

Quesnel /Horsefly Lakes Residential Land Assessment

Prepared for:

Cariboo Regional District
In partnership with
Department of Fisheries and Oceans
&
The Real Estate Foundation of BC

August 2009



Head Office:
2144 Kinglet Road
Williams Lake BC V2G 5M3
T: (250) 267 2445
F: (250) 305 2445
E: orbis1@telus.net

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY	3
1.1 PUBLIC CONSULTATION SURVEYS	3
1.2 PUBLIC INFORMATION.....	4
1.3 ENVIRONMENTALLY SENSITIVE AREAS (ESAs).....	4
1.4 RECOMMENDATIONS	5
2. LOCAL GEOGRAPHY	6
2.2 TOPOGRAPHY	7
2.3 BIOGEOCLIMATIC ECOSYSTEM CLASSIFICATION (BECs).....	7
2.4 REGIONAL GEOLOGY.....	8
2.5 PARKS AND PROTECTED AREAS	8
2.6 WATERSHEDS.....	9
3. FISH AND WILDLIFE	12
3.1 WILDLIFE.....	12
3.2 FISHERIES RESOURCE	13
3.3 ENDANGERED / THREATENED SPECIES	18
4. NATURAL RESOURCES	19
4.1 FORESTRY	19
4.2 MINING	19
4.3 COMMERCIAL TOURISM	19
4.4 AGRICULTURE.....	21
4.5 SRMP LAKE CATEGORIES	21
5. FIRST NATIONS	23
6. GOVERNMENT PLANS & POLICIES	24
6.1 CARIBOO REGIONAL DISTRICT (CRD)	24
6.2 DEPARTMENT OF FISHERIES AND OCEANS (DFO)	25
6.3 ENVIRONMENT CANADA.....	25
6.4 INTEGRATED LAND MANAGEMENT BUREAU	26
6.5 MINISTRY OF ENVIRONMENT.....	26

6.6 TRANSPORT CANADA26

6.7 MINISTRY OF HEALTH (INTERIOR HEALTH AUTHORITY)27

7. FISH & WILDLIFE PROJECTS 28

8. CONSULTATION 29

8.1 GOVERNMENT INTERVIEWS29

8.2 COMMUNITY SURVEYS29

8.3 COMMUNITY MEETINGS30

9. COMMUNITY SURVEY RESULTS..... 31

10. REFERENCES 39

10.1 WEBSITES39

10.2 DOCUMENTS AND REPORTS40

1. Executive Summary

The Quesnel – Horsefly Lakes Residential Land Assessment Project (the Project) is jointly sponsored by the Cariboo Regional District, the Department of Fisheries and Oceans and the Real Estate Foundation of BC. The assessment area includes the foreshore area of Quesnel and Horsefly Lakes (the *Subject Lands*). The purpose of the project is to identify opportunities and constraints for suitable residential development areas in the *Subject Lands*. The *Subject Lands* represent a unique environmental, ecological and recreational landscape with high potential for future development pressures. This assessment is designed to identify the environmental, social and economic *carrying capacity*¹ for this area and use this information as a tool for decision makers in responding to future development pressures. Carrying capacity of the *Subject Lands* has been identified through community and government consultation and land use research.

As a combined effort between the Cariboo Regional District, Department of Fisheries & Oceans and Real Estate Foundation of BC, this project brings together local government, federal government and the private sector in an attempt to promote synergies in land use policy development and decision making.

1.1 Public Consultation Surveys

In order to gain public input to the process, surveys were sent out to residents in the communities of Horsefly and Likely and residents living within 100m of the shores of Quesnel and Horsefly Lakes. Survey information related to age, children and length of occupancy was gathered and the results indicated that the community is in decline. The survey results further indicate a much different demographic in the survey area than in the Province and the community of 150 Mile House (also located in Electoral Area F of the Cariboo Regional District). The table below shows the “empty nesters” or residents over the age of 45 with children not

¹ Carrying capacity is defined as the number of people that can be supported by a given ecosystem, given their consumption of natural resources and use of technology.

living at home is more than double the Provincial and Regional averages. Detailed results of the 2009 Survey are presented in graph form in Section 9 of this report.

	2009 Project Survey results	150 Mile House 2006 census results	Provincial 2006 census results
% population over age 45	74%	42%	43%
Children over the age of 18	77%	24%	31%

1.2 Public Information

Public Information meetings held in the communities of Horsefly and Likely were reasonably attended (12 to 30). The discussion at these meetings showed that there is a dichotomy between the lake residents and the residents of the communities of Horsefly and Likely. Most of the seasonal lakeshore residents are strongly opposed to new development where the permanent residents are concerned about the economic sustainability of their community and are more supportive of development. Those who did support development preferred it to occur within the service areas of Horsefly and Likely. No one wanted to see the Quesnel / Horsefly Lakes become the “next Shuswap Lake” however the need for a critical mass of commercial activity to provide services and amenities to make lake access possible was supported. The idea of development based on environmental *carrying capacity* was largely supported. In addition to these meetings public information brochures that summarize the findings of the project will be created by the Cariboo Regional District and made available to potential developers.

1.3 Environmentally Sensitive Areas (ESAs)

In addition to the data collected and presented in this report, the project includes a mapping component to provide spatial context to the carrying capacity of the *Subject Lands*. Mapping data has been gathered from the Integrated Land Management Bureau – Horsefly Sustainable Resource Management Plan & the BC I-Map website and used to create polygons that identify Environmentally Sensitive Areas (ESA). Polygons that represent the ESAs have been mapped in digital format and will be uploaded to a public interface using the Community Mapping Network. Public access to the ESA polygons will provide a useful high level planning tool for future development in the area.

1.4 Recommendations

1. Potential developers of property located in the *Subject Lands* should be familiar with the following regulatory literature:
 - Cariboo Regional District: “Shoreline Management Policy”
 - Fisheries and Oceans Canada: “Working in and Around Water”
 - BC Ministry of Environment: “Land Development Guidelines”
2. Planning decisions should attempt to address the challenges identified during this project of maintaining the environmental integrity of the area while providing opportunities for economic growth.
3. Development policies and decision making based on environmental *carrying capacity* was largely supported and provides a measurable planning tool to achieve environmental integrity and economic growth.
4. The residents expressed the need for a “critical mass” of commercial activity to provide infrastructure, services and amenities to make lake access and recreation possible. Access to commercial fueling stations on the lake was a primary concern.
5. This report has presented a detailed analysis of environmental constraints. These constraints should be used at a high level when making land use decisions and policies.
6. The disposition of Crown Land is under the Jurisdiction of the BC Crown and the values identified in this report should be considered in any Crown Land sales process.
7. The *Subject Lands* are rich in First Nations interests and values and consultation should be conducted on a case by case basis.
8. A protocol agreement or letter of understanding with local First Nations regarding process for this to occur may be advantageous to both the CRD and the First Nations.
9. The environment, natural setting and low population were identified as key values by the residents. Land use decisions should be made that support and maintain these values.
10. Any development proposals within the service areas of Horsefly and Likely should be considered priority.

11. Potential developers of property within the *Subject Lands* should refer to the associated map with this report for:

- Avoidance of areas with environmental constraints such as critical fish habitat & critical habitat for species at risk
- Avoidance of areas with steep terrain or wetter soil types
- To take note of areas where roaded access already exists

2. Local Geography

Quesnel Lake is situated east of the Cariboo Plateau in the foothills of the Cariboo Mountains. With a watershed area of approximately 11,500km² this glacial fjord lake is the largest lake in the Cariboo district and the largest inland fjord lake in British Columbia. With a mean depth of approximately 160m and a max depth of approximately 506m, this lake contains a vast and abundant fish population. Like most oligotrophic lakes, the low nutrient levels, primarily low productivity and the oxygen rich bottom combine to create an ideal location for large populations of fish. The three main systems recharging Quesnel Lake are the Horsefly River, the Mitchell River, and Niagara Creek with several other smaller systems feeding the lake. The Quesnel River is the only discharge channel from Quesnel Lake, with a mean annual outflow of approximately 131 cubic meters per second.

Horsefly Lake is another large lake in the area and is located south of Quesnel Lake. The lake is approximately 5800 ha. in size and is fed by several higher elevation creeks surrounding the lake. The Little Horsefly River is the outflow of the lake connecting to Little Horsefly Lake which then drains into the Horsefly River. The lake is clear and cool and home to a variety of fish like that of Quesnel Lake. Both lakes are connected by a walking trail leading from Suey Bay on Horsefly Lake to Slate Bay on Quesnel Lake.

2.1 Settlement Areas

The two largest communities in the *Subject Lands* are Likely and Horsefly. Likely is located at the confluence of the Quesnel River with Quesnel Lake. Likely was once a major mining center

and is known for its role in the Cariboo Gold Rush and the hydraulic mining activities of the “Bullion Pit”. Likely is home to an estimate of approximately 350 residents. Horsefly is located along the Horsefly River immediately downstream from the convergence zone of the Little Horsefly and Horsefly Rivers. Horsefly has a population of approximately 150 residents according to the 2006 BC Stats Census, and 67 permanent dwellings. The residents of both Likely and Horsefly depend on the forestry, ranching, tourism and mining industries.

2.2 Topography

In the Quesnel / Horsefly Lakes Areas, the general topography is typical of mountain foothills terrain. Located on the west side of the lakes is the Cariboo Plateau which is increasingly undulating as it leads toward the Quesnel Lake area. Adjacent to the Cariboo Plateau, several rivers and creeks carve the land creating deep or large valleys creating the area known as the Quesnel Highlands. The Quesnel Highlands are made up of several lower elevation mountains, located on the north and south sides of these lakes, including those generating the Goose Range north of Quesnel Lake. East of Quesnel Lake and adjacent to the Quesnel Highlands are the Cariboo Mountains. Elevations in the Quesnel Highlands and Cariboo Mountains range from approximately 700 - 2600m asl.

2.3 Biogeoclimatic Ecosystem Classification (BECs)

The general climate of the Cariboo Region is characterized by warm dry summers, and long, cold, snowy winters. Both Quesnel and Horsefly Lake are located in the transition zone from the Cariboo Plateau to the Cariboo Mountains and two distinct biogeoclimatic zones emerge, the ICH-Interior Cedar Hemlock Zone and the ESSF - Engelmann Sub Alpine Fir Spruce Zone. The shores of Quesnel Lake are within the ICH - Interior Cedar Hemlock Zone which extends west into the Cariboo Plateau and also south to the community of Horsefly. The remaining areas within the Horsefly Forest District boundaries are classed as ESSF - Engelmann Sub-Alpine Spruce Zone and AT - Alpine Tundra zone and generally encompass the higher elevations around these lakes and extend north into the Cariboo Mountains. Due to the two different zones, the Horsefly Forest District climate is characterized by the dry grassland span of the Cariboo Plateau and the interior rainforest of the Cariboo Mountains. The combination of

biogeoclimatic zones and location provide the area with a unique micro-climate. The Cariboo Mountains receive as much precipitation as many coastal areas; the precipitation falls as snow in the winter months, and lasts late into the spring. The late lying snow patches are the result of low temperatures not conducive to rapid melting. The diverse flora and fauna of the area encompassing Quesnel Lake and Horsefly Lake are a direct result of the unique micro-climate in this area.

2.4 Regional Geology

The bedrock geology of the *Subject Lands* consists of Precambrian and Paleozoic sedimentary rocks, underlain by extrusive volcanics of Triassic and Jurassic age. This area was heavily glaciated during Pleistocene; this is evident by the glacial fjord lake (Quesnel Lake) and the glaciers that are still present in the high elevation areas. There are two dominant soil types of the Quesnel Lake and Horsefly Lake area they are Humo-ferric Podzols and Gray Luvisols. The Humo-ferric Podzols make up the majority of this area, however located south of Horsefly Lake and west of both Lakes are Gray Luvisols. The Gray Luvisols continue to extend west into the area from the Cariboo Plateau. Caution must be exercised in development in areas of wetter soils such as the clay-like Luvisols as this combined with steep terrain can cause instability.

2.5 Parks and Protected Areas

Provincial Parks

Four provincial parks are present in the Horsefly Sustainable Resource Management Plan (HSRMP) boundaries:

- *Horsefly Lake Provincial Park*
- *Cedar Point Provincial Park*
- *Cariboo River Provincial Park, and*
- *Cariboo Mountains Provincial Park*

Three are located on the shores of the *Subject Lands*, Cedar Point Provincial Park is located on Quesnel Lake approximately 6km from the town of Likely and Horsefly Lake Provincial Park is located on Horsefly Lake approximately 13km northeast of the town of Horsefly. Cariboo

Mountains Provincial Park touches the tip of the North Arm of Quesnel Lake.

Goal 2 Parks

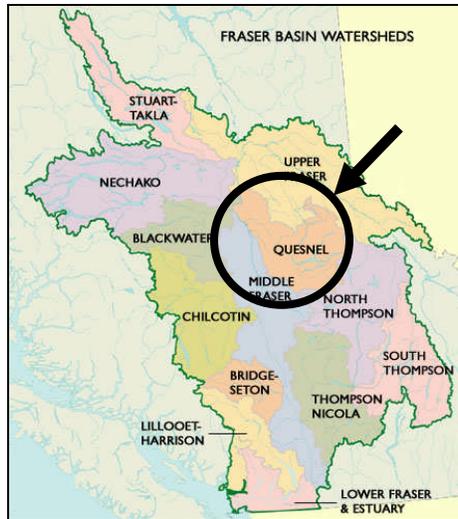
Goal 2 proposed protected areas make up .25% of the Cariboo Regions Land Base that under the CCLUP (Cariboo Chilcotin Land Use Plan) are allocated for future designation as protected areas. Twelve percent of the Cariboo Regions land base is to be classed as parks or protected areas as specified by the provincial government. The CCLUP added 17 new Goal 1 protected areas² to the existing parks areas to total 11.75 percent of this 12 percent. The function of Goal 2 proposed protected areas are to protect; rare and endangered species, unique, natural or outstanding cultural heritage, outstanding or unique botanical, zoological, geological and paleontological features, unique or special recreational features, and fragile cultural heritage features. The Cariboo Mountains and Cariboo River Provincial Parks make up the land base of the Horsefly areas that contributes to the 11.75% of the 12% to be classed as protected areas or parks. There are eight Goal 2 proposed protected areas located on the shores & in close proximity of Quesnel Lake. The parks are Quesnel Lake Parks System (QLPS -1) on Wyatt Creek, QLPS-2 on Roaring River, QLPS-3 Long Creek Eco Reserve, QLPS-4 on Peninsula Bay, QLPS-5 on Bouldery Creek, QLPS-6 on Lynx Peninsula, QLPS-7 on Horsefly Bay, and QLPS-8 on Cariboo Island.

2.6 Watersheds

The *Subject Lands* fall within the Quesnel Watershed. Refer to the map³ below for location.

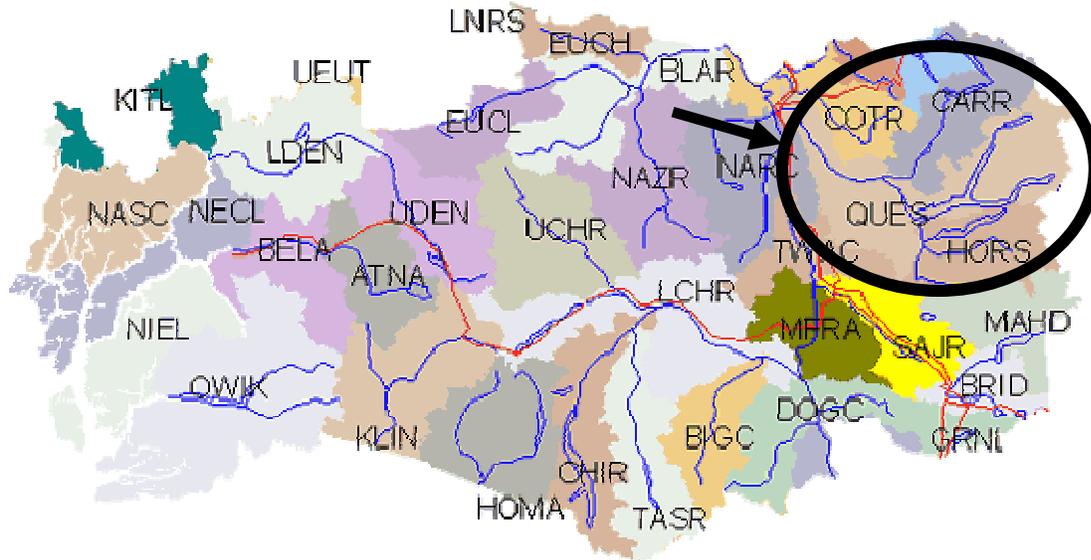
² Goal 1 Protected Areas are established for representativeness. They may protect viable, representative examples of the natural diversity of the province such as major terrestrial, marine and freshwater ecosystems, characteristic habitats, hydrology and landforms, and/or characteristic backcountry recreational and culture and heritage values of each ecosection.

³ The Fraser Basin Council map shows the main subwatersheds within the Cariboo Region.



The Quesnel Watershed consists of four smaller watersheds: Cariboo River, Cottonwood River, Quesnel River & Horsefly River. The *Subject Lands* fall within the Quesnel River & Horsefly River watersheds. Refer to the map⁴ below for location.

Watershed Atlas Groups - Region 5



The Horsefly River watershed was the only watershed in the Cariboo region to receive an Interior Watershed Assessment Procedure with some sub-basins receiving the detailed level

⁴ The circled area on the BC Watershed Atlas map shows the Cottonwood River, Cariboo River, Quesnel River & Horsefly River watershed systems that make up the Quesnel Watershed.

three assessments which involved hydrological fieldwork. The process for watershed analysis is now handled primarily by licensees who hire hydrologists and most of the analysis on watersheds to date is a basic overview somewhat similar to the Level 1 assessments under the Interior Watershed Assessment Procedure.

3. Fish and Wildlife

3.1 Wildlife

This area is home to a wide variety of wildlife. Large mammals include but are not limited to Grizzly Bear (*Ursos arctos*), Black Bear (*Ursus americanus*), Mountain Goat (*Oreamnos americanus*), Mountain Caribou (*Rangifer tarandus*), Moose (*Alces americanus*), Deer (*Odocoileus spp*), and Cougar (*Puma concolor*). The Horsefly Sustainable Resource Management Plan (HSRMP) describes many of these species as present within the *Subject Lands*.

Grizzly Habitat

Grizzly Bears (*Ursos arctos*) are federally listed under the Species at Risk Act (SARA) as a species of Special Concern and provincially are blue listed. Grizzly Bears were listed federally in 2002. The Horsefly Sustainable Resource Management Plan indicates the majority of Quesnel Lake shoreline & most of the north shore of Horsefly Lake are within the moderate habitat capability for Grizzly Bears. The remaining areas surrounding the two lakes are low habitat capability. Some high habitat capability is present north of Quesnel Lake and in an interview Rob Dolighan (MOE) & Don Lawrence (DFO) identified the shoal areas along Quesnel Lake as high habitat capability during spawning times.

Wetland Habitat

According to the HSRMP, key wetlands in the Quesnel Lake and Horsefly Lake areas were identified to protect winter, summer & calving habitat for moose with an emphasis on protecting forested areas around wetland & riparian areas. There are key wetland areas at the northern tip of the North Arm of Quesnel Lake within the Mitchell/Niagara Park, a few small patches on the west & east side of the West Arm of Quesnel Lake and some small patches at the West End of Horsefly Lake.

Ungulate Winter Range

The HSRMP outlines areas of ungulate winter ranges, natal areas & critical habitat. There are Mountain Goat (*Oreamnos americanus*) winter range & natal areas in the high elevations between the East and North arms of Quesnel Lake and southeast of Horsefly Lake with some isolated pockets adjacent to the east arm of Quesnel Lake. Mule Deer (*Odocoileus hemionus*) winter range occurs around the Likely community area & along the east shore of the West Arm of Quesnel Lake and along the north shore at the west end of Horsefly Lake. Details of the Mountain Caribou critical habitat are outlined below.

Mountain Caribou

Mountain Caribou⁵ (*Rangifer tarandus*) are federally listed under SARA as threatened & provincially are red listed. A Recovery Implementation Group was formed after the Mountain Caribou were listed as threatened in May 2000 and the Group helped in the formation of the Recovery Implementation Plan. The two Mountain Caribou herds in the Quesnel & Horsefly Lakes area are the Wells Gray North & the Well Gray South. Mountain Caribou critical habitat areas consist of Caribou no harvest areas. The region contains of critical habitat in the mountainous region that falls between the east and north arms of Quesnel Lake, with a small area located east of Horsefly Lake. There is more critical habitat located north of Quesnel Lake on the west side of the east arm as well as south of the north arm and east of Horsefly Lake.

3.2 Fisheries Resource⁶

Intact and healthy riparian zones on both Quesnel and Horsefly Lakes play an important role in fish habitat enhancement with the following:

- Provide shade and cooling
- Provide cover along the shoreline for juvenile fish
- Provide bank stability
- Acts as a water filter

⁵ Mountain Caribou are an ecotype of Woodland Caribou (*Rangifer tarandus caribou*); the other is the Northern Caribou ecotype.

⁶ Fisheries section of this report was provided by Rick Holmes of Cariboo Envirotech

- Overhanging branches help deliver food by way of insects dropping into the water

Of interest to potential developers of property located near streams and rivers are the following regulatory agencies where literature and guidance can be obtained to protect riparian or shoreline zones:

- Cariboo Regional District at 250-392-3351 and at <http://www.cariboord.bc.ca/>
For their “Shoreline Management Policy”
- Fisheries and Oceans Canada-Williams Lake 250-305-4002
Pacific Region at <http://www.pac.dfo-mpo.gc.ca/index-eng.htm>
For the “Fisheries Act”
For the document “Working in and Around Water”
For the document “Standard Operating Policies”
- BC Ministry of Environment-Williams Lake 250-398-4530
Cariboo Region at <http://www.env.gov.bc.ca/cariboo>
For the document “Land Development Guidelines”
For the “Water Act”

3.2.1 Quesnel Lake

Quesnel Lake located approximately 90 kms by road east of Williams Lake is known as a great sport fishery and the deepest fiord lake in the world with a variety of maximum depths offered in reports and on the Internet, but most commonly, a depth of 506 metres is provided. The lake is also the deepest in British Columbia and the outlet in the village of Likely is located at approximately 729 metres. The Quesnel River drains this large interior lake that has a watershed area of approximately 11,500 km². The three largest contributors of water to this lake are the Horsefly River, the Mitchell River, and Niagara Creek.

The following fish species are known to reside in Quesnel Lake:

Common Name	Latin Name	Abbreviation
Bull Trout	<i>Salvelinus confluentus</i>	BT

Burbot	<i>Lota lota</i>	BB
Chinook	<i>Oncorhynchus tshawytscha</i>	CH
Coho	<i>Oncorhynchus kisutch</i>	CO
Kokanee	<i>Oncorhynchus nerka</i>	KO
Lake Trout	<i>Salvelinus namaycush</i>	LT
Longnose Dace	<i>Rhinichthys cataractae</i>	LNC
Minnow (general)	many, all cyprinids	C
Mountain Whitefish	<i>Prosopium williamsoni</i>	MW
Northern Pikeminnow	<i>Ptycheilus oregonensis</i>	NSC
Peamouth Chub	<i>Mylocheilus caurinus</i>	PCC
Rainbow Trout	<i>Oncorhynchus mykiss</i>	RB
Redside Shiner	<i>Richardsonius balteatus</i>	RSC
Sockeye	<i>Oncorhynchus nerka</i>	SO
Sucker (general)	<i>Catostomus</i>	SU

Kokanee (Oncorhynchus nerka) is the freshwater version of sockeye salmon. In Quesnel Lake there are separate reproductive stocks of Kokanee termed shoal and stream spawners. Stream spawners have now virtually disappeared from estimated populations of 50,000 to 100,000 in the 1950s. Shoal spawners have been more difficult to enumerate, however the 2003 spawning population was estimated to be 75,000 to 150,000 using biostandards of survival developed on Kootenay Lake and Arrow Reservoir. This is down 37-57% over the last decade (1993-2003) from an estimated spawning population of 175,000 – 245,000 (Dolighan, R. et al 2003).

The large rainbow trout (*Oncorhynchus mykiss*) found in Quesnel Lake are trophy size, late maturing and few in number. They spawn primarily in the Horsefly River, McKinley Creek and the Mitchell River. This unique strain of rainbow trout, rival the more famous Gerrard rainbows in size and provide anglers with a memorable fishing experience. Due to their limited number, special angling regulations have been implemented on Quesnel Lake to protect this strain of rainbow trout.

Bull Trout are termed a “species of special concern” in British Columbia. Up until a few years ago they were often called Dolly Varden as well but are now known to be two different species (interview Richard Holmes 2009).

3.2.2 Horsefly Lake

Horsefly Lake is also located east of Williams Lake (approximately 80 km.) and drains into the Horsefly River which subsequently flows into Quesnel Lake at Horsefly Bay. The well known sport fishery lake is deep as well with a maximum depth of 190.5 metres. The lake has a surface area of 5,868 hectares and is situated at an elevation of 787 metres.

The following fish species are known to reside in Horsefly Lake:

Common Name	Latin Name	Abbreviation
Kokanee	<i>Oncorhynchus nerka</i>	KO
Lake Trout	<i>Salvelinus namaycush</i>	LT
Minnow (general)	many, all cyprinids	C
Whitefish (general)	<i>Prosopium spp.</i>	WF
Northern Pikeminnow	<i>Ptycheilus oregonensis</i>	NSC
Rainbow Trout	<i>Oncorhynchus mykiss</i>	RB
Western Brook Lamprey	<i>Lampetra ayresi</i>	RL
Sockeye	<i>Oncorhynchus nerka</i>	SO
Sucker (general)	<i>Catostomus</i>	SU

The Interior Fraser River Coho have been listed as “endangered” by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). However when tabled for status through the Canadian Species at Risk Act (SARA) they were not listed as protected species due to socio-economic reasons (interview Richard Holmes 2009).

Critical Fish Habitat

The HSRMP outlines areas of critical fish habitat and the species habitat that was considered was salmon, bull trout, rainbow trout & kokanee. Areas such as spawning grounds, nursery, rearing, food supply and migration areas that are vital to the survival and recovery of fish species at risk was all included within the critical fish habitat. On Quesnel Lake, there are many critical fish habitat areas along the convergence zones of most creeks and rivers on the North Arm & East Arm, there are a few areas along Haggan's Point & Shoal's Bay, an area around Hazeltine Creek & Hobson Arm and the whole of Quesnel River. On Horsefly Lake, at the east end there are four areas along the convergence zones of creeks, at the west end there are three areas along the convergence zones of creeks, and along the whole of the Horsefly River.

Sport Fishing

Sport Fishing is extremely popular attracting people from all over North America as well as internationally to fish in the area. Whether based out of a lodge or resort situated on Quesnel or Horsefly Lake or reliant on one of these lodges or resorts, the fishing adventure companies are abundant. All of these companies are operational in the late spring to early fall and accommodate fishing activities either entirely or partially, some even cater to ice fishing in the winter months. The partial fishing resorts facilitate other activities such as hunting, boating, wildlife viewing, and nature tours.

3.3 Endangered / Threatened Species

The table below identifies the endangered and threatened species from known to exist in the *Subject Lands* both the BC Provincial Status and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) for listed wildlife species. The table was generated from the BC Species and Ecosystems website searching species in the Central Cariboo in the ICH biogeoclimatic zone. The BC Status has four classes, they are;

1. Extinct
2. Red – extirpated⁷, endangered⁸ or threatened⁹
3. Blue – species of concern (vulnerable)
4. Yellow – species that are not at risk in BC

COSEWIC status has six levels to its status list they are;

- | | | |
|-------------------|-------------------------|----------------------|
| 1. Extinct | 2. Extirpated | 3. Endangered (E) |
| 4. Threatened (T) | 5. Special concern (SC) | 6. Not at risk (NAR) |

Scientific Name	English Name	COSEWIC	BC Status
<i>Ardea herodias</i>	Great Blue heron, <i>herodias</i>		Blue
<i>Asio flammeus</i>	Short-eared Owl	SC	Blue
<i>Chrysemys picta pop.</i> 2	Western Painted Turtle	SC	Blue
<i>Gulo gulo luscus</i>	Wolverine, <i>luscus</i> subspecies	SC	Blue
<i>Icteria virens</i>	Yellow-breasted Chat	E	Red
<i>Martes pennanti</i>	Fisher		Blue
<i>Melanerpes lewis</i>	Lewis's Woodpecker	SC	Red
<i>Myotis thysanodes</i>	Fringed Myotis		Blue
<i>Numenius americanus</i>	Long-billed Curlew	SC	Blue
<i>Ovis canadensis</i>	Bighorn Sheep		Blue
<i>Rangifer tarandus</i>	Caribou (southern population)	T	Red
<i>Salvelinus confluentus</i>	Bull Trout		Blue
<i>Taxidea taxus</i>	Badger	E	Red
<i>Ursus arctos</i>	Grizzly Bear	SC	Blue

⁷ Extirpated - species doesn't exist in BC .

⁸ Endangered - species is in imminent danger of extirpation or extinction

⁹ Threatened - species is likely to become endangered

4. Natural Resources

Forestry, mining, agriculture and commercial tourism all depend on the maintenance of the regional carrying capacity. The natural resources section gives an overview of each field as well as an overview of the water resources management in the *Subject Lands*.

4.1 Forestry

The licensees that operate within the Quesnel & Horsefly Lakes area are West Fraser and Tolko. BC Timber Sales also has an operating area on the south side of Quesnel Lake. The Likely Community Forest is adjacent to the West Arm of Quesnel Lake. The Likely Community Forest is jointly operated by the community of Likely, Tolko & the Soda Creek Indian Band. There are a few woodlots west of the West end of Quesnel Lake but not adjacent to the lake. There are two woodlots adjacent to the West end of Horsefly Lake.

4.2 Mining

Historically mining has been very important to the Quesnel Lake and Horsefly Lake areas. The Cariboo Gold Rush in the 1850's was the start to the mining industry in this area followed by the damming of the Quesnel River in the late 1890's to allow exploration down river. In the late 1890's to the early 1940's the Bullion Pit was the largest Hydraulic gold mine in the Cariboo Region. Mining has continued to be a predominant land use in the region. Mineral tenures in the area are concentrated in the areas extending from the northwest side of the North Arm of Quesnel Lake circling around the west end of both Quesnel and Horsefly Lakes. This area accounts for approximately half of the *Subject Lands*. Currently the area is home to numerous active placer mining operations, advance mineral exploration projects and the Mount Polley Copper Gold Mine.

4.3 Commercial Tourism

Quesnel Lake and Horsefly Lake both boast vast back country areas providing an abundant resource for the tourism industry. There are many backcountry activities in this area that include but are not limited to hunting, fishing, canoeing/kayaking, wildlife viewing, hiking, mountain biking, skiing, and snowmobiling. Aside from the many access roads existing in the

area that allow for tourists to enjoy the back country activities this area has to offer, there are several guides and resorts ready to accommodate tourists. The four provincial parks are a small contribution to the many recreation sites that can be found in the areas around the two lakes. In addition to the activities that contribute to tourism in this area, there are also many scenic areas, there are eight high elevation viewpoints located in the immediate areas around Quesnel Lake and Horsefly Lake.

There are numerous lodges and resorts in the Quesnel and Horsefly Lake region including but not limited to Silvertip Lodge, Elysia Resort, Northern Lights Lodge, Pyna-Tee-Ah Fishing Adventures, Eco Tours BC (a division of Pyna-tee-Ah Fishing Adventures) and Plato Island Resort. By providing accommodations and guiding services the aforementioned resorts or lodges cater to the many leisure activities contributing to this areas tourism industry.

Silvertip Lodge located on the shore of Quesnel Lake situated at the tip of the East Arm accommodates the backcountry skiers. They provide Heli-skiing opportunities to small groups no larger than ten people. The Lodge has a chef, ski guide and masseur on hand.

Elysia Resort is centered on the southern shoreline of Quesnel Lake across from the North Arm outlet and consists of a lodge with guestrooms, cabins and campsites. The resort is open from May to September and offers a wide variety of activities for guests. Some of these activities include wildlife viewing, bird watching, fishing, guided trips, hiking and many more activities.

The Northern Lights Lodge is a guided Fly-Fishing resort accommodating both river and still water fishing. There is a lodge and four cabins situated lakeside near the outflow of Quesnel Lake. This lodge was built in 1942 and is open from mid-June to October.

Pyna-Tee-Ah Fishing Adventures specializes in guided river and backcountry fishing and is located on the Quesnel River at the outlet of Quesnel Lake. The lodge has accommodations for up to 12 people. Eco Tours is a division of the Pyna-Tee-Ah fly fishing and offers wildlife

viewing, bird watching, a Natural History tour or adventure in the area.

Plato Island Resort is located on the southwest side of Quesnel Lake, west of Plato Island and approximately 36km northeast of Horsefly. The resort has several RV sites or cabins available and caters primarily but not limited to hunters, ATV riders and boaters.

There are also several adventure/guiding groups that facilitate outdoor/wilderness activities that are not centered in the Quesnel Lake area such as Cariboo River Fishing and Wilderness Adventures offering Fishing and Wildlife viewing opportunities, Rainbow Waters Fly Fishing Adventures, and Fight The Bite Fishing Adventures.

4.4 Agriculture

Agriculture interests in the area consist of the Agriculture Land Reserve, grazing tenures and some ranch land in the *Subject Lands*.

There are portions of the Agriculture Land Reserve (ALR) on Quesnel Lake just west of Bouldery Creek on the East Arm & a small finger extends to Hazeltine Creek on the West Arm. On Horsefly Lake, there is a small portion at the East tip of the lake, 2 areas just west of Archie Creek, and some large sections at the west end of the lake. There is a large portion between the two lakes surrounding Keno & Jacques Lakes. The largest areas of ALR are west of Quesnel & Horsefly Lakes.

There are range tenures surrounding Horsefly Lake & south of Quesnel Lake & between the North Arm & East Arm of Quesnel Lake. There is some ranch land in the area mostly in closer proximity to Horsefly Lake.

4.5 SRMP Lake Categories

The Horsefly Sustainable Resource Management Plan (HRSMP) categorizes lakes into five different categories that primarily address visual quality objectives. These categories are:

A Refugium Lake is a lake of ecological importance or ecosystem representation and contains

rare or endangered species/habitat.

A Wilderness Fisheries Lake is a lake that provides natural features in areas that are undisturbed and generally have no motorized access. The commercial land development around these lakes is limited to non-existent, leaving the primitive setting as an unmodified pristine natural environment.

A Quality Lake is a lake that provides quality natural features, pristine natural appearing environments, limited to no commercial development and access to these lakes may be limited.

A General Lake is a lake that provides public recreation opportunities in a natural setting or a predominantly rural setting. Access to these lakes is generally good, land development is variable and the natural environment may be modified substantially.

Key lakes are lakes that have visual objectives and other important values and recreational opportunities vital to the tourism industry. These lakes can be combined with one of the above categories.

Both Quesnel Lake and Horsefly Lake are categorized as Quality Lakes. Visual quality objectives may be threatened by a large residential or commercial development and should be considered in any development proposal. The CRD Shoreland Management Policy addresses natural conformity, as outlined in section 6.1, and would likely “trump” any VQO challenges that development may present; however, acknowledgement of the synergies between these planning tools is valuable to maintaining the environmental integrity of the *Subject Lands*.

5. First Nations

There are two Secwepemc and one Carrier First Nations with asserted traditional territory within the *Subject Lands*:

- T'exelc First Nation - Williams Lake Indian Band
- Xats'ull First Nation - Soda Creek Indian Band
- Lhatko First Nation – Red Bluff Indian Band.

There are well documented interests in the *Subject Lands* and affected areas by these First Nations in the form of registered archaeology sites, traditional use studies and research projects. High potential areas have been identified for First Nations cultural resources in the ESA polygons; however, traditional use and archaeology data is typically not made available to the public. As such consultation with First Nations on development proposals should be dealt with on a case by case basis consistent with Provincial and Regional Government Standards.

The Williams Lake Band & Soda Creek Band are currently in the BC Treaty Process and have established Statement of Intent (SOI) areas that identify their respective Traditional Territories. Within these SOI areas, negotiations have progressed to identify Treaty Settlement Lands some of which are located within the *Subject Lands*. First Nations should be contacted to identify lands selected for future Treaty Settlement Lands.

6. Government Plans & Policies

There are various federal, provincial and local government plans, policies and regulations that apply to management within the *Subject Lands*. The details of each are listed below.

6.1 Cariboo Regional District (CRD)

Shoreline Management Policy

With the increasing desire to purchase and develop waterfront property the Cariboo Regional District (CRD) has implemented the Shoreland Management Policy. The policy sets out to accomplish six main goals when dealing with development of shoreland areas. Shoreland areas are defined in this plan as 150-250 meters of land from the lake watercourse, depending on the water quality sensitivity. The objectives of the Shoreland Management Policy are:

- 1. To preserve the water quality of lakes and watercourses within the Cariboo Regional District.*
- 2. To manage shoreland development in such a manner as to preserve the integrity and capability of existing aquatic and shoreland environmental resources for wildlife habitat (movement and feeding corridor for mammals, waterfowl nesting, spawning grounds, etc.).*
- 3. To integrate shoreland developments with their natural surroundings, thereby preserving the aesthetic quality of the natural setting.*
- 4. To protect the shoreland from erosion and degradation.*
- 5. To provide shoreland access to the general public where appropriate and to reduce conflict with adjacent landowners.*
- 6. To determine suitable areas for shoreland development.*

To achieve these outcomes the Shoreland Management Policy uses four guidelines:

- 1. Onsite effluent disposal guidelines help to ensure contaminants are not entering water bodies and reducing the quality of water.*
- 2. Riparian buffer zone guidelines are used to maintain shore stability, protect fish and wildlife habitat and water quality, and to preserve the aesthetics of the area.*
- 3. Development Guidelines are intended to contribute towards objectives 1 to 5 of the above noted objectives.*
- 4. Within the Individual Shoreland Management Policies, the development guidelines are intended to contribute towards all the above noted objectives, most notably objectives 5*

& 6.

Due to being large, deep lakes both Quesnel & Horsefly Lakes have a low lake sensitivity rating. Water quality sensitivity means a rating determined as per the methodology referenced in [the shoreline management policy] as an indication of the capability of a water body to assimilate additional nutrients (principally phosphorus) without a detrimental effect on the water quality of that water body. The lake sensitivities range from low, moderate to high where a lake with a low sensitivity rating has a high capability to assimilate additional phosphorus.

6.2 Department of Fisheries and Oceans (DFO)

Canada Fisheries Act

The Fisheries Act is federal legislation that dates back to the confederation and the purpose of the Act is to protect Canada's fisheries resources. The predominant Fisheries Act sections which are applicable to the management of the *Subject Lands* are sections 35 & 36(3). Section 35 provides for protection of fish habitat against any harmful alteration, destruction or disruption of fish habitat. Section 36(3) provides for protection of fish habitat from deleterious substances.

Land Development Guidelines

These guidelines were produced by DFO & MOE. The purpose of the guidelines is to protect fish species & habitat from potential damage from land development activities. These guidelines were primarily developed to protect Pacific salmon populations, steelhead, trout, char and other freshwater fish species. The primary goal of these guidelines is to ensure the quantity & quality of fish habitat are protected & maintained. The secondary goal is to ensure the efficiency in provision of environmental assessment/impact information from land developers to DFO & MOE.

6.3 Environment Canada

Species At Risk Act (SARA)

The act is the federal government's commitment to prevent the extinction of any wildlife species and to secure actions for their recovery and to manage other species to prevent them

from becoming at risk. Part of the process under SARA is to protect critical habitat of the species at risk. One of the main species at risk in the *Subject Lands* is Mountain Caribou and the management is described in the wildlife section of this report.

6.4 Integrated Land Management Bureau

Horsefly Sustainable Resource Management Plan (HSRMP)

The Horsefly Sustainable Resource Management Plan is one of seven plans within the Cariboo region that falls under the direction of the Cariboo Chilcotin Land Use Plan. The plan area covers the Cariboo Chilcotin Forest District area formerly known as the Horsefly Forest District. The Plan provides for detailed area based resource targets and strategies for timber, range, mining, fish, wildlife, biodiversity conservation, water management, tourism, recreation, agriculture, and wildlife/agro-forestry. Critical Fish Habitat & Goal 2 parks were designated through the HSRMP process and are described above in the Fish section & Parks section of the report.

6.5 Ministry of Environment

MOE actively regulates development and guides environmental constraints to development including habitat protection, endangered species, contaminated sites and watershed management.

Water Act:

The Water Act section 9 regulates approvals and notifications for changes in and about a stream. Approvals are the responsibility of the Water Stewardship division of MOE.

Environment Management Act:

The Act provides for the management, protection, and enhancement of the environment. This Act regulates the management of wastewater.

6.6 Transport Canada

Navigable Waters Protection Act

The Act ensures a balance between the public right of navigation and the need to build works

such as bridges, dams or docks as examples. Any works have to be approved by the Minister of Transport.

6.7 Ministry of Health (Interior Health Authority)

Health Act

The Act ensures the protection of both surface water & groundwater in BC. The Act requires that septic systems and other sources of contamination are located at least 30 metres away from a drinking water well or watercourse.

7. Fish & Wildlife Projects

Organization	Project Name	Project Description
Department of Fisheries & Oceans (DFO)	McKinley Siphon	Commenced in early 1960's. Cold water pumped from Mckinley Lake to Mckinley creek to increase spawning success of Coho salmon.
DFO	Horsefly Spawning Channel	Built in 1988. Can hold 20, 000 spawning Sockeye salmon. Operates on non-peak years to improve egg to fry survival.
DFO	Black Creek Ranch property purchase/restoration	1000 acres purchased from the Black Creek Ranch. Restoration and conservation of previously damaged riparian habitat.
DFO	McKinley sockeye/coho enumeration fence	Located in Mckinley creek, 50 yards upstream of confluence between Mckinley creek and Horsefly river. Provides detailed information and documentation of Coho salmon and rainbow trout entering Mckinley creek.
DFO	Michelle Lake Dam	Negative storage dam providing warm water for winter spawning grounds in Michelle River.
Ministry of Environment (MOE)	Quesnel Lake Restoration Project	Project components include geochemistry, limnology, Sockeye, Kokanee and Rainbow Trout biology and abundance, Sockeye cyclic dominance, modeling of food web dynamics and restoration planning for Quesnel Lake and Horsefly River areas. This project is providing critical information required toward a rehabilitation and management plan for Sockeye, Kokanee, and Rainbow Trout stocks.
Quesnel River Watershed Alliance	Various	Has been involved in various projects within the Quesnel & Horsefly Lake areas.
Horsefly River Round Table	Various	Provide information, funding, and project management to facilitate healthy watersheds. Management of a fish-friendly campground in salmon spawning area. Coordination and management of the Horsefly Salmon Festival.
Fraser Basin Council	Various	Assisted in the formation of the Horsefly River Roundtable. The Fraser Basin Council offers advice and assistance for communities interested in developing and implementing sustainability plans.
Land Conservancy	Black Creek Ranch property purchase/restoration	The Land Conservancy purchased property from the Black Creek Ranch along the Horsefly River then leased the land to the Provincial government, helping in the creation of the Horsefly River Riparian Conservation Area.
Cariboo Chilcotin Conservation Society	Various	Has been involved in various projects in the Quesnel & Horsefly Lakes areas.
Environmental Youth Team	Various	Had been involved in various projects within the Quesnel & Horsefly Lakes areas.

8. Consultation

Consultation consisted of personal and phone interviews and correspondence by email with government staff, community surveys and community meeting in Horsefly and Likely.

8.1 Government Interviews¹⁰

- February 24, 2009 Interview with Rob Dolighan, MOE and Don Lawrence, DFO at the MOE office at 9am
- February 25, 2009 phone interview with Bev Frittenburg, ILMB
- March 16, 2009 Interview with Rob Dolighan, MOE and Don Lawrence, DFO at the DFO office at 10am
- March 18, 2009 email correspondence with Patrick Teti, MOF
- March 24, 2009 phone interview with Bev Frittenburg, ILMB
- March 24, 2009 email correspondence with Robin Hoffos & Darcy Peel, ILMB
- March 24, 2009 phone interview with Tony Fiala, BC Parks
- June 15, 2009 Interview with Judy Hillaby, DFO at DFO office at 2 pm

8.2 Community Surveys

A total of 888 Community Surveys were mailed out to residents located 100m from waterfront on Quesnel and Horsefly Lakes and communities of Likely and Horsefly in the winter of 2008. Of the 888 total surveys 274 were completed and 26 returned to sender representing a 26% participation rate.

In order to gain public input to the process surveys were sent out to residents and community meetings were held in the communities of Horsefly and Likely. Survey information related to age, children and length of occupancy showed the community is in decline. 74% of the respondents indicated that they were over the age of 45 and had children over the age of 18

¹⁰ As part of the research process most active NGOs in the Region were also contacted.

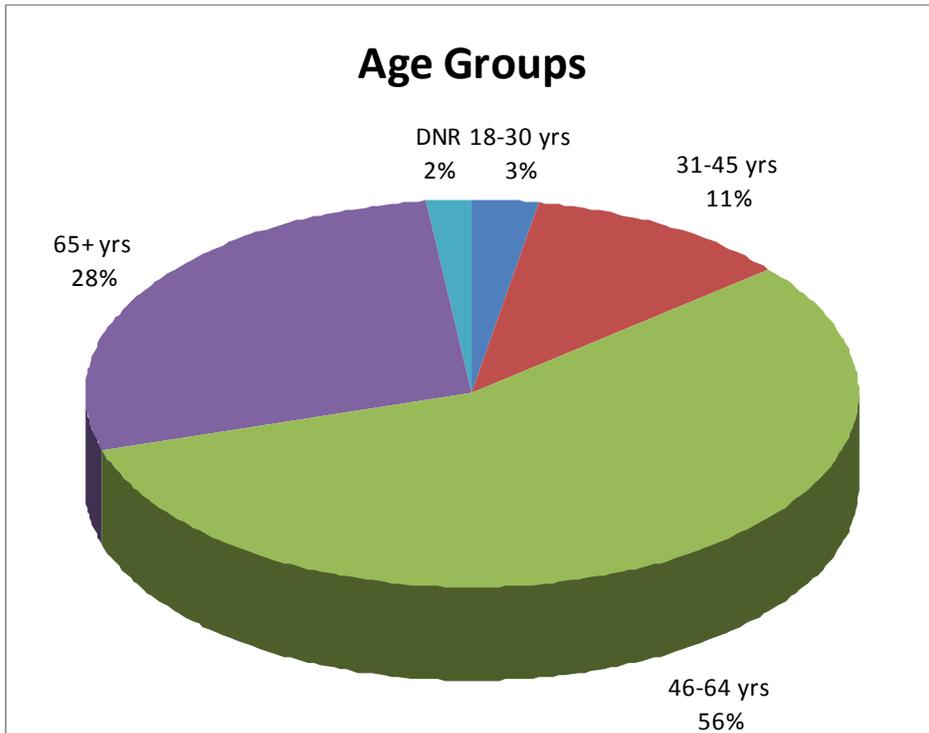
yrs. 62% indicated that they have lived in their residence for more than 10 years with only 20% indicating that they have moved into the area in the last 5 years. The respondents consistently showed the environment, natural setting and low population are key values that contribute to the quality of life in the area. The majority of the support for new development was within the service areas of the communities of Horsefly and Likely.

8.3 Community Meetings

Community meetings were held in Likely on May 26, 2009 and in Horsefly on June 2, 2009. Attendance at the Likely meeting was 12 with all of the attendants representing lakeshore, retirees. Attendance at the Horsefly meeting was approximately 30 with a mix of lakeshore and community residents.

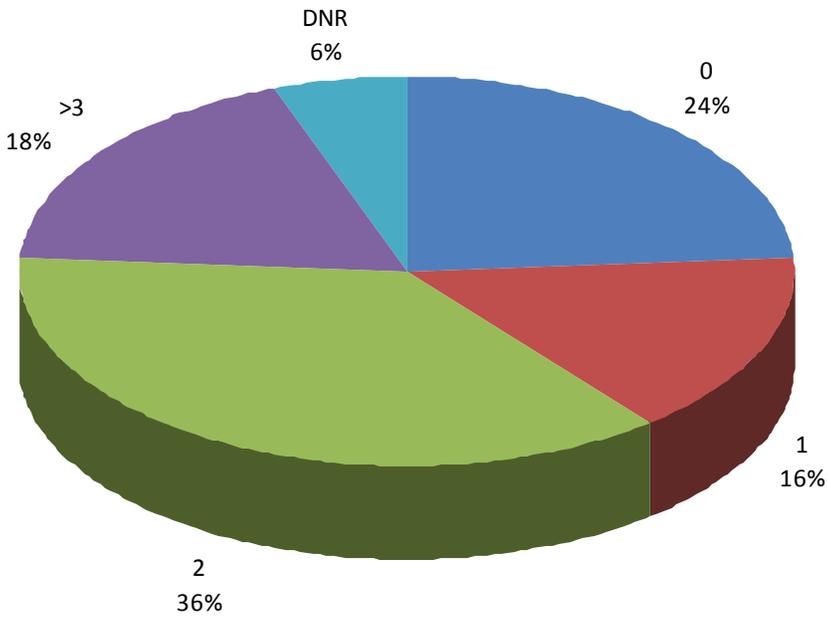
Meetings held in Horsefly and Likely were reasonably attended (12 to 30). The discussion at these meetings showed that there is a dichotomy between the lake residents and the residents of the communities of Horsefly and Likely. Most of the seasonal lakeshore residents are strongly opposed to new development where the permanent residents are concerned about the economic sustainability of their community and are more supportive of development. Those who did support development preferred it to occur within the service areas of Horsefly and Likely. No one wanted to see the Quesnel / Horsefly Lakes become the “next Shuswap Lake” however the need for a critical mass of commercial activity to provide services and amenities to make lake access possible was supported. The idea of development based on environmental *carrying capacity* was largely supported.

9. Community Survey Results¹¹

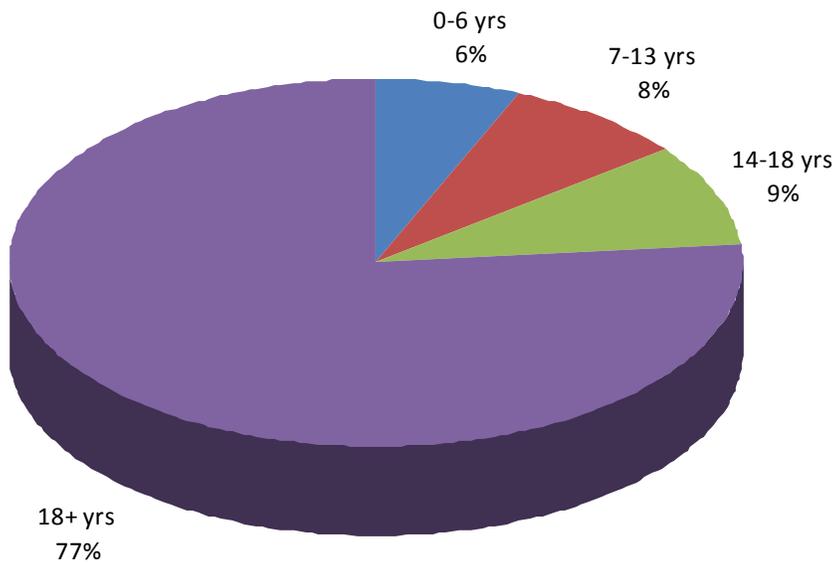


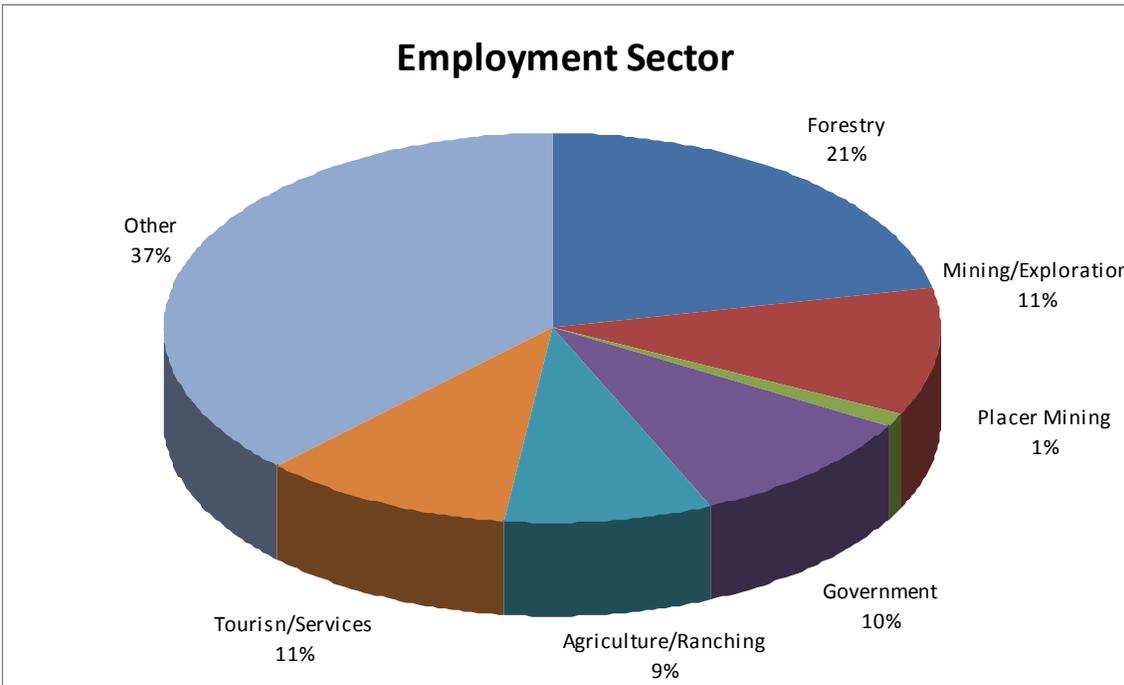
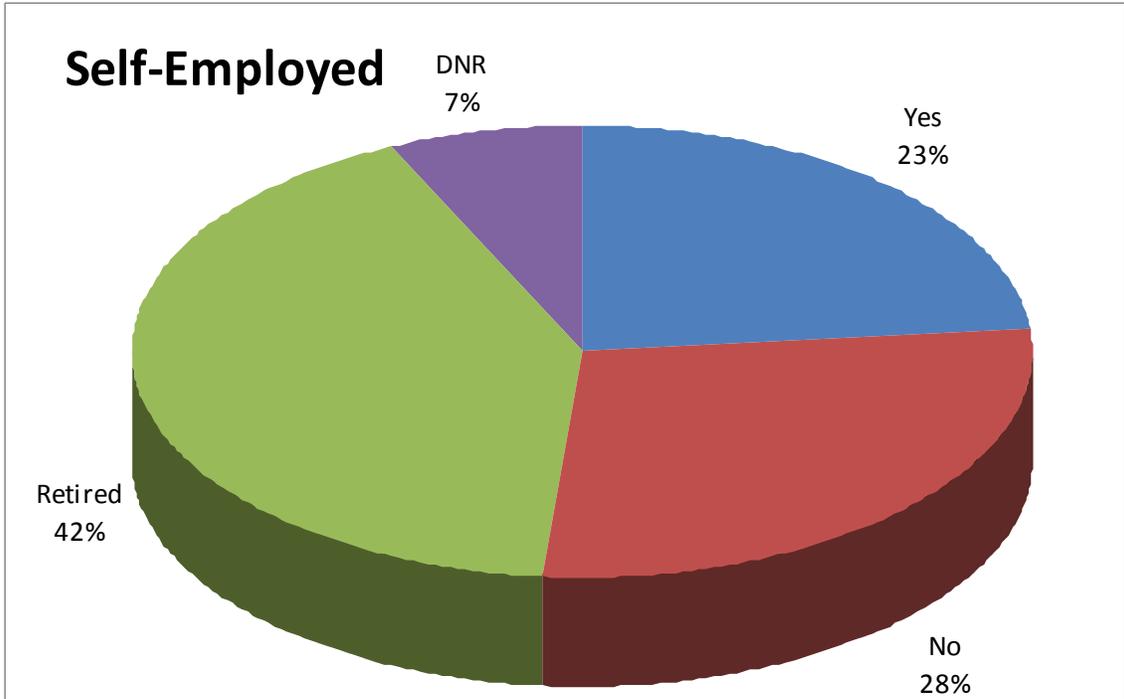
¹¹ On the graphs DNR means 'did not respond'.

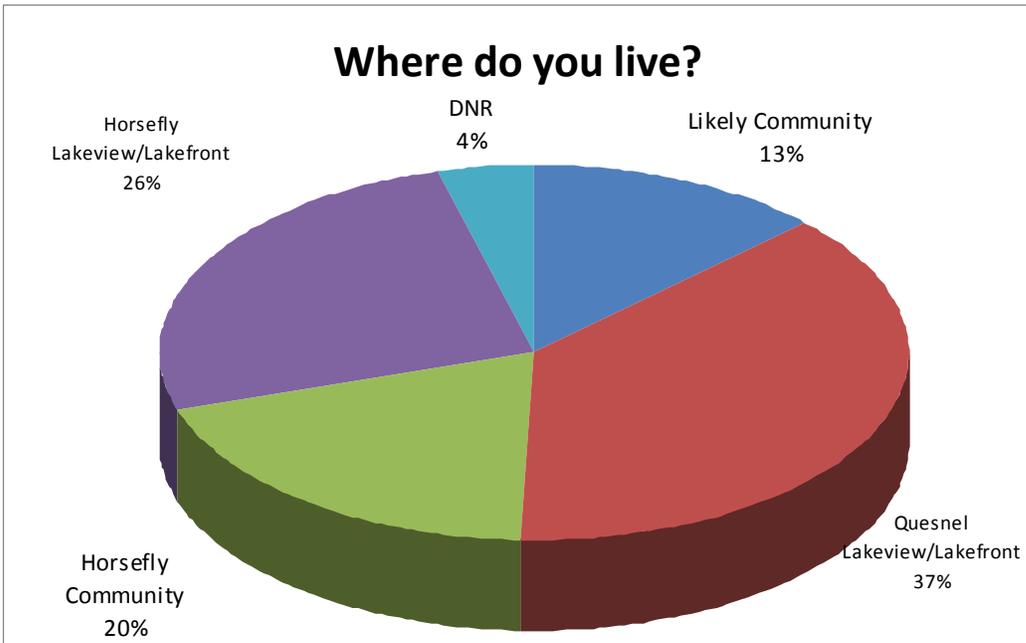
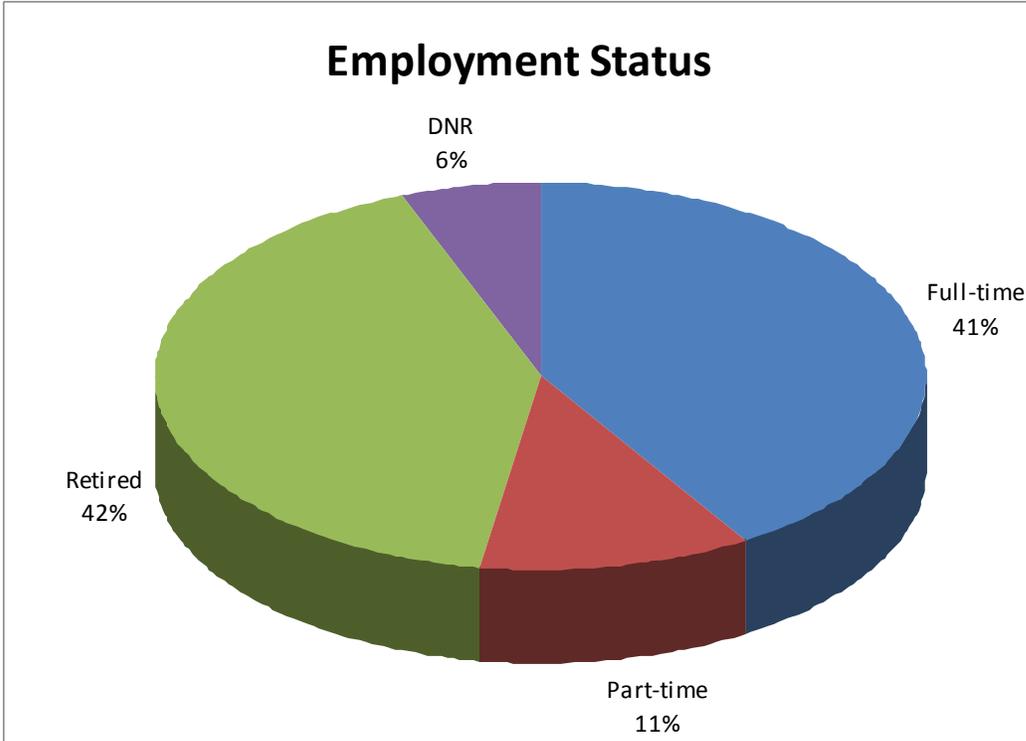
Number of Children per Family

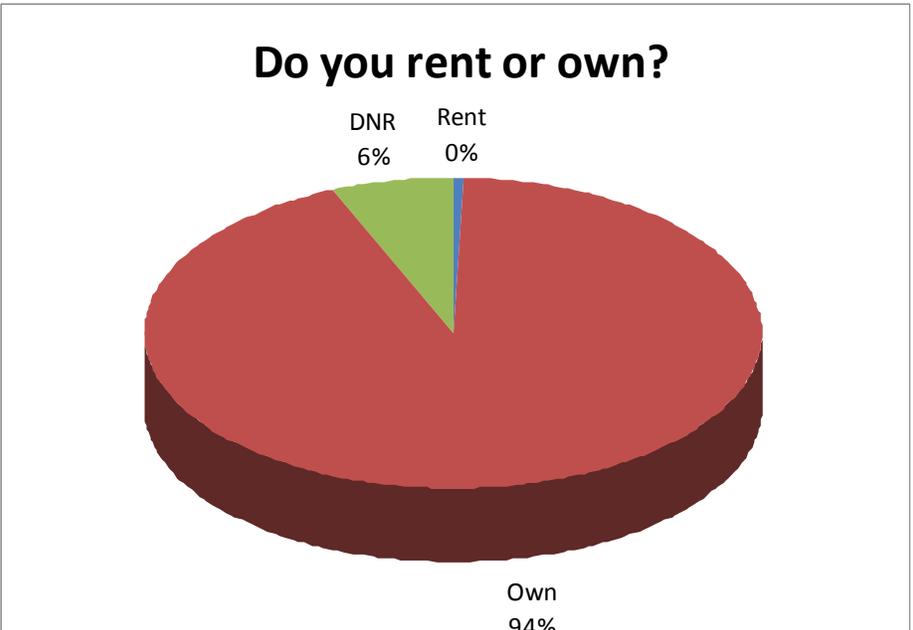
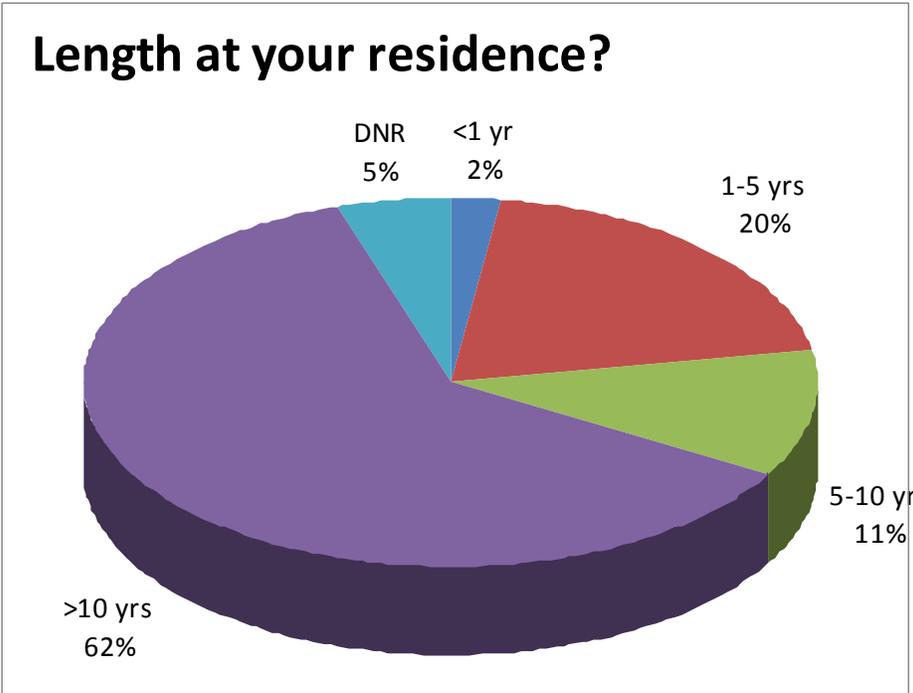


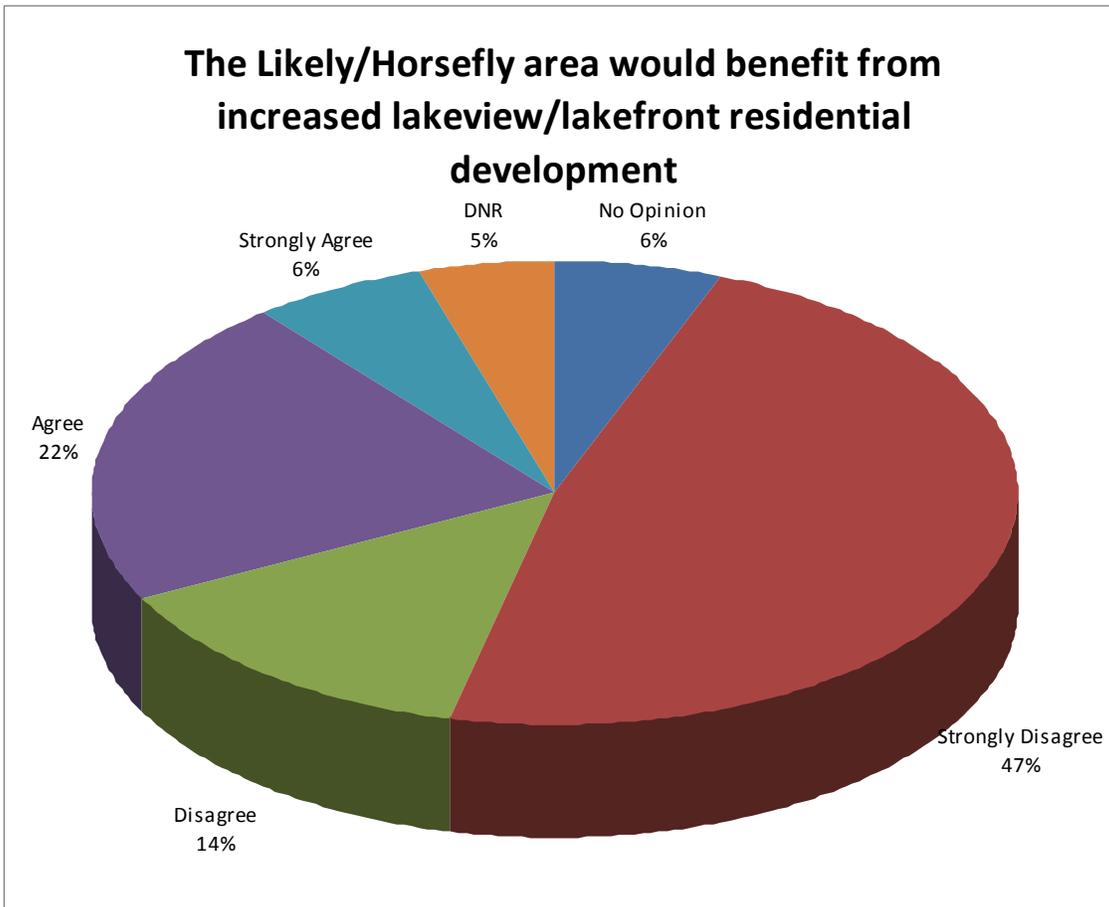
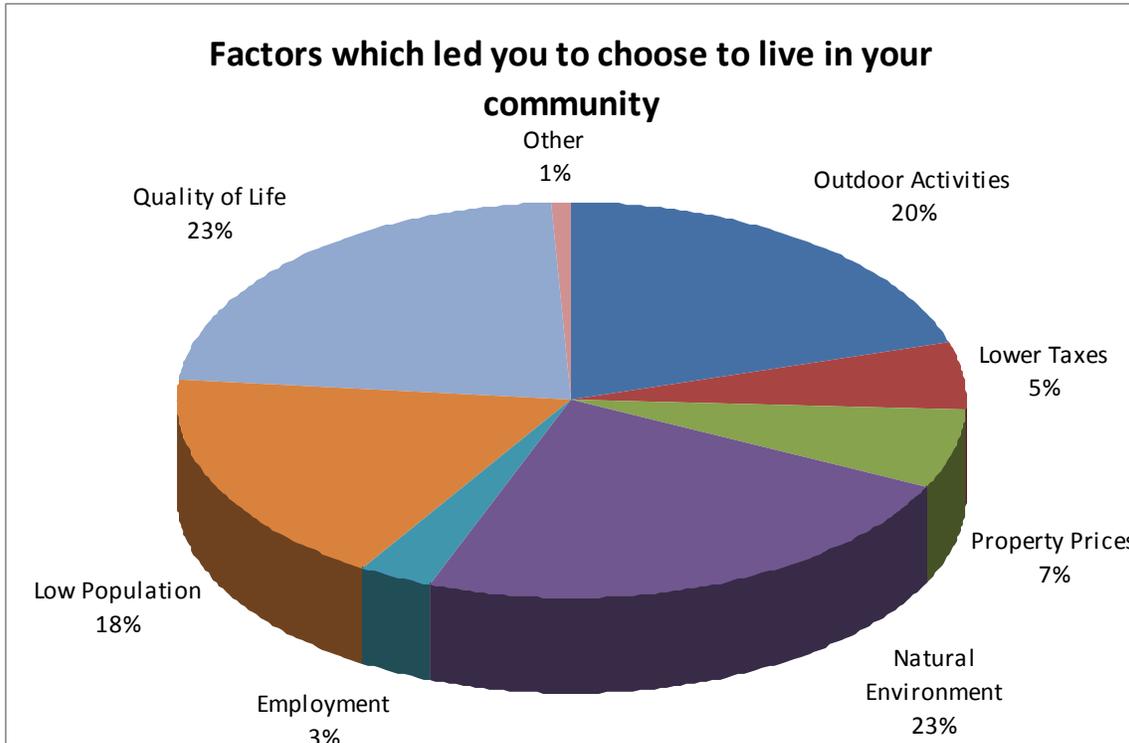
Children's Age Groups



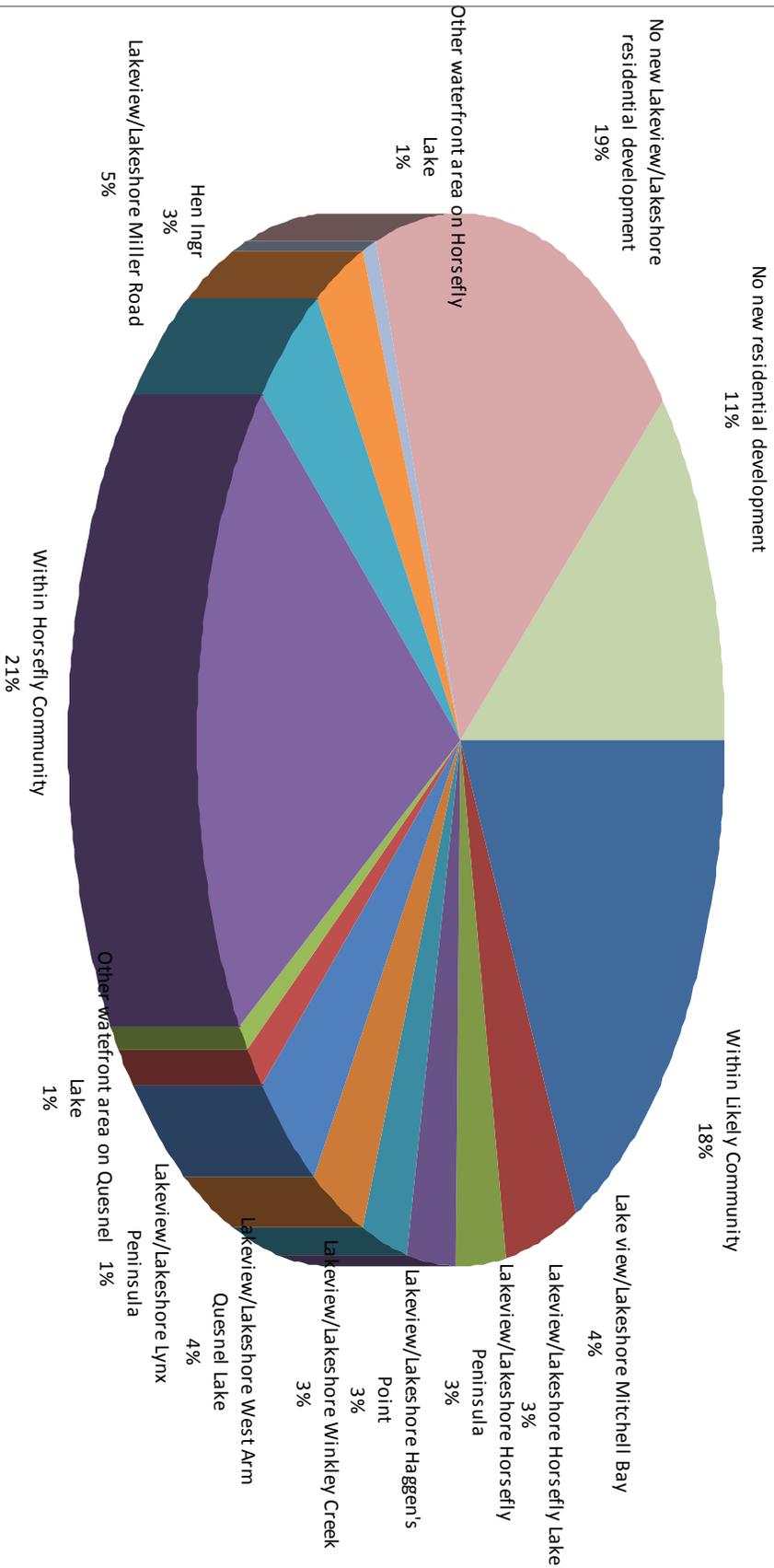


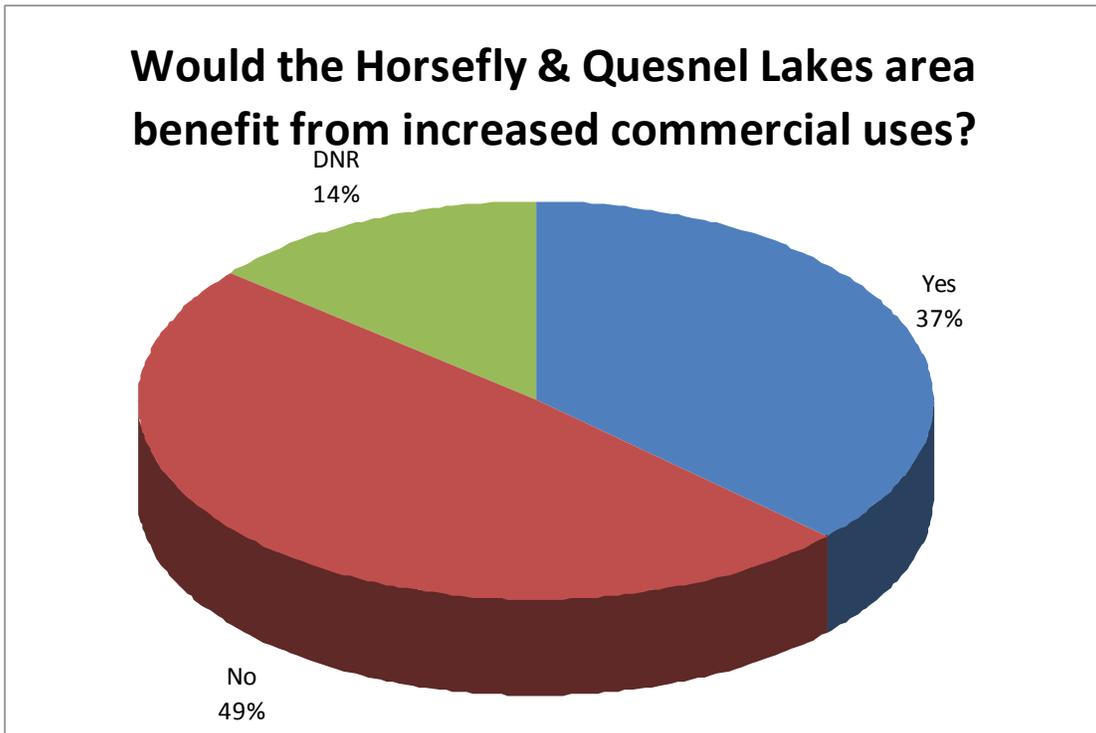
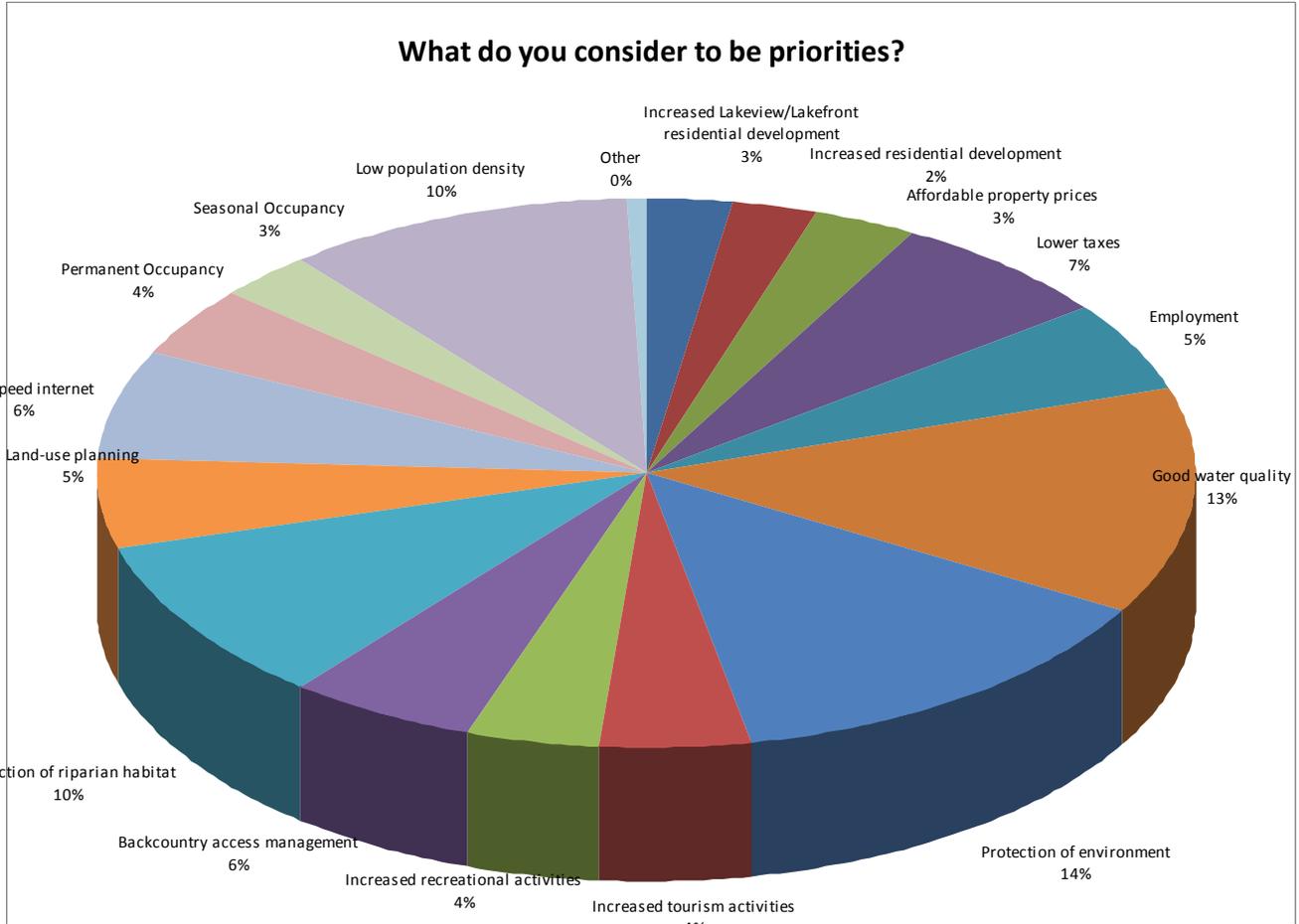






In your opinion, which area would be the most appropriate location for residential development?





10. References

10.1 Websites

Elysia Resort: www.elysioresort.com

Northern Lights Lodge: www.nllodge.com

Pyna-Tee-Ah Fishing Adventures: www.bcadventures.com/pynateeah

Eco Tours BC: www.bcadventures.com/ectoursbc

Cariboo River Fishing and Wilderness Adventures: www.caribooriverfishing.com

Silvertip Lodge: www.canadianmountainholidays.com/heli-skiing/lodges/lodges/silvertip

Plato Island Resort: www.platoislandresort.com

Rainbow Waters Fly Fishing: www.fishrainbowwaters.com

Fight the Bite Fishing Adventures: www.bcadventures.com/fitthebite

www.bcadventure.com/adventure/explore/cariboo/ccariboo/quesnel.htm

www.bcadventure.com/adventure/explore/cariboo/ccariboo/horsefly.htm

www.horseflyreality.ca

www.bcstats.gov.bc.ca

www.likely-bc.ca/index.html

Fish and Wildlife: www.env.gov.bc.ca

HSRMP- Horsefly Sustainable Resource Management Plan:

www.ilmb.gov.bc.ca/slrp/srmp/north/horsefly/Horsefly_SRMP_Final.pdf

Department of Fisheries and Oceans

BC Species & Ecosystem Explorer <http://www.env.gov.bc.ca/atrisk/toolintro.html>

Canada Species at Risk Act http://www.dfo-mpo.gc.ca/species-especies/home_e.asp

COSEWIC. Committee on the Status of Endangered Wildlife in Canada. Wildlife Species Search.

Coho Salmon.

http://www.cosewic.gc.ca/eng/sct1/searchdetail_e.cfm?id=716&StartRow=1&boxStatus=All&boxTaxonomic=All&location=All&change=All&board=All&commonName=coho&scienceName=&

returnFlag=0&Page=1

Province of British Columbia¹. Bull Trout in British Columbia. A Species of Special Concern.

http://www.env.gov.bc.ca/wld/documents/bulltrout_bc.pdf

Province of British Columbia². BC Fish Facts. Dolly Varden.

<http://wlapwww.gov.bc.ca/wld/documents/fishfacts/dollyvarden.pdf>

SARA. Species at Risk Act. Species at Risk Public Registry. Coho Salmon. Interior Fraser Population.

http://www.sararegistry.gc.ca/species/speciesDetails_e.cfm?sid=7161

10.2 Documents and Reports

1. CRD- Shoreline management Policy (available on CRD website: www.cariboord.bc.ca)
2. HSRMP- Horsefly Sustainable Resource Management Plan
3. Department of Fisheries & Oceans Canada & Ministry of Environment – Land Development Guidelines for the Protection of Aquatic Habitat
4. Recovery Implementation Plan for Threatened Woodland Caribou (*Rangifer tarandus caribou*) in the Hart and Cariboo Mountains Recovery Area, British Columbia
5. Dolighan, R. et.al. 2003. Summary of Quesnel Lake Kokanee and Rainbow Trout Biology With Reference to Sockeye Salmon. Stock Management Report No. 17. Province of British Columbia. 109 pp.