual systems and facilities within the resort. Alternative resources such as geothermal heating will be carefully considered in the engineering stages of the development. Pursuing the philosophy of a “green” oriented community will be a primary focus in the resort design.

4.2 Energy Supply-Gas

It is proposed that the Resort be serviced with gas. Gas would primarily be used in residential and commercial buildings for heating and cooking. Natural gas is not presently available, therefore a propane gas system is proposed. A phased in centralized propane storage system is proposed using large tanks similar to Whistler, Furry Creek, Sun Peaks and other locations in the Province. The system could be switched to natural gas, if and when the pipeline is extended north of Squamish or it could continue being operated as a propane system indefinitely.

A gas utility would be formed and regulated by the BC Utilities Commission. The Resort would contract the responsibility of operating the gas utility to a company such as B.C.G. Services who presently operates other similar systems in the Province.

4.3 Waste Management

4.3.1 Solid Waste

Garibaldi Resort will endorse the principles of the Squamish Lillooet Regional District (SLRD) Solid Waste Plan by proactively cooperating with Squamish and the Regional District and in setting their own waste management strategies to minimize residual waste production. Garibaldi can match the Regional District's waste reduction by offering the same waste reduction initiatives within the Resort in coordination with the Regional District.

It has been established that the Squamish Landfill could be expanded and operated until approximately 2030. It is anticipated that the residual waste from Garibaldi Resort would be accepted at the Squamish landfill. Garibaldi Resort could be expected to generate approximately 13,600 tonnes of municipal solid waste per year. This will reduce the anticipated landfill life expectancy, but not enough to warrant the consideration of an alternate disposal location.

The Regional District has indicated that composting and construction waste are key areas that they would like to see addressed by Garibaldi Resort. A study was completed for the SLRD by Gartner Lee (May 2002) that recommended the implementation of a comprehensive composting operation for the southern portion of the Regional District. Carney Waste Systems have purchased land for the construction of a composting facility. Their plan is to have a composting system in operation in 2004. Another study is currently underway to address the reduction of construction and demolition waste disposal. Garibaldi Resort will accommodate the recommendations of that report.

Curbside garbage collection is not recommended for Garibaldi Resort in order to avoid animal/human conflicts. Large waste generators will likely haul directly to the materials handling facility in Squamish or the Squamish Regional District landfill. Transfer station drop off depot sites can provide safe temporary storage of materials generated by smaller waste generators and for single and small multi family dwellings (less than 10 to 12 units). One depot located along a high traffic area should be sufficient to service the

Resort. Materials diverted from the disposal stream will match those of the Regional District recycling and composting programs.

4.4 Liquid Waste Management (Sewage)

4.4.1 Introduction

The Project Application submitted in January 1998 considered two treatment and disposal options "Connect to the District of Squamish Mamquam Plant with discharge to the Squamish River" and provide "On-site treatment with discharge to the Cheakamus River". The preference was the former with annexation to the District. This section does not deal with the issue of governance.

Since the last Project Application government regulations pertaining to sewage discharges have changed in BC. Any new discharge, or significant revision to existing Permits, must register under the BC Municipal Sewage Regulations (MSR). These regulations were promulgated to provide protection to the environment and public health.

Water conservation is a fundamental principle that will be universally practiced in order to minimize the quantity of wastewater that will require treatment and disposal back into the environment.

The magnitude of this development does not lend itself to the use of on-site septic systems, except possibly in the case of remote facilities, such as elevated mountain restaurants. In other words, a community sewer system will serve virtually 100% of the development.

Based on a maximum day overnight guest and resident population estimate of 22,846 and 14,000 day staff and skiers, and the commitment to water conservation, the estimated maximum daily flow is 5,060 m³/d. The average annual flow projection is 2,200 m³/d.

The conventional sewer collection system is recommended over the alternative system (which includes a septic tank on each property) to avoid the potential for septic odours and the cost of individual tanks. The sewer system will be designed to deliver flow to one treatment plant.

Three common issues for each option considered are peak loading, phasing and sludge. Peak loading is proposed to be handled by an equalization tank that will distribute the organic and hydraulic loads evenly over a 24 hour period. Phasing will be handled by selecting a modular-type treatment process. As more capacity is required because of increased development, then additional modules will be constructed. Sludge generated from the treatment process will be mechanically dewatered to an economically truckable state so that it can be hauled to a nearby composting operation.

The disposal of treated effluent may be practically accomplished to either water or land, as follows:

- | | |
|-------|-----------------------------|
| Water | - Squamish River |
| | - Cheakamus River |
| | - Cheekye River |
| Land | - Rapid Infiltration Basins |
| | - Snowmaking |
| | - Golf Course Irrigation |

Rapid infiltration basins were examined in some detail through on-site test pits around Development Area 4. The soils are not very percable and too much area is required. Therefore, this method of disposal is not recommended. Making snow with treated effluent was also considered, but rejected primarily because of significantly higher costs compared to other options with no commensurate environmental benefit.

Effluent irrigation of the golf courses is a practical alternative in combination with a river disposal option. It is not practical or cost effective as a total disposal solution because of the large winter storage lagoon required to hold effluent during non-irrigation periods. Effluent irrigation is envisioned to be part of the Cheekye River disposal option, but could also be part of the Cheakamus River option as well.

4.4.2 Evaluation of Options

The three different rivers were considered as separate disposal options. Each is discussed briefly below.

Option 1: Connect to District of Squamish Mamquam STP/Squamish River

This option requires a large aerated equalization facility to average the flows over the entire day. Chemical addition is needed to prevent corrosion and odour problems developing in the 9,400 m long trunkmain. A pump station is required to lift into the treatment plant. The Mamquam STP and disposal facilities would need to be upgraded to accommodate the development's flows. It is expected that if Garibaldi were to connect, then the District of Squamish would be required to register under the MSR. This option is estimated to be the highest capital cost.

Option 2: On-Site STP/Cheekye River and Spray Irrigation

This option incorporates a treatment plant at the Resort with discharge to the Cheekye River and reuse on the golf courses. The MSR requires a minimum 40:1 dilution in the river - to ensure this dilution ratio does not drop below this value, a portion of the treated effluent will be directed to storage in golf course ponds. An Environmental Impact Study (EIS) is required, under the MSR, to confirm the effluent quality. A 1,600 m long trunkmain is required to reach the Cheekye River. Based on reasonable effluent criteria this option is the least cost alternative.

Option 3: On-Site STP/Cheakamus River

This option is similar to that presented in the previous Project Application and assumes a very low level of phosphorus is required. An EIS is also required for this option as well. However, the low phosphorus requirement translates into a significantly higher treatment plant cost, which in combination with a 4,000 m long trunkmain makes this almost as costly as connecting to Mamquam.

4.4.3 Recommendations

Environmental protection and public health will be ensured by fulfilling the terms of the MSR. The primary recommendation is to select discharge to the Cheekye River with beneficial reuse of some of the effluent for irrigation the golf course(s) as the preferred method of disposal. It is further recommended that an EIS be undertaken to confirm the effluent criteria.

4.5 Water Supply

Water supply is required for potable use in the Resort as well as for residential and commercial irrigation, snowmaking on some of the ski runs and for golf course irrigation.

A strong water conservation philosophy will underpin the design and operation of the water system. The Conservation Plan includes mandatory use of low volume plumbing fixtures, severe irrigation restrictions and other demand management techniques. This approach will minimize the amount of water used and the impacts on the environment.

On an annual basis at build-out the Resort will require approximately 800,000 m³ for potable and residential and commercial irrigation, 500,000 m³ for snowmaking and 300,000 m³ for golf course irrigation for 36 holes.

Surface water from runoff above the Resort is the preferred source of water supply. The proposed points of diversion are on tributaries to the Brohm River (Figure 18-1). The lower reaches of the Brohm are fish bearing and are considered highly valuable habitat. Minimum in-stream flow is required for fisheries, which dictates that snowmaking water be diverted into storage during freshet for use in late fall/winter.

By utilizing storage for snowmaking water, all Fisheries and Oceans and Provincial policies for minimum in-stream flow maintenance can be met. Golf course irrigation will utilize reclaimed treated wastewater from the wastewater treatment plant. Reuse for golf course irrigation will reduce fresh water diversion by 300,000 m³ per year and reduce treated wastewater discharge by an equivalent amount.

Treatment will be provided for potable water to ensure it meets the requirements of the BC Safe Drinking Water Regulation or the proposed Drinking Water Protection Act, whichever is in force at the time. Key elements for potable treatment will include filtration and disinfection. Chloramines will **NOT** be used for disinfection.

Insert Urban Systems Figure 18-1

Figure 18-1 Diversion Points

The potable water supply system will be capable of meeting the Maximum Day Demand during a 1 in 25 low runoff year.

The water distribution system will be designed to service the Development Areas over a considerable elevation change. Treated water storage reservoirs and pressure reducing stations between pressure zones will maintain service pressures between 207 kPa (30 psi) and 683 kPa (99 psi) while providing balancing storage for peak hour demands and fire flows in general conformance with Fire Underwriter's Survey (FUS).

VOLUME 5 – ROAD DESIGN, ACCESS AND TRAFFIC IMPACTS

Traffic projections have been generated from opening day through to build out. This traffic has been modeled on the access, at the Highway and through Squamish. The traffic characteristics result from a combination of: day skiers, destination skiers (stay at the resort), employees, residents, and pass-by trips. Variations for time-of-day, day-of-week, month, and growth over time have been accounted for.

As shown in Figure 5.0-1, the access will connect to Highway 99 one kilometre north of the Alice Lake Park intersection, with an underpass and ramps. A main collector extends northeasterly and climbs to the permanent snow line. Secondary collectors and local roads extend through the development areas. Design criteria establish the geometric parameters for this hierarchy of road classifications.

The road network is the result of planning iterations to meet the objectives. The Highway connection suits an initial commercial node at the Highway (area 1); which serves as the entrance to the resort. The roads provide route throughout the resort, with overlapping lifts/ski runs, golf links and a trail system. Thereby, creating ski-to/ski-from, view, and golf lots which are integrated with higher density commercial nodes

Insert Figure McElhanney Figure 5.0-1

Figure 5.0-1 Garibaldi Resort Road Network Plan

VOLUME 6 - GEOTECHNICAL ASSESSMENT

The geotechnical assessment of the Garibaldi at Squamish Project has been carried out in general conformance with the Project Report Specifications, as amended by the Environmental Assessment Office to July 1988.

The assessment is based on terrain analysis of 1:10,000 and 1:20,000 scale aerial photographs and site reconnaissances carried out since 1993. No systematic field checking of a large proportion of the mapped terrain polygons has been carried out, as required to be in complete conformance with the BC Forest Practices Code Guidebook, but considering our familiarity with the study area, we consider that the terrain mapping and interpretation are suited to project planning purposes.

Much of the terrain in the study area is bedrock controlled and extensive areas of exposed bedrock exist. Cliffs and talus slopes, presenting a potential rockfall hazard, do exist, but the current Master Plan minimizes the impact of this potential hazard on proposed residential and commercial areas. Debris flows occur in some of the creek channels. Snow avalanches are not likely to reach the access roads except, perhaps, at the lower limit of run-out zones on localised road segments. The Brohm Ridge Linears, located along the eastern boundary of the project area above the Cheekye River, will not be affected by the development and will have no effect on the development, except for the possibility of progressive slope deformation affecting the foundations of one ski lift. Mt. Garibaldi is currently considered to be a dormant volcano and poses no realistic risk to the development.

Our overall assessment of risk posed by geotechnical hazards is that there is no unacceptable risk to the development shown on the current Master Plan. Detailed field assessment will be required in some areas prior to construction, together with due-diligence geotechnical engineering design.

The geotechnical assessment also included consideration of the feasibility of potable and snow-making water reservoirs at 5 locations in the project area. All are considered feasible, subject to geotechnical inspection in snow-free conditions.

Generalized recommendations were also provided for geotechnical parameters used for road design, including cut and fill slopes for soil and rock.

VOLUME 7 – ENVIRONMENTAL IMPACT ASSESSMENT

7.1 Baseline Resources

7.1.1 Surface Water Quantity and Quality

The project lies within the Cheakamus River watershed. Brohm River, a tributary to the Cheakamus River, is largely contained within the project boundary. Brook Creek, its major tributary, is entirely within the project boundary. Other streams that drain smaller parts of the proposed resort include Cheekye River, Swift Creek and Culliton Creek. The Cheakamus River near Brackendale has mean monthly flows that range from a low of 16.4 m³/s in March to a high of 78.8 m³/s in June, based on records for the years 1957 to 2001. Brohm River flows are estimated to range from 1.2 m³/s in August to 5.16 m³/s in May, with a mean annual flow of 2.86 m³/s.

Baseline water quality monitoring was conducted over four seasons in 1997 and 1998 in Cheakamus River, Cheekye River, Brohm River, Swift Creek and Culliton Creek.

The study area is characterized by very soft, near neutral water and highly variable levels of total suspended solids (TSS). Cheekye River and Culliton Creek drain the Warren Glacier. These streams had TSS levels ranging from <4 mg/L during winter low flows to over 1000 mg/L (Cheekye River) and almost 500 mg/L (Culliton Creek) in the late summer and fall. Brohm River and Swift Creek, which do not drain the glacier, had lower maximum and less variable TSS concentrations, ranging from <4 to 18 mg/L. Nutrients were characterized by relatively low concentrations of inorganic nitrogen (nitrate, nitrite and ammonia). Phosphorus levels were low in Brohm River and Swift Creek but higher in the glacier-fed Cheekye River and Culliton Creek. Average orthophosphate-phosphorus concentrations ranged from 0.003 mg P/L in Swift Creek to 0.010 mg P/L in Culliton Creek. The average orthophosphate concentration at both Cheakamus River sites was 0.005 mg P/L. Nitrogen:phosphorus ratios suggest that primary productivity in the Cheakamus River and Swift Creek is phosphorus-limited, while the Cheekye River, Brohm River and Culliton Creek may be nitrogen-limited.

7.1.2 Primary and Secondary Productivity

Surveys were conducted in 2000 and 2002 to establish baseline populations and communities of periphyton (attached algae) and benthic invertebrates in Cheekye River, Brohm River, Swift Creek and Culliton Creek.

Algal (periphyton) biomass, as measured by chlorophyll *a*, was relatively low. In 2000, average chlorophyll *a* concentrations ranged from 2.2 mg/m² at the upper Brohm River station (BR7) to 13.7 mg/m² at the downstream station in Culliton. In 2002, average

concentrations ranged from $<5.0 \text{ mg/m}^2$ at the upstream Culliton Creek station and the downstream Cheekye River station to 10.3 mg/m^3 at the downstream Brohm River station. These chlorophyll *a* levels are far below the British Columbia water quality guidelines of 50 mg/m^2 for recreation (aesthetics) and 100 mg/m^2 to protect aquatic life (effects on fish habitat).

Periphyton taxa (species or genus) were identified only in the 2002 samples. Total taxa richness¹ ranged from 15 at the downstream Cheekye River station to 30 at the upstream Brohm River station. Numerically, blue-green algae (Cyanophyta), including *Oscillatoria cf tenuis*, *Lyngbya* spp., *Nostoc* sp. and *Gloeotrichia cf echinulata* dominated the periphyton communities of all streams except Swift Creek. Blue-green algae typically are capable of fixing nitrogen and thus are well adapted to nitrogen-limited streams. In Swift Creek, the only Cheakamus River tributary that is phosphorus-limited based on the baseline water quality data, the dominant periphyton species were the red alga (Rhodophyta) *Audouinella* sp. and diatoms.

Benthic invertebrate communities were sampled at the end of August 2002. Both abundance and taxa richness of benthic invertebrates were relatively low. The total abundance (total numbers) of benthic invertebrates ranged from 203 animals per sample ($2025/\text{m}^2$) at the downstream station in Culliton Creek to 1336 animals per sample ($13,360/\text{m}^2$) at the downstream Swift Creek station. The average number of taxa per sample ranged from 16 in the lower Cheekye River to 29 at the upstream station on Swift Creek. The lower Cheekye River station and the downstream station on Culliton Creek had large, embedded substrate and high turbidity. They likely provide relatively poor habitat for benthic invertebrates.

The invertebrate communities in all the streams sampled were made up primarily of insects. The most common benthic invertebrate species included the mayflies *Baetis bicaudatus*, *Drunella dodsii* and early nymphs² of the family Heptageniidae; early stonefly nymphs of the family Chloroperlidae; and an unidentified species of water mite (Acari). These invertebrates were present at all the sampling stations and in over 70% of the samples. The mayfly *Rhithrogena* sp. and the stonefly *Taenionema* sp. were present at all sampling stations except the downstream site on Swift Creek (S2). All of the common mayfly and stonefly species/genera are considered intolerant of pollution.

7.1.3 Fisheries Resources

The Cheakamus River is an important tributary to the Squamish River for spawning salmonids. Species recorded as present in the Cheakamus River include chinook, chum, coho, kokanee, sockeye and pink salmon, cutthroat, bull, steelhead and rainbow trout, lamprey (general), Dolly varden char/bull trout, Mountain whitefish, prickly sculpin, sculpin (general) and threespine stickleback.

¹ the total number of unique periphyton identified to species or genus level

² larval forms that are too immature to show characteristics that identify the genus and species

Fish species recorded as present in Brohm River include chinook salmon, coho salmon, cutthroat trout, Dolly Varden char/bull trout, rainbow trout, sockeye salmon, and steelhead trout. An impassable falls is located 4.8 km from the confluence with the Cheekye River while numerous cascades create full/partial barriers immediately upstream of the existing logging bridge near highway 99. Previous sampling in a number of Squamish/Cheakamus River tributaries identified Brohm River as an extremely important contributor to the Squamish watershed's juvenile steelhead population.

Fish species present in Cheekye River include chinook salmon, coho salmon, cutthroat trout, Dolly Varden char/bull trout, rainbow trout, sockeye salmon, and steelhead trout. No recorded fish presence in Swift Creek is available. However, due to direct connectivity to the Cheakamus River, cutthroat trout, coho salmon, rainbow trout, steelhead trout, and Dolly Varden char/bull trout can be expected to occur within the lower portion of reach 1. Fish species recorded as present in Culliton Creek include Dolly Varden char/bull trout, rainbow trout and steelhead trout. Several obstructions to fish passage are present in this stream including impassable falls located approximately 0.3 km from the Cheakamus River.

Fish habitat assessments were conducted in 1996/97 and 2000 to determine fish presence, barriers to fish passage, sensitive zones, and special habitat features for each of the potentially affected streams within the vicinity of the project boundaries in addition to sections of the Cheakamus River. Fish and fish habitat surveys were conducted during both low and high flow conditions. Initial sampling in October of 1996 was conducted to assess fish distributions under high flow conditions in relevant streams; however, sample sites did not include Swift Creek or Cheakamus River. The September/October 1997 studies were conducted to facilitate an assessment of fish distributions under low flows and medium flow conditions. Surveys conducted in 2000 focused on low flow conditions and were carried out in mid September.

Fish sampling in lower Brohm River immediately upstream and downstream of Highway 99 and in the outlet of Brohm Lake resulted in the capture of rainbow/steelhead trout juveniles, cutthroat trout juveniles and coho salmon juveniles. Fish sampling conducted in Brook Creek, a tributary to lower Brohm River also resulted in the capture of juvenile rainbow/steelhead trout, cutthroat trout and coho salmon. Sampling conducted in upper Brohm River and an unnamed tributary to upper Brohm River in 1996, 1997 and 2000 resulted in no fish captured.

Swift Creek is known to frequently flow subsurface, significantly limiting its habitat value; however, despite its low flow regime in the lowermost reaches, field surveys confirmed the importance of Swift Creek as rearing habitat for salmonids. Both rainbow trout and coho salmon were observed in October 1997, while in September 2000 approximately 100 coho salmon fry were observed stranded in isolated pools. Access to upstream reaches, above the noted sightings within reach 1 is limited by an impassable falls at Highway 99. Fish sampling upstream of the bridge in reach 5 resulted in no fish captured/observed in any of the surveys conducted in 1996, 1997, and 2000.

Fish sampling in Culliton Creek during September/October 1997 and September 2000 resulted in the capture of rainbow trout, Dolly Varden char/bull trout, chinook salmon and coastrange sculpin in Reach 1. No fish were captured above Reach 1 in any sampling year. The presence of impassable falls located at 0.3 km from the confluence of Culliton Creek with the Cheakamus River limits anadromous fish populations to the lower creek.

Fish sampling conducted in the lower Cheekye in late October 1996 and September/October 1997 resulted in the capture of chinook fry and rainbow trout juveniles in Reach 2. Fish sampling conducted in Reach 3 during September 2000 resulted in the capture of cutthroat trout and rainbow trout. No fish were captured in any other reach. There are no recorded physical barriers to fish migration in the Cheekye drainage, but persistent turbulent flows and flashy violent floods, in addition to the overall low quality of spawning and rearing habitat significantly limit the fisheries potential. Fish distributions are expected to be limited to the sections between the confluence with the Cheakamus River to the lowermost portion of reach 3.

7.1.4 Vegetation

Vegetation studies included Terrestrial Ecosystem Mapping (TEM) conducted in 1997 and a rare plant survey conducted in 2002.

Logging has occurred in the project area for approximately the last 150 years and presently is ongoing in several areas. The study area is mostly Douglas fir (62%) and Western hemlock (13%) dominated, covering a total area of 3692 ha.

According to the Sensitive Ecosystem Inventory (SEI) standards from the Ministry of Water, Land and Air Protection (MWLAP), three different ecosystem types that occur on the property might be considered sensitive:

- wetland;
- riparian; and
- older growth (average tree age >100 years).

Rare and endangered vascular plant species are listed by the Conservation Data Center (CDC), which categorizes them as either red-listed or blue-listed. Red-listed species include species that are extirpated in British Columbia, in danger of becoming extirpated, or threatened. Blue-listed species are species that are sensitive or vulnerable to human activity or habitat encroachment. The CDC compiled a rare element occurrence report (EOR) for the project site. There were no records of rare plants occurring within the study area, but the following rare vascular plant species were reported to occur in Garibaldi Provincial Park located to the immediate north and east:

- Nodding semaphoregrass (*Pleuropogon refractus*), blue-listed vascular plant – typically occurs in bogs, streambanks and lakeshores;
- Slender-fruit willowherb (*Epilobium leptocarpum*), blue-listed vascular plant – occurs in moist meadows and along streambanks in the montane to alpine zones; and

- Enander’s sedge (*Carex lenticularis* var. *dolia*), blue-listed vascular plant – typically occurs in alpine and subalpine meadows.

The Committee on the Status of Endangered Wildlife in Canada’s (COSEWIC) November 2002 “Species at Risk” list includes four species have some potential of occurring on the site due to suitable habitat. These species, which were not found during the rare plant survey, are:

- Tall bugbane (endangered);
- Phantom orchid (threatened);
- Vancouver beggarticks (special interest); and
- Giant helleborine (special interest).

During the rare plant survey, which was conducted in September 2002, the slender-fruit willowherb (blue-listed) was found along a rocky seepage area at approximately 1100 m elevation. The other rare vascular plant species discovered on the site was the Cascade parsley fern (*Cryptogramma cascadiensis*), a species previously known in B.C. only from the mountains south of Chilliwack and from the Revelstoke area. In addition to the rare vascular plants found in the study area a rare lichen species³, Methuselah's beard lichen (*Usnea longissima*) and a rare moss species, naked roundmoss (*Rhizomnium nudum*), were found in the study area. The lichen population was found on the eastern shore of Cat Lake Provincial Park. The moss was observed in a stand of old growth forest near the “Connector Road”.

Representatives of several rare plant communities were observed during the rare plant survey and the terrestrial ecosystem mapping survey, but the majority of them were young second growth. The most significant mature rare plant community observed on the site was Mountain hemlock/Amabilis fir – Blueberry site association (blue-listed). There were also remnants of Sitka spruce – Salmonberry (red-listed), Amabilis fir/Sitka spruce - Devil's club (blue-listed) and Amabilis fir/Western redcedar - Devil's club (blue-listed) observed adjacent to the major watercourses in the study area.

7.1.5 Wildlife

The *Project Specification Report* requested the following information on wildlife:

- Mountain goat surveys;
- Deer winter range surveys;
- Studies of Black Bear and Grizzly Bear;
- Bobcat, Cougar, Coyote and Wolf surveys;
- Wolverine surveys;
- Surveys to determine use of the area by non-migratory birds;

³ Tracking lists of non-vascular plants are still being developed for British Columbia. The lichen and moss mentioned here are considered rare in Oregon.

- Identification of Marbled Murrelet habitat;
- Harlequin duck survey; and
- Stream survey for Coastal Tailed frog adults and tadpoles.

Wolverine surveys are being conducted in late April 2003 while Harlequin duck surveys will be conducted in late April-May 2003 and reported separately in an amendment. The remaining survey and study results are reported in this document.

7.1.5.1 Mountain Goats

Mountain goat surveys were completed in winter 1996-1997, late summer-fall 2000 and spring-summer 2002. A summary of ENKON's Mountain Goats surveys within and adjacent to the Garibaldi at Squamish study area is as follows:

- During the winter, goats use Brohm Ridge's south treed slopes to access the Cheekye drainage fingers.
- In early May, goats use the northeast end of Brohm Ridge to enter Garibaldi Park from their winter range in the Cheekye drainage.
- Goats were not observed in the Cheekye headwaters or Brohm Ridge area from May until the first snows in November. Surveys to date suggest that the Cheekye and the Brohm Ridge areas are important to goats primarily as wintering habitat.
- Any goats observed by ENKON between May and November were located within Garibaldi Provincial Park, outside the project study boundary area.
- During late winter/early spring (March), all identified goats were confined to four areas at the forest/scree/cliff zones of the Cheekye and Brohm Ridge areas.
- The back of Culliton watershed and the very east end of Brohm Ridge, which connects the Cheekye watershed with Garibaldi Park, is used as a migration corridor by goats to access the Park for summer.
- There are two Mountain Goat populations associated with the project study site, the Culliton and the Brohm Ridge/Cheekye populations.

Based on the historical reports and ENKON's recent surveys, the Cheekye/Brohm Ridge Mountain Goat population has the following seasonal movements (see Figures 5-6 and 5 8):

- *Mid-November to Mid-April* - The Cheekye/Brohm Ridge Mountain Goat population overwinters in the headwaters of the Cheekye watershed and on the steep south-facing slopes of Brohm Ridge. The headwaters of the Cheekye drainage appear to be the most important winter habitat for goats. The goats make use of the forested rock cliffs on the south side of the ridge, the ridge crest and the open north-facing slopes.

Insert Figure 5-6 Mountain Goats

**Figure 5-6 Results of Mountain Goat Surveys by MELP, Don Blood & Assoc., and
Keystone Environmental**

Insert Figure 5-8 Mountain Goats

Figure 5-8 ENKON Goat Survey Results

- *Early November and late April* - The majority of goats migrate in and out of the over-wintering habitat. The movement corridor appears to be along the very eastern end of Brohm Ridge and west of the Warren Glacier. The migrational movement is timed with snow accumulation in the late fall (rutting season) and snow decline (calving) in the spring. The goats move into the winter habitat from Garibaldi Provincial Park after snow accumulates and out again as the snow declines in the Park.
- *Late-April to June* - This is the kidding time (birthing). The location for kidding areas has not been established, although the upper Culliton drainage and Garibaldi Mountain Provincial Park are likely locations.
- *June to October* - The vast majority of Mountain Goats in the area are found in Garibaldi Provincial Park. Although a few individuals remain in the Cheekye/Brohm Ridge area, most of the population moves to the western edge of the Park along the Table and associated ridge peaks.

7.1.5.2 Deer

Deer habitat surveys were conducted in May, June and September 1997 and July and September 2002 and February 2003. Surveys focused on potential winter range of deer in low elevation areas, since heavy snow accumulations at high elevations limit use. Wintering habitats have with very specific attributes including south aspects, old-growth forest and steep slopes. Deer sign on potential wintering habitat was recorded on several transects. The results showed that:

- key winter ranges for deer appear to be restricted to remnant old-growth Douglas-fir stands on steep, rocky, south to west-facing sites below the 700 m level;
- steep, low-elevation, south-facing slopes supporting second-growth forest had little evidence of winter use;
- good winter range is restricted in occurrence because of an extensive logging history on the site; and
- some deer appear to move upward as the snow line recedes.

The conclusion from the summer surveys is that Black-tailed Deer are associated with all vegetative areas of the study site from the base of the mountain to the summit meadows of Brohm Ridge. Deer do not appear to concentrate in specific areas.

The conclusion from the winter surveys is that Black-tailed Deer Areas considered of high and moderate value to wintering deer were identified in low elevation areas on south facing slopes (see Figure 5-22). In almost all of these areas, some or all components of known winter deer habitat (i.e., south aspect, old-growth, steep slopes) were present.

Insert Figure 5-22 Deer Winter Range

Figure 5-22 Black-tailed Deer Winter Habitat Suitability

7.1.5.3 Black Bears

Based on surveys conducted in 1996 and 1997, black bears appear to occur throughout the site, but concentrate in areas such as valley bottoms and hydroseeded road edges where food is readily available. In addition, habitats within the MH zone, particularly the logged sites, support dense blueberry stands and are likely good mid-summer to fall foraging areas for bears.

A seasonally active den, reported by local residents who use the Brohm Ridge area on a regular basis, is located just outside the property boundary at the northeast end of the site. Bears were seen in the vicinity of the den on several occasions during the 2002 surveys.

7.1.5.4 Grizzly Bears

Historical information collected from MWLAP includes seven sightings and known occurrences of Grizzly Bears in the vicinity of the project area between 1975 and 1998. All sightings were recorded north and east of Brohm Ridge and Garibaldi Peak, and south of Garibaldi Lake. Grizzly Bears and their sign were not observed in the study area during any of the baseline wildlife surveys.

The Garibaldi at Squamish Inc. study area belongs to the Squamish-Lillooet Grizzly Bear Population Unit (GBPU). The current population of Grizzly Bears in this GBPU is estimated to be twenty-seven.

The Garibaldi at Squamish Project study area falls within one of the several potential population linkages that may provide connectivity through the human-dominated landscapes of the Sea-to-Sky Plan Area. The Culliton Creek watershed was identified as an east-west linkage across Highway 99 between Squamish and Whistler. The linkage potentially provides a direct connection between the lower reaches of the Squamish River, which is known for supporting high concentrations of spawning salmon, and habitats in the vicinity of Garibaldi Lake. Grizzly Bears have been known to occur in both areas, but there have been no reports in the vicinity of Highway 99 within or near the identified linkage. The linkage is within the Squamish municipal zone near the junction of Culliton Creek and the Cheakamus River and that the viability of the linkage will largely depend on land use decisions by associated governing bodies.

7.1.5.5 Bobcat, Cougar, Coyote and Wolf

ENKON observed several Coyote during surveys of the project area. No sign of Bobcat, Cougar, or Gray Wolf was observed. Several Coyote are expected to utilize the study area on a regular basis. Populations of wide-ranging species such as Bobcat, Cougar and Gray Wolf are expected to be low on the site, consisting of a few individuals occasionally moving through the area.

7.1.5.6 Wolverine

Based on MWLAP historical data from 1970 to 1999, all Wolverine sign in the vicinity of the Garibaldi at Squamish Inc. study area has been recorded on and around the glaciers in Garibaldi Provincial Park. The Ministry reports seventeen Wolverine sightings.

Seven sets of Wolverine tracks were observed within the study area on three of ENKON's Mountain Goat surveys in 2002: An additional aerial survey is planned for late April 2003 with a specific focus on finding denning areas of Wolverine within and adjacent to the study area.

7.1.5.7 Small Mammals

A small mammal survey was conducted in 1997. Deer Mouse and shrews were the most abundant rodents captured, particularly in the second-growth habitats of the study area. Southern Red-backed Vole was moderately abundant at mid-to-high elevations in alpine parkland, old-growth forest, and regenerating stands. A single Water Shrew and a single Shrew-mole were found in pitfall traps in low-elevation floodplain habitats. The survey also identified summer burrows and scats of the Northern Bog Lemming and several Hoary Marmot burrows along Brohm Ridge. Other small mammals included Yellow-pine Chipmunks, commonly observed near rocky habitats and among shrubbery, and Common Pikas, observed on numerous occasions along talus slopes fringed with herbaceous growth. No additional small mammal surveys have been conducted or are proposed.

7.1.5.8 Birds

Bird surveys conducted in May and June 1997 identified 58 bird species. Most of the species are expected to nest within the project area. Breeding bird surveys conducted in July 2002 identified fifty-seven species. The most common species were American Robin, Chestnut-backed Chickadee, Dark-eyed Junco, Pacific-slope Flycatcher, Swainson's Thrush, and Winter Wren. Nine active and two inactive (old) passerine nests were found.

Surveys for Spotted Owl and Northern Goshawk were conducted in 1997 by broadcasting calls. No responses of Spotted Owls were detected, which is not surprising considering that this species has not previously been detected in the Squamish-Whistler corridor and habitats on the study site are primarily unsuitable second-growth forests. In addition, no goshawks responded to taped calls, although some habitats on the site appeared to be suitable for foraging. Northern Goshawks are primarily old-growth species and are likely absent or at low abundance on the site due to extensive logging.

Nocturnal and diurnal raptor surveys were conducted in 2002. Three owl species (Northern Saw-whet Owl, Great-horned Owl and Barred Owl) were recorded during the nocturnal survey. Only one raptor species, an adult Cooper's Hawk was located during the diurnal survey. Given that the bird was present on two days, the site may be within a Cooper's Hawk breeding territory.

7.1.5.9 Marbled Murrelet

A Marbled Murrelet survey was conducted in 1997. Locations were chosen where murrelets might be expected to fly up valleys from Howe Sound toward old-growth nesting habitat. No murrelets were detected on the survey. Although the extent of remaining old-growth forests at lower elevations of the study area is limited, a considerable amount of old-growth still exists in high elevation areas. Further studies will be conducted in late May or early June 2003 to document potential utilization of these areas by Marbled Murrelet.

7.1.5.10 Harlequin Duck

ENKON is planning to survey Harlequin Ducks in May 2003 by walking larger rivers (i.e., Cheekye and Brohm rivers, and Culliton Creek), and conducting a brief aerial survey of more inaccessible areas.

7.1.5.11 Amphibians and Reptiles

ENKON conducted general amphibian and reptile surveys in 2002. Four species of amphibians were captured, Pacific Tree Frog, the blue-listed Coastal Tailed Frog, Rough-skinned Newt and Northwestern Salamander. Reptiles observed included Common Garter Snake, Northern Alligator Lizard and Northwestern Garter Snake.

7.1.5.12 Coastal Tailed Frog

In September 2002, ENKON performed a survey for Coastal Tailed Frogs on all creeks associated with the proposed development. Tailed Frogs were only found within the headwaters of Brohm Creek. Watercourses where Tailed Frogs were found featured characteristically preferred habitat including cascading stream morphology (>8% gradient), a low amount of fine bed material (sand/fines), boulder clusters, and good stream riparian cover.

7.1.5.13 Habitat Suitability Mapping

In order to develop habitat suitability maps for various species of concern, species models and ratings tables were developed. The species for which habitat suitability mapping was conducted (as per the Project Specifications) included Mountain Goat, Black-tailed Deer, Black Bear, Grizzly Bear, Wolverine, Marbled Murrelet, Northern Pygmy-Owl and Western Screech-Owl.

7.2 Potential Impacts and Mitigation

7.2.1 Approach

The environmental impact assessment identifies the potential impacts of activities associated with the Garibaldi at Squamish project on various components of the ecosystem. The assessment addresses primarily the environmental effects associated with construction and operation of the ski runs, base area (residential and commercial

areas), infrastructure and access roads. Impacts associated with decommissioning are not assessed, since the project, once built, is expected to have a long operational life.

The general approach of the assessment is to focus on environmental components or indicators identified as being of management concern within the project area. These Valued Ecosystem Components (VECs) or indicators were selected based on scoping of environmental issues during the project application phase, issues raised in the Project Specifications and professional judgement.

7.2.2 Hydrology

Project activities that have the potential to alter the hydrology of area streams include:

- clearing forests for all aspects of the development;
- construction of impervious surfaces (e.g., buildings, roads); and
- withdrawal of water from two Brohm River tributaries for potable water and snowmaking.

Forest clearing can alter hydrology, causing increases in peak flows and baseflows. The effect on streamflows resulting from clearing for ski runs will not be significant as this clearing will not be extensive. Any effect of clearing for the base area developments and roads will be impossible to distinguish from the effect of creating impervious surfaces in these areas.

The creation of impervious areas (hard, non-absorbent surfaces) can significantly alter the hydrology of a developed watershed. However, even without mitigation the effect of the Garibaldi at Squamish base area would be minimal because total impervious area will be less than 6% of any watershed. Mitigation, in the form of infiltration devices will be incorporated into the design of the base area. Thus, the construction is not expected to have any significant impact on hydrology.

The project will require 1,612,000 m³ of water annually for domestic purposes, snowmaking and golf course irrigation. The preferred option for the water supply for all purposes except golf course irrigation is withdrawal from the headwaters of Brohm River. The preferred option for golf course irrigation is to use reclaimed water from the wastewater treatment plant. Two locations on tributaries to the Brohm River have been chosen as the preferred diversion locations.

A complete analysis of water supply requirements and effects on streamflows is presented in Volume 4 (*Waste Management, Energy and Water Supply*) and in the discussion of impacts to fisheries (below). Total project potable and snowmaking demands (1,312,000 m³) represent less than 8% of the annual discharge of the combined diversion locations (17 million m³). For Brohm River at the mouth the maximum percent of the monthly flow withdrawn will be 4.1%.

Mitigation measures to minimize effects on flows in Brohm River include:

- a comprehensive water conservation program to minimize both potable water and snowmaking requirements (Section 18); and
- a water withdrawal program designed to minimize changes in low flows and in the natural hydrologic regime.

With mitigation changes in the hydrograph at the mouth of Brohm River will be negligible.

7.2.3 Water Quality

7.2.3.1 Impacts during Construction

Potential sources of impacts to water quality and/or productivity during construction include:

- Erosion from areas cleared to construct roads, ski runs, base area, golf course and other facilities;
- Spills of vehicle fuels, oils and other hazardous materials such as concrete; and
- Nitrogen loss from explosives with subsequent runoff to surface waters.

With mitigation, none of these potential impacts are expected to be significant. A comprehensive sediment and erosion control plan will be developed for the construction of the ski runs, roads and base area. Likewise a spill prevention/spill response plan will be developed. Implementation of these plans will prevent significant impacts, although some brief instances of sediment release could occur.

Modelling of nitrogen losses from explosives shows that the potential nitrogen loss to surface water is 149 kilograms per year. Based on a total annual flow in Brohm River of 90,318,000 m³, this release translates to increase in the total nitrogen concentration of only 0.002 mg/L. Thus, nitrogen compounds in the river will not cause toxicity and will not stimulate primary productivity.

7.2.3.2 Impacts during Operation

Potential sources of impacts to water quality and/or productivity during resort operation include:

- Runoff from roads, parking lots, roofs, lawns and other developed areas (non-point source runoff);
- Spills or intentional discharges of hazardous materials into storm drains in the base area, including discharges from swimming pools and hot tubs;
- Runoff of chemicals used in for maintenance of the ski runs;
- Runoff of fertilizer or pesticides used on the golf courses; and
- Discharge of treated wastewater to the Cheekye River.

With mitigation, none of these potential impacts are expected to be significant. A stormwater/ non-point source plan has been developed for the project, and a fertilizer and pesticide management plan has been developed for the golf courses. Thus, there will be no residual effects from these sources

Chemicals to be used on ski runs include small amounts of fertilizer for firming the snow on racer courses and an inducer for snowmaking. The amounts of fertilizer nitrogen will be far less than the nitrogen potentially released from explosives. Thus, fertilizer use will not affect water quality. The snow inducer is a protein derived from a naturally occurring bacterium. It is neither toxic nor pathogenic, and it will not affect water quality.

During the detailed design phase a full Environmental Impact Study of the Garibaldi Wastewater Treatment Plant will be completed according to *Environmental Impact Study Guideline – A Companion Document to the Municipal Sewage Regulation*. However, a preliminary assessment was conducted. It showed that ammonia concentrations in the Cheekye River will meet provincial water quality guidelines at all times, including during a seven-day low flow. In addition, nutrients in the discharge will not cause significant increases in algal growth in either the Cheekye River or downstream in the Cheakamus River.

7.2.4 Fish Habitat

Potential impacts to fish habitat could result from:

- Encroachment of the development onto riparian areas;
- Stream crossings; and
- Water withdrawal.

However, due to the mitigation measures proposed, no significant impacts are anticipated.

7.2.4.1 Development Setbacks

Riparian areas will be protected by setbacks for residential and commercial developments, golf courses and ski runs. Table 7-1 shows the proposed setbacks:

Table 7-1 Proposed Setbacks for Different Development Activities

Development Activity	Stream Type	Setback from Stream
Residential Development	Lakes	30m Fisheries management and reserve zone (FMRZ)
Residential and Commercial Developments	Fish Bearing Streams	50m Fisheries Management Reserve Zone
	Non-Fish Bearing Permanent Streams	30 m Fisheries Management Reserve Zone
	Non-Fish Bearing Non-Permanent Streams	30 m Fisheries Management Reserve Zone
Golf Course Development	Fish Bearing Streams or Larger Streams Flowing into Fish Bearing Streams	15m minimum leavestrip
	Small streams that Provide Food and Nutrients to Fish Bearing Streams	5m minimum leavestrip
Ski Runs and Ski Lifts	Fish Streams with Average Channel Widths of >5<20m (S2)	50 m Total Reserve and Management Zone
	Fish Streams with Average Channel Widths of 1.5<5m (S3)	40 m Total Reserve and Management Zone
	Fish Streams with Average Channel Widths of <1.5m (S4)	30 m Total Reserve and Management Zone
	Non-Fish Streams with Average Channel Widths of >3m (S5)	30 m Total Reserve and Management Zone
	Non-Fish Streams with Average Channel Widths of <3m (S6)	20 m Total Reserve and Management Zone

7.2.4.2 Stream Crossings

Ski Runs

Even with the above noted riparian management zones and ski runs/lifts limited to non-fish bearing sections of tributary streams to Brohm and Swift Creeks, impacts associated with ski runs/lifts crossings of non-fish bearing streams (S5 and S6) could not be avoided. However, based on a total of ~200 ski run/lift crossings of S5 and S6 streams, the impacts are primarily limited to approximately 30 ski run/lift crossings. These crossings will require tree removal and topping of shrubs to <0.5 m in height. Vegetation topping to 2 m height will be required for trees below lift lines.

Roads

The development will strive towards meeting no-net-loss: net gain in fish habitat through protection of fish bearing watercourses and provision of habitat compensation for stream crossings of fish bearing sections of Brohm and Cheekye Rivers, Swift and Culliton Creeks and tributaries. The following summarizes the approach to stream crossings:

- Fish bearing sections of Brohm and Cheekye Rivers and Swift Creek mainstem and tributaries will not be enclosed or diverted.
- Clear span bridges will be used for all new crossings of fish bearing sections of Brohm River and tributaries.
- Clear span bridges and/or open bottom culverts will be used for road crossings of non-fish bearing sections of Brohm River mainstem and large (>3m width) non-fish bearing permanent tributaries.
- Habitat mitigation/compensation will be provided for loss of riparian habitat associated with the one bridge crossings over the fish bearing section of Brohm River.

7.2.4.3 Water Withdrawals

Water withdrawal will not negatively affect fish habitat because the varying criteria from the Department of Fisheries and Oceans and the Ministry of Water, Land and Air Protection have generally been met or greatly exceeded. These criteria include:

1. **DFO Maintenance of 30% MAD in Fish Bearing Streams:** The total project water withdrawal provides for significantly more flow than the criterion of maintaining 30% MAD for the Brohm River at the mouth.
2. **WLAP Non-Fish Bearing 90% MAD:** Both points of diversion that are in non-fish bearing streams withdraw significantly less water than the allowable maximum 90% MAD criterion.
3. **WLAP Fish Bearing Variable % MAD** (includes a range from 20-400% of MAD for various life stages of salmon and trout): All of these criteria will be met.
4. **DFO/WLAP 2003 Median Monthly Flow** (mimic the natural hydrograph and maintain the median monthly flow of the lowest flow month at all times): Brohm River at the mouth hydrograph is almost identical pre and post development (varies from 0.6 % to 4.3% of MAD in any month).

By definition, 50% of the days in the low flow month (August) are already less than the median flow of that month. Therefore, during some or all of August (low flow month) no water could be withdrawn to meet the project water demands. Therefore, the August water demand will be stored from additional water taken during the high flow months of May-June.

Based on the projects estimated water demand, the median monthly flow of the lowest flow month can be met for the remaining months.

7.2.5 Vegetation

Impacts to vegetation were determined using GIS overlays of the project footprint on vegetation maps. Impacts to vegetation will result from clearing for the roads, base area and ski runs. Construction of ski runs in the alpine area will not entail any clearing or

grading. Therefore, the only loss of alpine vegetation anticipated is small areas (<.5 ha) associated with two restaurants and a maintenance facility. Residual vegetation losses include the removal of approximately 235 ha of old growth forest (age class 9, >250 years old) and 26.5 ha of age class 8 forest (141 to 250 years old).

7.2.6 Wildlife

Impacts to wildlife habitat were determined using GIS overlays of the project footprint on habitat suitability maps. Other impacts were identified through analysis of human uses of the site and animal behaviour patterns.

Residual effects on wildlife are related primarily to habitat loss and increased potential for disturbance/animal-human interactions. The residual effects include the following:

- Potential slight disturbance to Mountain Goats by winter ski operations;
- Loss of a maximum 81 to 92 ha of Black-tailed Deer winter range and up to 240 ha of early spring range;
- Increased potential for Black Bear-human conflicts;
- Somewhat increased potential for Grizzly Bear-human conflicts (but the Grizzly Bear population in the project area is extremely low);
- Disturbance to Wolverine due to increased backcountry recreation;
- Disturbance to Cougar due to human presence in the village (base) area;
- Loss of habitat for forest dependent small mammal species such as Douglas Squirrel and Northern Flying Squirrel;
- Loss of potential nesting habitat for Marbled Murrelets (but this species has not been observed in the project area);
- Possible loss of some nesting habitat for small, cavity-nesting owl species such as Northern Pygmy-Owl and Western Screech-Owl;
- Potential loss of habitat for Tailed Frogs in the upper portions of two Brohm River tributaries due to water diversion and construction of a water reservoir; and
- Increased potential for collisions between vehicles and wildlife (particularly deer, black bear and small mammals).

Proposed mitigation measures include a detailed Grizzly Bear management plan, which includes measures applicable to other predators including Black Bear, Wolverine and Cougar.

7.2.7 Air Quality

Air quality effects, including greenhouse gas emissions generated from the construction of the Garibaldi Ski Resort will include:

- combustion emissions from mobile heavy-duty diesel and gasoline powered equipment, portable auxiliary equipment and worker commute trips;
- combustion emissions for open burning of wood and organic debris; and
- fugitive dust.

Operational activities at the resort that may contribute to GHG emissions include:
energy use

- combustion emissions from wood burning appliances; and
- combustion emissions from visitor vehicular traffic.

The preferred energy source at Garibaldi is hydroelectric power. As this energy source does not entail burning of fossil fuels, greenhouse gas emissions are not expected.

To minimize effects on air quality, a comprehensive air quality management plan has been prepared. It provides Best Management Practices for:

- construction vehicle selection and maintenance;
- open burning;
- fugitive dust control; and
- wood burning appliance selection and operation.

It also includes a program to minimize vehicle use by:

- Promoting the use of walkways and bike paths and encouraging the use of non-polluting modes of transportation at the resort (e.g., bicycles, walking, electric carts);
- Encouraging carpooling and use of transit as modes of transportation to and from the resort; and
- Using low-pollution shuttle buses to transport visitors around the resort area.

7.2.8 Cumulative Impacts

The potential for cumulative impacts between residual effects of the Garibaldi at Squamish Project and various historical and planned land uses was assessed. The area of the cumulative impact assessment extends from Squamish to Daisy Lake and focuses primarily on the Cheakamus River watershed and the lower Squamish watershed downstream of the Cheakamus confluence. Historical land uses that could contribute to cumulative impacts include:

- human settlement (farming followed by urbanization);
- logging;
- the railway; and
- Highway 99.

The major anticipated land uses that could affect ecosystem components of the cumulative impact study area and contribute to cumulative impacts include:

- ongoing logging; and
- the Sea-to-Sky Highway (Highway 99) upgrade.

The assessment concluded that none of the interactions between the project and other land uses or activities will result in significant cumulative impacts.

7.3 Environmental Management Plans

The report contains the following Environment Management Plans:

- Erosion and Sediment Control Plan
- Water Management Plan
- Watershed Protection Plan
- Solid Waste Management Plan
- Liquid Waste Management Plan
- Drainage Control/Stormwater Management Plan
- Non-point Source Waste Discharge Control Plan
- Vegetation Management Plan
- Grizzly Bear Management Plan
- Air Quality Management and Monitoring Plan
- Fertilizer and Pesticide Management Plan
- Spill Contingency Plan.

VOLUME 8 - SOCIO-ECONOMIC IMPACT ASSESSMENT

The following table summarizes the socio-economic impacts of the Garibaldi at Squamish Project.

Table 8-1 Garibaldi at Squamish - Summary of Economic and Social Impacts	
ECONOMIC IMPACTS:	
Employment	<ul style="list-style-type: none"> • An estimated 9,490 PYs of direct and 3,320 PYs of indirect/induced construction (accommodation/ski lifts) employment over 15 years. • Up to 3,500 FTEs of direct and 60 FTEs of indirect/induced accommodations and ski hill operations employment at build-out. • Operations employment opportunities will be created as of year 1 and will increase gradually through to build-out.
Income	<ul style="list-style-type: none"> • \$380 million in direct construction employment income over 15 years. • \$67 million in annual operations (accommodation/ski hill) income at build-out. • An estimated \$1 billion will be spent on the purchase of supplies from local, regional and provincial suppliers.
Government Revenue	<ul style="list-style-type: none"> • An estimated \$76 million in income tax paid on \$380 million construction employment income over 15 years and up to \$13.4 million annually in operations employment income tax following build out. • Federal and provincial governments will benefit from PST and GST paid on more than \$1 billion in supplies and equipment. • If residential build-out projections are achieved, residential property tax revenue could reach \$7.3 million. Although not quantified, additional property tax would accrue from the commercial and recreational components of the development. • If visitor accommodation build-out projections are achieved, room tax revenue paid to the province could eventually reach \$11.8 million annually.
Other Economic Impacts	<ul style="list-style-type: none"> • Will ease the current economic transition by providing jobs for displaced forestry and other workers. • Will modify the current employment and income profile of the region by increasing dependency on the tourism sector. • Will provide employment opportunities for high school grads and EI/SA recipients. • Will help contribute to the ongoing diversity of the economy and the tourism sector. • The current number of unemployed (skilled) construction workers will be inadequate to meet the requirements of the project so workers will need to be drawn from outside the region.

Garibaldi at Squamish - Summary of Economic and Social Impacts	
COMMUNITY (SOCIAL) IMPACTS	
Population	<ul style="list-style-type: none"> • The key population impacts of the project will be associated with the proposed residential component of the project while its construction will generate more modest, short-term population impacts. • Depending on the proportion of the proposed residential units that will be occupied by full-time residents, the development could house an increased resident population base of between 1,220 and 6,100 at build-out. • The number of resort visitor days is projected to increase from 250,000 in year one to one million in year 15.
Housing	<ul style="list-style-type: none"> • The addition of up to 2,352 housing units at Garibaldi (assuming build out projections are achieved) would represent a 43% increase over the current housing inventory. • The average price for Garibaldi homes is expected to range from \$300,000 to \$350,000 which is between \$65,000 and \$115,000 more than the current average price (i.e., for MFD and SFD) • Commercial accommodation units proposed for the resort will add up to 5,151 rooms to the current tourist room inventory which represents a 47% increase relative to the current SLRD room inventory and a 1290% increase relative to the current Squamish room inventory. By way of comparison, Whistler currently has about 5,200 rooms. • Existing rental accommodation will be inadequate to accommodate a significant number of short-term construction or other resort workers. Employee housing requirements will need to be addressed.
Community Services	<ul style="list-style-type: none"> • The need for additional police resources will have to be assessed as the project progresses. Typically, staffing needs are estimated at one officer for every 800 residents and one support staff for every four officers. Therefore, up to eight additional officers and two additional support staff would be required to service the residential population base of the resort once it reaches build out, while additional police resources to accommodate visitor levels would need to be determined as the project is developed and crime levels etc. are ascertained. It may be necessary to set land aside for the development of a community police office. • An independent fire protection assessment will need to be done before required fire fighting services can be determined. If the assessment determines that on-site fire protection services are required, then the proponents should consider setting land aside for a firehall and having infrastructure in place early in the development process. • The population and visitor impacts of the project will likely lead to a relatively large increase in demand for health services which could not be met by existing infrastructure and staff. The proponents have a number of options for addressing these issues and should involve the regional health authority during the development phase of the project so appropriate options can be identified.

Garibaldi at Squamish - Summary of Economic and Social Impacts	
	<ul style="list-style-type: none">• Squamish schools currently have excess capacity capable of accommodating almost 600 additional students. However, depending on a variety of factors, the development could eventually house more than 1200 students so additional capacity may eventually be required.• In terms of general public safety considerations, the development could limit the number of workers who have to commute to Vancouver and Whistler by providing more local employment opportunities that, in turn, could lessen the potential for road accidents by commuters, especially during the winter. However, this benefit could be off-set by the increase in visitor traffic coming to the area.
Tourism and Recreation	<ul style="list-style-type: none">• The Garibaldi development is expected to have a considerable impact on the current tourism and recreation profile of the region and to increase its appeal as a destination for a range of tourism and recreation activities.• The development of Garibaldi may lead to, or enhance existing, conflicts between participants in motorized and non-motorized recreational activities.• The development will likely foster a range of tourism and recreation impacts including increased participation in existing activities, opportunities to support “new” activities, increased packaging opportunities with other commercial operators in the area, better resources to host competitions, and so forth.

VOLUME 9 - GARIBALDI PROVINCIAL PARK ISSUES

This report examines the impact that development of Garibaldi at Squamish, a major year-round resort, will have on the Garibaldi Provincial Park, bordering to the north and east, and Alice Lake Provincial Park, to the south. Without adequate consideration during planning and development, there is potential for these important public recreation resources to suffer from overuse, inappropriate activities, invasion of unwanted materials, visual or noise intrusions or other impacts. Garibaldi Provincial Park, because of its range of natural features, untamed character, scope of extensive recreation opportunities and accessibility to a large and growing population, is one of British Columbia's most important park resources. Alice Lake is a valued intensive recreation site serving Squamish and the regional population, mostly in the summer.

The Garibaldi at Squamish proposal comprises a winter and summer resort containing extensive ski and snowboard facilities on Brohm Ridge, golf courses in the valley, a mountain village, hotels, condominiums, recreation homes, family residences and a comprehensive program of recreation and entertainment. Located just north of Squamish, a scenic forty-five minute drive from Vancouver, the resort is projected to host 850,000 visitors annually in ten years.

Whistler Resort, located adjacent to the north boundary of Garibaldi Provincial Park less than an hour away, is recognized as Canada's premier mountain resort, attracting more than 2 million visitors each year from around the world. Through its evolution, Whistler has had a significant impact on the park and provides an example for design and development considerations. It and other B.C. mountain resorts have been examined for guidance in preparing this assessment.

The area of Garibaldi Provincial Park bordering the proposed resort is zoned "natural environment" and contains glaciers, volcanic features, alpine tundra, temperate rain forest, lakes and rivers. No current data is available but it is generally acknowledged that visitation is low. The landform slopes northward from Mount Garibaldi, on the east edge of the resort, over the Warren Glacier to Garibaldi Lake, about 6 kilometres distant. According to backcountry adventure enthusiasts, this terrain is not challenging for winter ski touring and has no easy route for returning to the resort. For summer hikers, the trip to the lake is across a rugged landscape and requires a difficult uphill trek back to the resort. An alternate park exit is another 6 kilometres further west.

While the N  v   Traverse, over the glaciers east of Mount Garibaldi, is a popular wilderness ski touring excursion, the balance of the trek to Garibaldi Lake and out to the highway is not likely to attract many people. More challenging and interesting backcountry touring locations are found nearby. During the summer, the absence of a convenient route returning to the resort will also limit travel into this area. Some

adventurers will use the resort to access the nearby peaks and some will ski or board the untracked snow but the numbers will be small and will primarily comprise local people familiar with the area. It is estimated that in ten years, 5,000 visitors will access the park from the resort each the winter, with a peak visitation of 100 daily. Summer visits are projected at 3,500, with a maximum of 50 daily.

Activity at Alice Lake is mostly concentrated in the summer and involves picnicking, camping, swimming, canoeing, fishing and hiking. The park also serves as the operations base for the regional park staff. Visitation and activity levels are high for most of the season as the park serves a more intensive role.

Proximity of the resort to Garibaldi Provincial Park presents the greatest potential for impacts to occur. In order to prevent resort guests from inadvertently entering the park and to preclude activity not in keeping with park regulations, a series of actions are recommended:

- A main park entry gate is proposed for the boundary on Brohm Ridge at the Shark's Fin, complete with details about hazards, fragile resources and park regulations;
- A buffer of 65 metres from the park boundary is recommended that will become winter and summer operational limits separating the ski runs and development areas from the park, complete with signage and fencing in some locations;
- In areas where people may stray into the park, a well constructed and maintained trail is proposed on the resort side of the buffer and additional signage may be required; and
- A comprehensive awareness program is recommended to ensure that itinerant resort guests and residents alike are properly informed about the park, its features and sensitivities, hazards that may be encountered and potential travel routes.

In addition to these measures, a year-round trail is proposed leading north from Area 11 to the area above the fork of Culliton Creek. This is intended to serve as a scenic, backcountry excursion outside the park and to provide for a release route if anyone were to stray into the park and not be able to return to the resort.

The best means of preventing undue impacts from occurring in Garibaldi Provincial Park will be to develop recreation opportunities, services and facilities within Garibaldi at Squamish that attract guests, provide them with an exceptional experience and keep them within the resort until their departure. Recommended facilities and services have been presented that will establish the project with the potential, in conjunction with the exceptional outdoor recreation opportunities and community services in the Squamish area, to establish a mountain resort offering attractions and facilities without equal in Western Canada. The development of such a system will ensure that the resort becomes a strong contender for patronage, is successful in its operations and reduces the impact on the two adjacent provincial parks.

The development of a mountain resort will introduce visual elements into the landscape in the form of roads, buildings, ski lifts and runs. From Garibaldi Provincial Park, some of those elements will be visible from Mt. Price, the Warren Glacier and Paul Ridge. An analysis has been completed that identifies the visible elements and addresses mitigation measures. As most resort facilities are located within the two topographical bowls on Brohm Ridge, it is only the ridgelines that will be exposed. Intervening ridges block views or distances are too great for exposure from other sites. The distances from these three locations, along with recommended mitigative measures will virtually eliminate the visual impact.

Noise from the resort could be another intrusion into the park. Through an examination of the potential sources and types of noise that could be generated, it has been concluded that almost all noise will be transmitted down slope toward the highway. Due to distance and greater ambient noise levels, sounds from the resort will not be noticeable, except perhaps for short periods of construction. Within Garibaldi Provincial Park, due to topography and distance, noise from the resort is not expected to be heard above that of background sources.

Forest fire hazards are a condition that must be considered in the planning and development of a mountain resort, especially when adjacent to a large natural area. A program of resort design and construction has been recommended for fire prevention, a co-operative plan for fire suppression, training for resort staff, regular surveillance and quick response are expected to reduce the fire risk to acceptable levels.

Currently, local aircraft operators flying over Garibaldi and Alice Lake Provincial Parks abide by voluntary guidelines negotiated with park management. It is recommended that the same guidelines be followed for those offering services to Garibaldi at Squamish. Two helicopter landing areas are proposed, one at the Squamish Airport and one at the resort village. Established corridors for flights should be designated for these.

Garibaldi at Squamish Resort will attract permanent residents and itinerant guests. Some of these patrons will have pets for which controls will be required. Pets will not be allowed in Garibaldi Provincial Park. It is recommended that all dogs and cats be restricted from roaming free at all times. Dogs should be on leash whenever outdoors, except for specific off-leash areas. Dog walking paths, with disposal provisions for feces, are recommended. An educational program should be provided to inform resort patrons of the environmental implications relating to pets.

Control over construction methods, site rehabilitation, landscape treatment and disposal of plant waste will be important to prevent non-native vegetation from establishing in the resort and being introduced into the park. A landscape / species management plan is recommended that establishes acceptable plant species, educates contractors, staff and the public about proper controls, monitors the resort environment, arranges removal of unwanted species, rehabilitates disturbed sites and ensures proper disposal of plant wastes. Lists of native plants suitable for landscaping and noxious species are provided. Also, control over transport of unwanted species by horses, dogs, humans and machinery should be established.

It has been established that the public has the right of access across the resort in order to gain entry to Garibaldi Provincial Park. A route has been selected and an access easement will be registered for this purpose. Also, the resort has proposed to allow the public to purchase a single elevation pass that allows access to the alpine slopes but only if a reservation is made at least 24 hours ahead.

As Garibaldi at Squamish evolves, a consultation and monitoring program should be established between the park and resort management so that communication is facilitated, matters are reviewed regularly, appropriate action initiated and problems resolved.

VOLUME 10 - TRADITIONAL USE STUDY

10.1 Current Community Information

In undertaking this traditional use study, five interviews were conducted with culturally knowledgeable community members and elders. In these interviews, information regarding the Brohm Ridge/Nch'kay/Mount Garibaldi and surrounding areas was found. This information is summarized below. Additional information found in Reimer (2001 a-c, 2002) is relevant to this study and is also included.

1. Community members use and have used the area for hunting, trapping, fishing, plant gathering, trading, travel and ceremonial purposes before and after the construction of forest service roads. Many people stated that use of the area has been hindered by government regulations and the creation of Garibaldi Provincial Park, on hunting, fishing and plant gathering or the large influx of non-Squamish Nation people into the area. Other community members stated that the oral traditions and use of the area are still happening, with elders and younger people learning specific things since a lone individual cannot hold all the information for the area.
2. The community members who hunted in the area stated that the major game animals were sxwi7shen (deer), k'yi7ch (elk), mixhalh (bear), and xwuxwselken (Mt. Goat). Nch'kay/Mount Garibaldi and Brohm Ridge were known as excellent Mt. Goat habitat.
3. Goat hunting was done along all the slopes of Nch'kay/Mount Garibaldi. Alice/Paul and Brohm Ridges were used as an access route to Nch'kay/Mount Garibaldi and other surrounding mountains. Community members used .22 calibre guns to shoot Mountain Goats. It was said that other guns were too heavy to carry along the steep slopes. Mountain Goats used to come down from Brohm Ridge for food and when the snow pack was deep. The steep slopes along Brohm Ridge and Nch'kay/Mount Garibaldi made it difficult to chase down Mountain Goats since they could easily run over the loose rocky terrain. The mountain slopes of Nch'kay/Mount Garibaldi were and still are popular places to gather mountain goat wool off the trees.
4. Deer habitat was found on the all slopes of Ninich St'ena'ch and Chichsem St'ena'ch. Many game trails can be found on the slopes of the surrounding mountains.
5. Fish species that are caught in the Brohm and other surrounding creeks were sts'ukwi7 (salmon) and syuykw'ulu7 (trout).
6. At least 60 plant species were gathered in the area for a variety of purposes, most notably: numerous species of iy'alkp (berries) for sustenance, su' k am (cedar bark) and wood for numerous uses ranging from clothing, rope, carving

and construction material, to many other plants used for medicinal purposes. It was mentioned that the slopes of Brohm Ridge used to have very good cedar wood for canoe and house plank manufacturing. Community members recall seeing many cedar trees with large planks taken off them or had “test holes” in them.

7. A few community members travelled through the area when they were younger, they recollected that these trips were known as “going up the line.” Interviewees mentioned that the trail that went through the areas were used by many Squamish, Mt. Currie, and other coastal and interior native peoples going to and from Squamish, Pemberton and Mt. Currie to hunt, fish, trade and trap. Many people also went further north and or east into the interior of BC. It was recalled by one interviewee that a trip from Squamish to Mt. Currie would take 14-16 hours. Travel on the trail was on foot or on horseback and sometimes with or without a wagon. The trail was often referred to as the “Bandwagon Trail” and was very narrow through sections of the Cheakamus River canyon. The trail was established because the section of the Cheakamus River near the trail was not navigable by boat. The fast flowing water and large rocks made boat travel very difficult. Community members recall other people attempting to use large boat motors to travel up this section of river, only to have their outboards destroyed by the large rocks in the river. During the winter months only men were allowed to travel on the trail since it was deemed to be too dangerous for women.
8. Squamish people did use the Brohm Ridge and Nch’kay/Mount Garibaldi area, but changes in this use occurred with the construction of forest service roads and establishment of Garibaldi Provincial Park. These developments altered habitat for terrestrial and marine species. The construction of forest service roads opened the area to other people causing a decline in use. Community members mentioned that the area should be left alone so that it can rehabilitate itself.
9. Archaeological sites in the area include; many post-AD 1846 Culturally Modified Trees (CMT’s) are located in the vicinity of Brohm Ridge, Nch’kay/Mount Garibaldi and surrounding areas. It was mentioned by a number of interviewees that cedar bark stripping is regularly done throughout the entire region. It was mentioned that old village sites in the Cheakamus valley have been either washed away or deeply buried by the creek and landslides. Some community members have seen artifacts on the Cheakamus River floodplain and cut banks, while others have seen pictographs on the slopes of Buck and Cloudburst Mountains. Pictograph images at the base of Cloudburst Mountain are said to be at different heights above the modern ground surface. Those lower to the ground are said to be older in age, when the area was near the ocean. Pictographs on the slopes of Buck Mountain were those painted by medicine men trying to stop rising water during the great flood.
10. More detailed knowledge of traditional use of these areas dates to over 40 years ago, before the development of forest service roads and the park.

Community members who intensively used these areas have passed away. Present day Squamish Nation members have sense of alienation to the area since the forestry, mining, recreational activities and road construction to area of Brohm Ridge and Nch'kay/Mount Garibaldi.

11. Valuable information has been shared by past and present Squamish Nation community members but focused on ethnographic concerns of recording material culture and description of cultural traits. Specific land use activities were only incidentally recorded, as opposed to current interviews focusing on mapping occupancy and land use (Bouchard and Kennedy 1976 a and b; Bouchard and Turner 1976).
12. Many important Squamish Nation historical and stl'alkem or supernatural figures were found throughout the area. Many of these creatures were considered to be human-like, bird-like, insect-like, snake-like, and amphibian-like and play major roles in the Oral History and Tradition of the region. Examples of such creatures include the smaylilh or "wild people" or "mountain people", the skwikwtasymish or "dwarf people", lhelekwines or a creature who "took out body parts from the chest", ku'ukwchtk or a man known as "hit low" who knocked down trees in the forest, nich'ashen or "one leg" who gave "power" to people, sinulhkay or the "double headed serpent", in7inyazxa7en or the "Thunderbird" that lives in the area, and ch'inkw'u or a "snake-like creature" pursued by the Thunderbird.
13. Lakes located high in the mountains were places where the mountain people lived. These people were families and not a different tribe. The mountain people were very tall (6-7 feet) and physically strong. The Squamish people used to trade salmon and caribou with these mountain people in exchange for mountain goat and medicines. Other contact with the mountain people occasionally occurred when individuals training to become Indian Dancers went up to high mountain lakes to train and gain power.
14. Many Squamish Nation community members have worked on numerous development projects in the area. Occupations these people were involved with included road construction and maintenance, dam and tunnel construction (Daisy Lake Dam/Powerhouse), truck driving and the numerous jobs in the forestry sector. A few community members stated that they were too busy with their jobs to consider utilizing the area for traditional purposes.

As indicated in the above information, members of the Squamish Nation used the Brohm Ridge and Nch'kay/Mount Garibaldi area. The area is embedded in a regional network of Squamish traditional use as demonstrated in the ethnographic review and current community information.

10.2 Impacts on Traditional Use of Nch'kay

The review of ethnographic literature, attempts to examine trap line records, place name research, current community information and in field inspections demonstrates that the Squamish Nation has a very strong historical and pre-contact presence in the Brohm

Ridge, Nch'kay/Mount Garibaldi area and the surrounding region. A number of indicators of traditional use were located within the development area. Discussion on the impacts of traditional land use of the Brohm Ridge/Nch'kay/Mount Garibaldi area will focus on Primary, Secondary and Tertiary impacts.

Primary area directly affected by ski hill, road and residential construction, are the several Traditional Land Use and Archaeological Sites identified during survey. These include;

1. A stone rock cairn was identified on the north slope of Brohm Ridge. The cairn is made of square and rectangular slabs of local volcanic rock. The cairn ranged in height 60cm to 120 cm above ground with a base diameter of 1.2m. The cairn's origin cannot be determined at this time. It may have been used as a hunting blind, a survey marker, or associated with skiing activities.
2. A CMT with axe cuts on a mountain hemlock (*Tsuga mertensiana*) was identified on the crest of Brohm Ridge. The CMT is a blaze on the NW side of the tree. Modification was done with either an axe or a large knife (cut marks present). The Height Above Ground of the cut is 107 cm Diameter at Breast Height is 78.5 cm. The scar length is 80 cm with a width of 10.5 cm. The Lobe thickness is 8.5 cm. No increment bore samples were taken for dendrochronological analysis, however, the type the modification is believed to be more than 100 years. The CMT is an old trail blaze and probably part of the Billy family trap-line. Further assessment of the CMT is required.
3. Two trap-line trails were identified. Trap-line trail #1 was identified along the lower elevations of the southwest part of Brohm Ridge. Trap-line trail #2 is located along the lower elevations of the northwest part of Brohm Ridge. Both trails are marked by worn paths and blazes or metal tags along their length. Both trails are being used to provide pedestrian access to the top of Brohm Ridge. Each trail may also be quite old.
4. A trapping cabin was identified on mid-slope of the northwest section of Brohm Ridge. The cabin is also located at the sub-alpine parkland transition zone. The cabin is burnt and all that remains of it are some beams and associated historic refuse dump situated. The refuse dump consists of rusting and burnt cans and pottery/ceramic plate fragments. The site is on a gentle slope with a western aspect. To the northwest is a stream.
5. A hunting blind site located on top of a hill knoll at the southwester end of Brohm Ridge. This site included several blazed and de-limbed trees that provided material to construct the blind. The location is ideal for hunting ungulates and is probably part of the Billy family trap-line. No increment bore samples were taken for dendrochronological analysis, however, the type the modification is believed to be more than 100 years.

Borden Number	Type of Site
DIRt 1	Pictograph Panel
DIRt 2	Village
DIRt 3	Historic Cabin/Village
DIRt 4	Rockshelter
DkRr 1	Lithic Scatter
DkRr 2	Cairn/ Lithic Scatter
DkRr 3	Lithic Scatter
DkRr 4	Lithic Scatter
DkRt 1	Cache Pits/CMTs
DkRt 2	Lithic Scatter/Midden
DkRt 3	Burial Ground
DkRt 4	Burial Ground
DkRt 5	Cairn Burial
DkRs 1	Transformation Site/Lithic Scatter
DkRs 3	Transformation Site
DkRs 4	Burial Ground
DkRs 7	Cache Pits
DkRs 8	CMTs
DkRs 10	Rockshelter
DkRs 11	Cache Pits/CMTs
DkRs 12	Lithic Scatter
DIRs 3	Berry Drying Trench/Lithic Scatter
DIRs 4	Lithic Scatter
DIRs 5	Lithic Scatter

Impacts on these sites will hamper Squamish Nation land use of the area for traditional and contemporary purposes such as education, maintenance of language, spiritual beliefs and community cohesion and structure

Secondary impacts will be on those primary sources of evidence of traditional use provided by the Squamish Nation place names of local mountains, creeks, rivers and surrounding areas. Squamish place names still remain on many of regions the lakes, rivers, mountains, and other geographical features; Ch'iyak'mish, Pukway'usm, Skemi'n, Wiwk'm, Nch'em'ay' are examples of village names and burial grounds, Takta_kmu'yin tl'a in7inya'xa7en Chichsem St'ena'ch, Ninich St'ena'ch, Sxeltskwa'7 K'ew'k'ewa'tm Li'xwitsut, Xwmitl'm, and Tsewi'lx for mountains and Ch'iyak'mish, Syexwayakalh, Scha'wchawmixw or Sa7am'uysn, for creeks. The whole traditional territory holds a legacy of use, language, tradition, history, legend and spirituality that closely connects the people to their territory. The naming a place in a territory indicates that it is well known its residents; mental maps of territories are made and become included in the belief systems of the people. This act imparts a sense of connection to that place gives a sense of being the lands steward or owner. Many of the Squamish Nation place names in the area contain detailed information on what the area was used for and why it was given a name with a particular meaning. Additionally place names are often associated with archaeological sites, suggesting long continuity of culture.

For example Ch'iyak'mish, St'ewakw', Chichsem St'ena'ch, Ninich St'ena'ch and Tsewi'lx are areas that were used by people for specific purposes such as fishing, deer and mountain goat hunting. People who possessed the knowledge to use these areas were

considered to be "ta swa7s ts'its'ap" or "specialists"; these individuals probably controlled this resource. Place names of this type are examples of a place having specific technological functions.

Other names such as Tak_uta_umu'yin tl'a in7inya'xa7en, Siyam, Ske'wk'a'y, Sxeltskwu'7 and K'ew'k'ewa'tm Li'xwitsut indicate that the region also had social and ideological functions. Stories associated with these places are often told to young people in order to instill a sense of place, history, appropriate behaviour and conduct. These functions are critical in maintenance of the Squamish Nations distinct identity.

Increased land use, population density the sale of real estate, and subsequent impacts on the environment will affect on these places located near and further away from the ski hill, road and residential developments.

Tertiary impacts comprise those throughout the rest of Squamish Nation's traditional territory, where the physical, cultural, and economic interests of the Squamish Nation and its resident population could be affected by the ski hill, road and residential developments. Tertiary impacts also include long term/incremental (cumulative) effects of the ski hill, road and residential developments combined with past and potential future development.

Numerous ethnographic accounts illustrate that the Squamish Nation is known to have hunted, trapped, and gathered plants in the Brohm Ridge/Nch'kay/Mount Garibaldi region. The region is strongly embedded in a regional network of Squamish Nation place names, archaeological sites, traditional history and stories, training, technology, social life, and ideology. While this is not an aboriginal rights and title evaluation, the strong evidence within this vast network provides a preliminary indication that the Squamish Nation could demonstrate their aboriginal rights and title to Brohm Ridge/Nch'kay/Mount Garibaldi area and the surrounding areas.

VOLUME 11 – ARCHAEOLOGICAL IMPACT ASSESSMENT

11.1 Archaeological Overview Assessment

In 1996, an archaeological overview assessment (AOA) of the proposed development area was completed pursuant to Section 3.4 of the *British Columbia Impact Assessment Guidelines*. This AOA was concerned with determining the archaeological site potential within the development property. The overview research was based upon a review of regional archaeological and ethnographic literature, review of contoured development plans, review of biophysical resource mapping, examination of low-elevation aerial photographs, and on-site photographs of the development property.

Based on the overview research for the AOA, the results of the archaeological overview assessment can be summarized as follows:

- No known archaeological sites are present within the development property.
- The potential for unidentified archaeological sites to occur within the lower elevations of the development property is low.
- The potential for unidentified archaeological sites to occur within the upper elevations of the development property ranges from moderate to high.

Based on the results of the overview assessment, the following recommendations are made for additional archaeological investigations within the proposed development area:

1. an archaeological impact assessment be carried out for each polygon that has high archaeological site potential. The objectives of an impact assessment are to: identify and evaluate archaeological sites; identify and assess potential impacts to these sites as a result of the proposed development; recommend alternatives for managing unavoidable adverse impacts.
2. an archaeological field reconnaissance be carried out for each polygon that has moderate archaeological site potential. The purpose of the field reconnaissance is to: confirm or modify the site potential assessment; to identify the need and appropriate scope of further archaeological field studies.
3. no additional archaeological work is required for those areas of the development property that has been rated as having low archaeological site potential with the following exceptions: an archaeological field reconnaissance be carried out for those locations within 100 m of moderate or high potential polygons situated in the subalpine or alpine zone, where stands of old-growth western red cedar or yellow cedar are present; an archaeological field reconnaissance should be carried out for those locations where ground

disturbance will occur (including residential developments, access roads, golf centre, construction camps, waste management facilities, geotechnical assessments, and utility systems) within 100 m of potable water, on appropriate slope (flat ground or low angle slope), and/or within old-growth forest stands with western red cedar or yellow cedar.

11.2 Archaeological Impact Assessment

An archaeological impact assessment (AIA) was initiated for the proposed Garibaldi at Squamish Project, but the assessment is incomplete. The fieldwork component of the AIA was started in the fall of 2000, but an early snow in mid-October curtailed completion of the fieldwork until the following field season (late summer-early fall 2001). Prior to commencement of the 2001 field season the project was suspended.

Two prehistoric archaeological sites automatically protected under the *Heritage Conservation Act* (assigned site inventory numbers DIRs-004 and DIRs-005) and consisting of surface/subsurface lithic scatters were identified. Five cultural heritage sites (sites not automatically protected under the *Heritage Conservation Act*) were also identified during the archaeological survey. These sites consist of one rock cairn (G@S-3), one CMT (G@S-4), two trails (G@S-5 and G@S-6) with associated blazed trees and locally worn pathways, and the remains of a burnt cabin (temporary inventory number G@S-7).

The results of the archaeological impact assessment are incomplete and will need to be completed before any development activities can occur at the proposed Garibaldi At Squamish Ski Resort. However, preliminary results support the following conclusions and recommendations:

- Two known protected archaeological sites are present within the development property; both DIRs-004 and DIRs-005 have been identified and basic siteform information has been collected. However, additional recording and assessment are required for both sites. Several cultural heritage features were also identified (G@S-3 to G@S-7) and need further assessment.
- The potential for additional unidentified archaeological sites to occur within the mid- to-upper elevations of the development property ranges from moderate to high.
- The potential for unidentified archaeological sites to occur within the lower elevations of the development property is low.
- Based on the preliminary results of the impact assessment undertaken to date, the following recommendations are made for completion of archaeological investigations within the proposed development area:
 1. an archaeological impact assessment should be carried out or completed for each polygon that has high archaeological site potential. Of greatest priority is the completion of the survey of the western portion of Polygon #1 and the western and southern portions of Polygon #6.
 2. an archaeological field reconnaissance should be carried out or completed for each polygon that has moderate archaeological site potential.

Preliminary field reconnaissance survey must be undertaken for Polygons #3, #4, #8, #14, #15, #17, and #18.

3. no additional archaeological work is required for those areas of the development property rated as having low archaeological site potential, with the following exceptions:
 - in addition an archaeological field reconnaissance should be carried out or completed for those locations within 100m of moderate or high potential polygons situated in the subalpine or alpine zone, where stands of old-growth western red cedar or yellow cedar are present;
 - an archaeological field reconnaissance should be carried out or completed for those locations where ground disturbance will occur (including residential developments, access roads, helipads, golf centre, construction camps, waste management facilities, geotechnical assessments, and utility systems) within 100 m of potable water, on appropriate slope (flat ground or low angle slope), and/or within old-growth forest stands with western red cedar or yellow cedar.

VOLUME 12 - PUBLIC, STAKEHOLDER AND FIRST NATIONS CONSULTATION

Results of the stakeholder consultations are summarized in Table 12-1. A summary of consultation with the Squamish Nation follows in Table 12-2.

Table 12-1 Summary of Meetings and Correspondence with the Government Agencies and Stakeholders Associated with the Garibaldi Resort Project

DATE	AGENCY/STAKEHOLDER	PARTICIPANTS	ISSUES DISCUSSED
1. September 12, 2002	Meeting with Water, Land & Air Protection	Steve Rochetta, Jack Evans, Libor Michalak, Glenn Stewart, Earl McIssac	Fish and wildlife issues and field work requirements. Main issues were related to mountain goats, wolverine, bear management and Harlequin ducks.
2. October 30, 2002	Meeting with Land & Water BC	Glen Thompson, Paul Georgison, Charles Litledale, Bob Gaglardi, Luigi Aquilini, Mike Esler and Glenn Stewart	Meeting to introduce the proponent and government project team and review the proposed Master Plan schedule (April 25, 2003)
3. November 20, 2002	Meeting with Land & Water BC and the Environmental Assessment Office	Glen Thompson, Paul Georgison, Charles Litledale, Bob Gaglardi, Luigi Aquilini, Mike Esler and Glenn Stewart	Meeting to discuss the project management team and meet members of the consultant and government project team. Also discussed First Nations issues, EAO/LWBC timelines and contact information.
4. November 22, 2002	Meeting with BC Parks	Brian Clark, Tom Bell and Ed Atkinson (WLAP) Dave Day & Leo Kylo (IRIS Environmental)	Meeting to discuss EA and planning issues with Garibaldi Provincial Park, resource protection and quality of recreational experience, public safety, law enforcement, helicopter operation, conflicting land tenures and jurisdictions.

Table 12-1 Summary of Meetings and Correspondence with the Government Agencies and Stakeholders Associated with the Garibaldi Resort Project

DATE	AGENCY/STAKEHOLDER	PARTICIPANTS	ISSUES DISCUSSED
5. December 3, 2002	Meeting with District of Squamish	Kim Anema, Mick Gottardi, Mike Esler, Dave Ethier, Glenn Stewart, Chris Town	Meeting to update the District on the Garibaldi project and identify any issues. Kim indicated that the governance/cost-benefit study needs to be updated. Schedule (April 25, 2003 report submission) and project team were discussed.
6. December 5, 2002	Letter to Carol Johnson of Land & Water BC	Letter sent by Glenn Stewart	The letter requested tenure information on Files 0266230 and 0283039.
7. December 5, 2002	Letter to Glenn Stewart of ENKON	Letter sent by Kim Anema from the District of Squamish	The letter acknowledges the enclosure of a document entitled Garibaldi at Squamish Fiscal Impact Study-Final Report.
8. December 6, 2002	Meeting with District of Squamish	Ian Sutherland, Kim Anema, Dave Fenn, Bob Gaglardi, Luigi Aquilini, Mike Esler, Glenn Stewart, Dave McCrae	Meeting to introduce the proponent, project team and schedule to complete the Master Plan (April 25, 2003 report submission)
9. December 9, 2002	Memorandum to Kim Anema and Mick Gottardi of the District of Squamish	Memorandum sent by Glenn Stewart of ENKON	The memorandum summarizes the meeting held on December 6 including the discussion surrounding proponent corporate structure, consultant team, approval process timing, governance, liquid waste treatment, water supply, solid waste and action items.

Table 12-1 Summary of Meetings and Correspondence with the Government Agencies and Stakeholders Associated with the Garibaldi Resort Project

DATE	AGENCY/STAKEHOLDER	PARTICIPANTS	ISSUES DISCUSSED
10. December 10, 2002	Meeting with Ministry of Transportation	Rob Bitte, David Lee-Young, Jesse Bains, Jose Pinto, Steve Hobbs, Mike Esler, Glenn Stewart	Meeting to present the preliminary highway interchange, design criteria, traffic and access road
11. December 12, 2002	Meeting with Ministry of Forests	Julian Grzybowski, John Crooks, Mike Esler and Glenn Stewart	Meeting to introduce the project team and Master Plan schedule and discuss forestry issues related to the small business program. Cat Lake recreation site was discussed regarding the Squamish Nation potential interest.
12. December 12, 2002	Meeting Minutes to Rob Bitte, Jesse Bains, David Lee-Young	Sent by McElhanney	Meeting summary included project overview history/background, governance, design criteria, traffic terms of reference, interchange concept, access road and agreement for future meetings.
13. December 13, 2002	Meeting with Land & Water BC, EAO (by telephone) and Garibaldi Project Planning Team	Glen Thompson, Brent Harley, Paul Finkel and the Garibaldi Project Team including bob Gaglardi and Luigi Aquilini	Meeting to review mountain and resort base planning conducted to date including a discussion for revising the study are boundary to include two golf courses and associated residential development. Commercial space was also discussed in relation to the proposed highway interchange.

Table 12-1 Summary of Meetings and Correspondence with the Government Agencies and Stakeholders Associated with the Garibaldi Resort Project

DATE	AGENCY/STAKEHOLDER	PARTICIPANTS	ISSUES DISCUSSED
14. December 18, 2002	Meeting with the representatives of the Squamish-Lillooet Regional District	Paul Edgington, Steve Olmsted, Raj Kahlon, John Turner, Mike Esler and Glenn Stewart	Meeting to introduce the proponent and project team, Master Plan and EAO schedule (April 25, 2003 report submission) and governance. Issues discussed included Squamish Nation, governance, highway connection, liabilities from previous debts, and public opinion.
15. December 19, 2003	Tele-conference call with representatives of the Environmental Assessment Office	Ray Crook, Paul Finkel, Mike Esler and Glenn Stewart	The tele-conference call was held to discuss project timelines with the new Environmental Assessment Act, introduce the name of the new EAO project director Anne Currie, and state that bed units would be decided by LWBC and adopted by EAO
16. January 3, 2003	Letter to Paul Kuster, District Manager Squamish Forest District	Sent by Mike Esler	The letter re-iterates the discussion Mike Esler and Glenn Stewart had with Paul Kuster prior to Christmas and requests that the Squamish Forest District administration not initiate any contact with any other groups (exception Squamish Nation) regarding the management of Cat or Brohm Lake Recreation areas, until the proposed study boundary modification has been decided (letter included in appendix).
17. January 7, 2003	Meeting with Land & Water BC	Glen Thompson, Bob Gaglardi, Luigi Aquilini, Mike Esler and Glenn Stewart	Meeting to discuss the study are boundary re-configuration. Glen indicated that two issues were of concern including the change from the original request for proposals and government agency referrals

Table 12-1 Summary of Meetings and Correspondence with the Government Agencies and Stakeholders Associated with the Garibaldi Resort Project

DATE	AGENCY/STAKEHOLDER	PARTICIPANTS	ISSUES DISCUSSED
18. January 8, 2003	Meeting with District of Squamish	Ian Sutherland, Mike Esler and Glenn Stewart	Meeting to inform the Mayor of the proposed Study Area Boundary re-configuration. The Mayor indicated that unofficially he didn't have a problem with it.
19. January 8, 2003	Meeting with Brent Harley & Associates	Brent Harley, Mike Esler and Glenn Stewart	Meeting to inform Brent of the proposed Study Area Boundary re-configuration. Brent indicated that he didn't have a problem with it if the project becomes more successful.
20. January 8, 2003	Meeting with Squamish-Lillooet Regional District	Paul Edgington, Steve Olmsted	Meeting to inform the SLRD of the proposed Study Area Boundary re-configuration. Paul and Steve indicated that they didn't have a problem with it if the project becomes more successful.
21. January 9, 2003	Meeting with Environmental Assessment Office (EAO)	Sheila Wynn, Paul Finkel, Bob Gaglardi, Luigi Aquilini, Mike Esler and Glenn Stewart	Meeting to hand deliver the transition order and discuss the implications of the new Act related to Garibaldi Resort. Sheila indicated that Garibaldi had until December 31, 2003 to submit the project report that has been re-defined as additional information.
22. January 9, 2003	Letter from Paul Kuster District Manager, Squamish Forest District	Sent to Clients of the Squamish Forest District	The letter provides an overview of the new organization and staff changes. The small Business Enterprise Program has been renamed BC Timber Sales based out of Chilliwack.

Table 12-1 Summary of Meetings and Correspondence with the Government Agencies and Stakeholders Associated with the Garibaldi Resort Project

DATE	AGENCY/STAKEHOLDER	PARTICIPANTS	ISSUES DISCUSSED
23. January 15, 2003	Meeting with Ministry of Forests	Frank Ullman, John Crooks, Norbert ?, Mike Esler and Glenn Stewart	Meeting to introduce the project proponent, consultant team, submission timetable (April 25, 2003 report submission) and study boundary re-configuration and forestry issues related to Brohm and Cat Lake recreation areas.
24. January 15, 2003	District of Squamish	Mike Esler, Glenn Stewart, Raj Khalon, and Dave Fenn	Meeting to inform the District of the proposed Study Area Boundary re-configuration.
25. January 21, 2003	Meeting with Land & Water BC	Val Lowther, Mike Esler and Glenn Stewart	Meeting for Val to introduce herself as the Garibaldi project manager from LWBC and discuss issues related to tenure holders and land reserve areas including Brohm and Cat Lakes
26. January 22, 2003	Meeting with Environmental Assessment Office	Anne Currie, Bob Osborne, Bob Gaglardi, Luigi Aquilini, Mike Esler and Glenn Stewart	Meeting to discuss native issues and consultation with the Squamish Nation
27. January 23, 2003	Meeting with Resort Municipality of Whistler	Jim Godfrey, Bob McPherson, Mike Esler and Glenn Stewart	Meeting to discuss the proponent, project team, Master plan and EAO project report submission dates (April 25, 2003 report submission) and issues associated with Whistler. Jim indicated that Whistler doesn't have a problem with Garibaldi but would like to stay informed and review any traffic studies.

Table 12-1 Summary of Meetings and Correspondence with the Government Agencies and Stakeholders Associated with the Garibaldi Resort Project

DATE	AGENCY/STAKEHOLDER	PARTICIPANTS	ISSUES DISCUSSED
28. January 23, 2003	Meeting with Don Worthington (Crown lease #30575) for a recreational cottage site encompassing 0.97 hectares on Brohm Ridge)	Mike Esler and Glenn Stewart	Meeting to discuss Don Worthington tenure rights and old agreement with Wolfgang Richter to pay a fee for the use of Don's cabin. No decisions were made but GAS Inc. agreed to continue to meet with Don to discuss the issues in more detail.
29. January 24, 2003	Meeting with Ministry of Transportation	Rob Bitte, David Lee-Young, Jesse Bains, Jose Pinto, Steve Hobbs, Mike Esler, Glenn Stewart	Meeting to present the revised preliminary highway interchange, design criteria, traffic and access roads. The Ministry representatives indicated that since McElhanney has basically followed the TAC standards, the highway interchange and road design seem acceptable.
30. January 27, 2003	Letter to Mike Esler	Sent by Val Lowther of Land & Water BC	The letter acknowledges the request for a change to the original study area and states that LWBC requires additional information such as detailed mapping, location of improvements and any changes to staging plans before a decision can be rendered.
31. January 28, 2003	Meeting Minutes to Rob Bitte, Jesse Bains	Sent by McElhanney	Meeting summary included internal roads, Highway 99 interchange, design criteria, trip generation and preliminary findings and follow-up.

Table 12-1 Summary of Meetings and Correspondence with the Government Agencies and Stakeholders Associated with the Garibaldi Resort Project

DATE	AGENCY/STAKEHOLDER	PARTICIPANTS	ISSUES DISCUSSED
32. January 29, 2003	Meeting with Squamish Chamber of Commerce	Karen Hodson, Administrator and approximately 60-70 members Mike Esler and Glenn Stewart gave the presentation	Meeting to present the new majority shareholders, project team, timelines for submission to the EAO and LWBC (April 25, 2003 report submission) and to answer any questions regarding the project
33. January 31, 2003	Meeting with Provincial and Federal Regulatory Agencies including, EAO, DFO, Environment Canada, District of Squamish, Resort Municipality of Whistler, Ministry of Forests	Cameron Chalmers (District of Squamish), Frank Ullmann & John Crooks (Ministry of Forests), Brent Harley (Consultant to LWBC), Vicki Carmichael, Anne Currie & Paul Finkel (EAO), Val Lowther (LWBC), Jennifer Tennant (Environment Canada), Tom Bell (Parks), Rudy Reimer and Susie Calla (Squamish Nation)	All day meeting to update the various agency personnel on the project design and planning work completed to date. Presentations were made by SE Group (mountain plan), Perkins Design (resort base plan), Urban Systems (water supply, liquid and solid waste plan), McElhanney (road design and traffic), ENKON (environmental baseline information), IRIS (Garibaldi Provincial Park issues) and Thurber Engineering (geotechnical issues). ARCAS (Archaeological assessment) and First Heritage (Traditional Use Issues) attended but did not present any information

Table 12-1 Summary of Meetings and Correspondence with the Government Agencies and Stakeholders Associated with the Garibaldi Resort Project

DATE	AGENCY/STAKEHOLDER	PARTICIPANTS	ISSUES DISCUSSED
34. February 5, 2003	Squamish Outdoor Recreational Cycling Association	Mike Esler, Dave McRae, Brad Walkey, Don Petroco	Introductory meeting set up by Dave McRae to show the draft work in progress Master Plan and ask for their input. They were very receptive to the development and confirmed they wished to work with us. They would ideally like to see if they could integrate their existing trail system with the lower portion of the proposed development and have a bike bridge crossing over the Cheekye River. They had asked that the developer pay for such a bridge, as well as provide two motorcycles to assist them in constructing and maintaining new trails. Followed up with several messages to Brad but have not had an opportunity to meet again.
35. February 5, 2003	Black Tusk Snowmobile Club	Kevin Webb, Mike Esler, Barry Groundwater (President of the club), Jennifer and Michael Blomfeld	Introductory meeting set up by Kevin Webb to show the draft work in progress Master Plan and ask for their input. They wished to study further as they wanted to see if there could be a corridor for them to their existing facility from the lower part of the mountain and to access Brohm Ridge, which possibly could be phased out in the event their use created conflicts with the development.
36. February 28, 2003	Meeting with Land & Water BC	Val Lowther	Meeting with Val Lowther to discuss the status of tenure holders and to get an update on any further discussions.

Table 12-1 Summary of Meetings and Correspondence with the Government Agencies and Stakeholders Associated with the Garibaldi Resort Project

DATE	AGENCY/STAKEHOLDER	PARTICIPANTS	ISSUES DISCUSSED
37. March 3, 2003	Letter to Glen Thompson and Val Lowther of Land & Water BC	Sent by Mike Esler	The letter provides further justification and an enclosure of additional information to support the formal request for the additional study area.
38. March 4, 2003	Meeting with Land & Water BC	Glen Thompson, Val Lowther, Bob Gaglardi, Mike Esler and Glenn Stewart	Discussion about the proposed study area boundary modification and options for inclusion/exclusion of CASP
39. March 12, 2003	Meeting with Ministry of Transportation	Rob Bitte, David Lee-Young, Jesse Bains, Jose Pinto, Steve Hobbs, Mike Esler, Glenn Stewart	Meeting to present the revised preliminary highway interchange, design criteria, traffic and access roads. The Ministry representatives indicated that since McElhanney has basically followed the TAC standards, the highway interchange and road design seem acceptable
40. March 13, 2003	Letter to Glen Thompson of Land & Water BC	Sent by Glenn Stewart of ENKON	The letter provided a chronology of the study area boundary from the 1995 provincial call for expression of interest to the proposed April 2003 Master Plan submission.
41. March 18, 2003	Meeting Minutes to Rob Bitte and Jesse Bains	Sent by McElhanney	Meeting summary included draft road network plan, draft traffic plan, interchange and resort layout plan, and other.
42. March 20, 2003	Letter to Don Worthington	Letter sent by Mike Esler	The letter stated that GAS Inc. does not perceive a conflict with the land tenured to D. Worthington on Brohm Ridge

Table 12-1 Summary of Meetings and Correspondence with the Government Agencies and Stakeholders Associated with the Garibaldi Resort Project

DATE	AGENCY/STAKEHOLDER	PARTICIPANTS	ISSUES DISCUSSED
43. March 24, 2003	Meeting with Squamish-Lillooet Regional District Board	All board members with the exception of Ian Sutherland, Mayor of Squamish	Mike Esler and Glenn Stewart presented the new proponent, project team, mountain and resort base design and planning to date and modified study area boundary.
44. March 24, 2003	Meeting with Black Tusk Snowmobile Club (BTSC) (Crown Lands License of Occupation (#237416) for the use of 0.78 hectares and buildings in the west-central portion of the study area)	Barry Groundwater, Mike and Jennifer Bloomfield and Kevin Webb	Discussed a number of options to avoid conflicts between snowmobiling and alpine skiing including provision of access through the site so the BTSC could connect with Whistler, moving to a new tenure area and retaining their existing tenure area and avoid the alpine ski areas. BTSC to provide proposal once in receipt of the development plan from GAS Inc.
45. March 25, 2003	Meeting with Land and Water BC	Val Lowther, Mike Esler and Glenn Stewart	Discussed the report format for the submission on April 25. Val agreed that the report submission could follow ENKON's recommended volume format where each consultant would have a section or volume of the report specific to their discipline.

Table 12-1 Summary of Meetings and Correspondence with the Government Agencies and Stakeholders Associated with the Garibaldi Resort Project

DATE	AGENCY/STAKEHOLDER	PARTICIPANTS	ISSUES DISCUSSED
46. April 3, 2003	Meeting with Ministry of Transportation	Rob Bitte, Jesse Bains, Jim Symington, Dale Jeffs, Davi Lee-Young, Don Gillespie, Ken Lukawesky, Max Walker, Don Smith, Howard Hunter, Dave Smith (Thurber), Steve Hobbs (McElhanney), Mike Esler (GAS Inc.)	Meeting to present the revised preliminary highway interchange, governance related to highways jurisdiction, road network, design criteria, geotechnical assessment, traffic study.
47. April 9, 2003	Meeting with District of Squamish	Kim Anema, Ian Sutherland, Mike Esler	Meeting to discuss preliminary phase 1 development costs projected to date, timing of the cost-benefit analysis report and confirmation that GAS Inc will meet the April 25 deadline with LWBC.
48. April 9, 2003	Black Tusk Snowmobile Club	Mike Esler, Michael Blomfeld	Brief meeting for purposes of dropping off the draft Master Plan for their membership meeting that evening. It was agreed that the Master Plan would be held in the strictest confidence.

**Table 12-2 Summary of Meetings and Correspondence with the Squamish Nation
Associated with the Garibaldi Resort Project**

DATE	AGENCY/STAKEHOLDER	PARTICIPANTS	ISSUES DISCUSSED
1. January 9, 2003	Telephone discussion with the Squamish Nation	Chief Gibby Jacob	Telephone discussion with Bob Gaglardi to set up a meeting with some of the councillors
2. January 13, 2003	Meeting with Squamish Nation	Chief Gibby Jacob and a committee, Bob Gaglardi and Luigi Aquilini	Meeting to introduce the proponent and discuss potential opportunities for the Squamish Nation
3. January 14, 2003	Letter to Chief Gibby Jacob of the Squamish Nation	Sent by Bob Gaglardi and Luigi Aquilini	The letter provided a history of the corporate ownership, corporate management team, consultant team and various reports such as base maps, interim agreement etc.
4. January 30, 2003	Susie Calla of the Squamish Nation attended a portion of the project consultants planning meeting	Susie Calla	Half day meeting to update the various First Nations and federal and provincial agency personnel on the project design and planning work completed to date. Presentations were made by SE Group (mountain plan), Perkins Design (resort base plan), Urban Systems (water supply, liquid and solid waste plan), McElhanney (road design and traffic), ENKON (environmental baseline information), IRIS (Garibaldi Provincial Park issues) and Thurber Engineering (geotechnical issues). ARCAS (Archaeological assessment) and First Heritage (Traditional Use Issues) attended but did not present any information

**Table 12-2 Summary of Meetings and Correspondence with the Squamish Nation
Associated with the Garibaldi Resort Project**

DATE	AGENCY/STAKEHOLDER	PARTICIPANTS	ISSUES DISCUSSED
5. February 14, 2003	Meeting with Squamish Nation	Chief Gibby Jacob, Bob Gaglardi, Luigi Aquilini, Mike Esler and Glenn Stewart	GAS Inc. offered employment and business opportunities, payment of a percentage of the overall gross revenues generated by the project provision of funding to review the proposed project
6. February 20, 2003	Letter to Squamish Nation	Sent by Bob Gaglardi and Luigi Aquilini	Introductory letter as a follow up to the meeting held on February 14, 2003 and to ask for a meeting with the Chiefs and Council. Various information documents including Potential long term opportunities for the Squamish Nation were outlined a letter.
7. March 12, 2003	Meeting with Squamish Nation Chiefs and Council	Chief Gibby Jacob, Chairman Chief Bill Williams, Co-Chairman Byron Joseph and other chiefs and councilors, Bob Gaglardi and Luigi Aquilini, Dave Ethier (Urban Systems) Mike Esler and Glenn Stewart	Presented the new proponent, project team, mountain and resort base design and planning to date, modified study area boundary, servicing concepts and environmental baseline work to date. Discussed potential partnership/involvement of the Squamish Nation such as 15+ years of facility construction and logging employment, first right of refusal for employment opportunities, education and training programs, and operational employment in slier services, hotel property and restaurant management. Chairman and Chief Bill Williams indicated that the “best the Squamish Nation could do before April 25, 2003 was to provide a letter that stated GAS Inc. presentation materials were accepted and the Squamish Nation and GAS Inc. were in full consultation”. All of the presentation materials were left with the Squamish Nation including display boards and hand-outs.

**Table 12-2 Summary of Meetings and Correspondence with the Squamish Nation
Associated with the Garibaldi Resort Project**

DATE	AGENCY/STAKEHOLDER	PARTICIPANTS	ISSUES DISCUSSED
8. March 14, 2003	Letter to Squamish Nation	Sent by Bob Gaglardi and Luigi Aquilini	Thank you letter for meeting with the Chiefs and Council and offered to host lunch/dinner for members of the North Vancouver and Squamish bands.
9. March 21, 2003	Meeting with Squamish Nation	Chief Gibby Jacob and a committee met with Bob Gaglardi and Luigi Aquilini	Meeting to clarify some of the previous miscommunication and to re-iterate GAS Inc. intention to provide long term benefits to the Squamish Nation including employment and business opportunities and financial compensation for purchase of property.
10. April 4, 2003	Letter to Squamish Nation	Sent by Bob Gaglardi and Luigi Aquilini	Clarification of Garibaldi at Squamish Inc. re-iterating GAS Inc. intention to provide long term benefits to the Squamish Nation including employment and business opportunities and financial compensation for purchase of property.