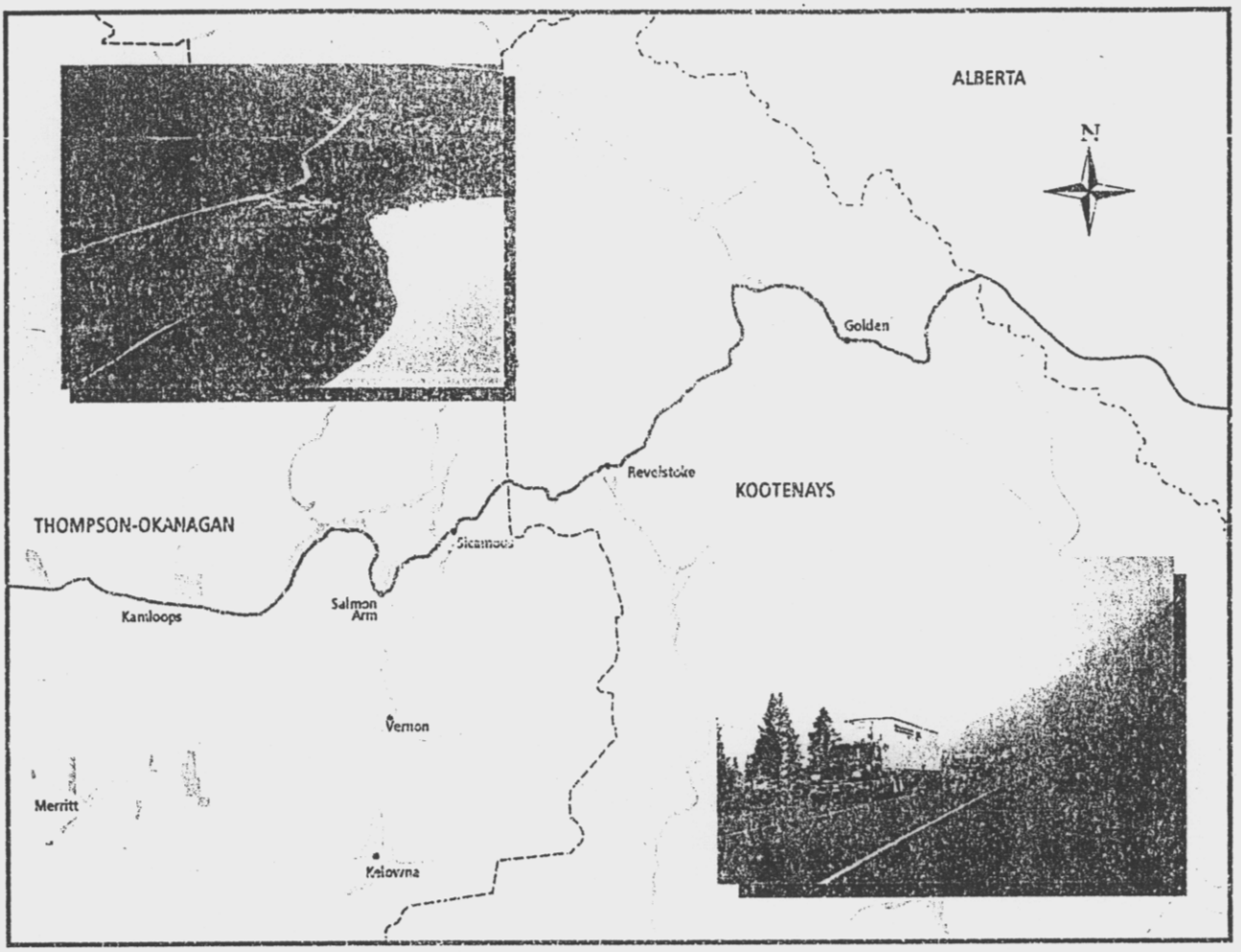

'EXTERNAL' TRAFFIC ON THE TRANS CANADA HIGHWAY: KAMLOOPS TO THE ALBERTA BORDER

APRIL 1998

'External' Traffic on the Trans Canada Highway: Kamloops to the Alberta Border

Prepared for
The TCH Corridor Management Plan
Ministry of Transportation and Highways

by

Actran Consultants

in association with

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Executive Summary

This report presents an overview and analysis of "external" traffic on the 441-kilometre section of the Trans Canada Highway that extends from the Afton interchange, west of Kamloops, to the Alberta border. "External" traffic refers to all trips that begin or end at some point outside the corridor. For example, a trip from Kelowna to Golden or Merritt to Calgary over the Trans Canada Highway is classified as an "external" trip. The report describes the travel markets that generate this traffic, considers the factors that are affecting growth in these markets, and presents a 25-year traffic forecast.

There is no direct measure of the economic contribution of the highway. However, each year this section of the Trans Canada Highway carries forest products that are valued at more than $300 million as well as about $1 billion worth of other commodities. It also supports a highway-oriented tourist industry that generates about $500 million per year in economic activity over a broad region that is centred on the TCH.

On an average summer day in 1996, about 17,500 vehicles used the Afton-Alberta section of the Trans Canada Highway to travel to or from the Lower Mainland, the Okanagan Valley, the Kootenays, the Province of Alberta, and other points outside the corridor. Volume is heaviest at the west end of the corridor where there are about 10,500 external trips over the highway on an average summer day. Towards the east end of the corridor, external traffic amounts to about 8,100 trips per day.

External trips are an important component of overall travel in the corridor. As shown below, they account for more than 50 percent of traffic over most of the highway during the summer months.

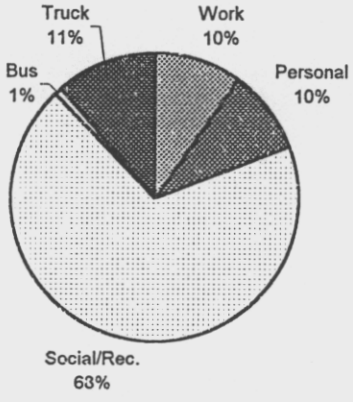
External Traffic as a Percent of Total Traffic -- Summer

Location	External Traffic (% of Total Traffic)
Monte Creek, west of the junction with Highway 97	60
Tappen	50
East of Sicamous	85
Golden, east of the junction with Highway 95	95

Year-round (or base) traffic on the Trans Canada Highway has been growing faster than the extra load that is carried during the summer months. At Monte Creek, for example, mid-winter traffic increased by about 45 percent between 1991 and 1997. By comparison, the added load during the summer months (i.e. the difference between summer traffic and mid-winter traffic) grew by only 15 percent over the same period of time. This suggests that local travel, trucking, and other year-round use of the highway has been growing faster than tourist travel and other seasonal trips.

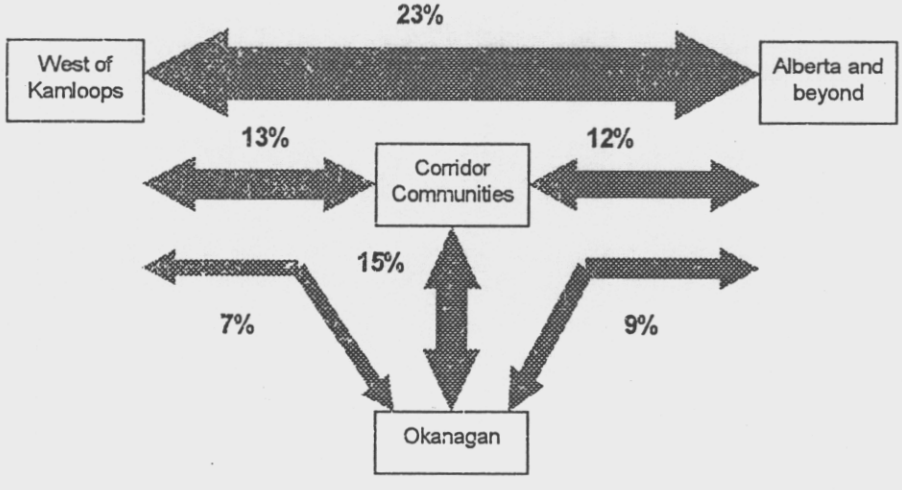
Social/recreational travel is the dominant trip purpose during the summer months and accounts for close to 70 percent of all external traffic. As shown in the following chart, work-related travel, personal business and trucking also account for a significant part of the traffic stream.

External Traffic During the Summer Months



The Lower Mainland, the Okanagan and southern Alberta are the main generators of external traffic. The general pattern of summer travel on the highway is illustrated in the following chart.

Principal External Traffic Flows



In addition to traffic movements shown in the chart, about 13 percent of external traffic uses the Afton-Kamloops section of the highway to connect through Kamloops to the Yellowhead route.

Growth in external traffic is affected by many factors, including those outlined below.

- Population is one of the principal factors underlying travel growth. As shown in the following table, population in the regions that generate most of the external traffic on the highway is expected to increase by 35 to 70 percent over the next 25 years.

Region	Expected Population Growth 1996-2021
Corridor communities	58%
Lower Mainland	55%
Central and north Okanagan	70%
All of British Columbia	50%
Southern Alberta	35%

- Alberta generates a large part of the commercial and social/recreational traffic on the highway. Tourism and travel surveys show that Alberta residents account for 85 percent of highway travel to B.C. from the other provinces, and Alberta is the primary destination for 85 percent of B.C. residents who are travelling east by road. Alberta also accounts for about 70 percent of inter-provincial truck traffic moving to and from B.C.
- There are no clear trends for tourist travel in the corridor. Tourism room revenues have shown strong growth at the west end of the corridor over the last ten years. However, there has been little or no growth elsewhere in the corridor. At the same time, the hotel/motel industry has made substantial investment in new and upgraded accommodation at certain points in the corridor. For example, the number of hotel and motel units in Golden and the surrounding area increased by 75 percent between 1994 and 1998.
- Other indicators such as campground and park use do not distinguish between local users and "external" highway travellers, and consequently cannot be used in forecasting external traffic.
- The corridor is not a primary log-haul route. Most of the logs that are transported to mills along the corridor are hauled over forest roads, secondary highways and water routes that feed the corridor. As a result, most of the log traffic on the Trans Canada Highway involves relatively short hauls. However, there are some long-haul movements. These include: logs that are purchased from other operators or traded between mills; and pulp logs shipped to the wood chip plant in Cache Creek.
- Lumber, plywood and wood chips account for most of the forest industry traffic on the highway, and volume is heaviest to the west of Monte Creek. Forest products traffic on this section of the highway includes: lumber from corridor mills and the Okanagan Valley, destined for the Lower Mainland and the rail reload centre at Campbell Creek; wood chips being hauled to the pulp mill in Kamloops; and pulp logs en route to Cache Creek. In total, about 35,000 loads of logs and forest products are transported over this section of the highway every year.
- The timber harvest rate in the region could be reduced by about 18 percent over the next 25 years. Some of that loss may be offset by log purchases from other regions, but a loss of this magnitude will likely result in mill closures.
- No developments are foreseen that would divert traffic to other routes or modes. Where air transport is concerned, corridor residents will continue to rely on the Trans Canada Highway to reach Vancouver, Kelowna and Calgary to take advantage of frequent, less expensive flights that are available from those centres. Travel by rail is recovering, but growth will have little effect on highway traffic. Finally, changes in regulation and technology are not expected to change the competitive balance between rail and truck or divert traffic from one mode to the other.
- It appears that truck traffic to and from B.C. is following a national trend of slow east-west growth. Trade patterns have shifted, and north-south traffic has been growing at a faster pace

than inter-provincial traffic. This is reflected in Transport Canada's forecasts, where growth rates for B.C.'s inter-provincial truck traffic are expected to fall short of population growth.

- Travel by scheduled bus is expected to remain static or decline while the motor coach tour industry expands. The volume of motor coach traffic is sufficiently small that any increase will have little effect on highway operations except at rest stops and points of interest.

Several factors were considered as the traffic forecasts were developed, but the projections rely primarily on forecasts of population growth. The following table indicates how those forecasts were applied to highway traffic.

Summary of Growth Assumptions Used in the Forecasts

Trip Type	Population Forecasts used for Traffic Forecasts				
	Corridor	Central and North Okanagan	Lower Mainland	B.C.	Southern Alberta
Work (Business & Commute)	✓				
Shopping	✓				
Personal Business & Medical	✓	✓		✓	
1-Day Social/ Recreational	✓				
Multi-day Social/ Recreational	✓		✓	✓	✓
General Trucking				✓	

The forecast of resource industry truck traffic was based on expected change in the allowable annual timber harvest.

The resulting traffic volumes are shown below. As indicated, external traffic is expected to increase by 40 to 50 percent over the next 25 years.

Projected External Traffic on an Average Summer Day (SADT)

Section of the TCH	1996	2001	2006	2011	2016	2021	25-year Increase
Afton i/c-Kamloops	10,450	11,500	12,500	13,500	14,400	15,400	47%
Kamloops-Monte Creek	9,050	9,900	10,700	11,600	12,400	13,200	46%
Monte Creek-Salmon Arm	7,600	8,300	8,900	9,600	10,300	10,900	44%
Salmon Arm-Sicamous	6,300	6,800	7,400	7,900	8,400	8,900	41%
Sicamous-Revelstoke	8,550	9,300	10,000	10,800	11,500	12,200	42%
Revelstoke-Golden	8,250	9,000	9,600	10,300	11,000	11,700	41%
Golden-Yoho National Park	8,100	8,800	9,500	10,100	10,800	11,400	41%

As an indication of the rate of growth implied by these forecasts, external traffic on the Salmon Arm-Sicamous section of the highway would increase by about 100 vehicles per day in each of the next 25 years. West of Monte Creek and east of Sicamous, the increase from one year to the next would amount to about 160 vehicles per day on a typical summer day.

The analysis suggests that truck traffic on this section of the Trans Canada Highway will not be sensitive to highway performance. For example, it appears that average speed would have to decline by as much as 30 kilometres per hour before truck traffic from Regina and beyond would be diverted from the Trans Canada route onto the Yellowhead. On the other hand, reduced performance could have a significant economic effect. For example, reducing truck speed by 5 kilometres per hour over the full length of the corridor would increase trucking costs by an estimated $9 million per year.

'External' Traffic on the Trans Canada Highway: Kamloops to the Alberta Border

1. Introduction

The Trans Canada Highway (TCH) serves two basic travel needs. It connects communities within the corridor, handling commuter travel, shopping trips, local recreational trips and other travel between homes, businesses, farms and recreational areas along the route. It also handles a large volume of "external" traffic, including travel to the Lower Mainland, the Okanagan, Alberta and the other provinces. This report concentrates on the external component of traffic on the section of the TCH that extends from the Afton interchange (west of Kamloops) to the B.C./Alberta border.

External travel accounts for a substantial part of travel in the TCH corridor. East of Sicamous, for example, about 85 percent of travellers on the highway during the summer months are driving to or from points that are outside the corridor. This "external" traffic has several components. It includes:

- Forest industry traffic, from logs that are destined for mill sites, to wood chips, lumber, plywood and other products that are destined for processing plants and final markets.
- General freight moving between B.C. and the other provinces or between points in British Columbia.
- Tourist travel to points along the corridor or elsewhere in the province.
- Personal travel to regional centres in B.C. and Alberta.

Each of these markets has unique characteristics. The purpose of this report is to review those characteristics, anticipate how markets might change over the next 25 years, and consider how they might respond to changes in highway performance.

Information is organized under eight broad headings in the main body of the report. Those sections deal with the following topics:

- An overview of travel on the TCH.
- Personal and business travel.
- Tourist travel.

- Resource industry traffic.
- General freight.
- Bus transportation.
- Competitive routes and modes.
- Traffic forecasts.

Additional detail is provided in the appendices.

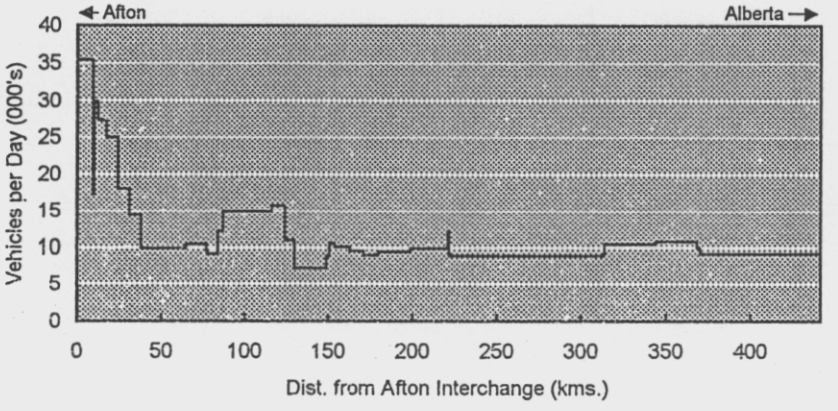
The report draws on five working papers that were prepared for the project. These deal with: traffic analysis; tourism; resource sector traffic; the rail, truck, air and bus industries as they relate to the Trans Canada Highway; and traffic forecasts.

2. Overview of Travel on the TCH

2.1 Traffic Overview

The Trans Canada Highway serves a wide variety of travel needs, and the nature of those needs varies over the length of the corridor. Traffic volume, alone, indicates the extent of the change in role and function across the corridor. The following chart shows the variation in average annual daily traffic (AADT) between the Afton interchange and the Alberta border.[1]

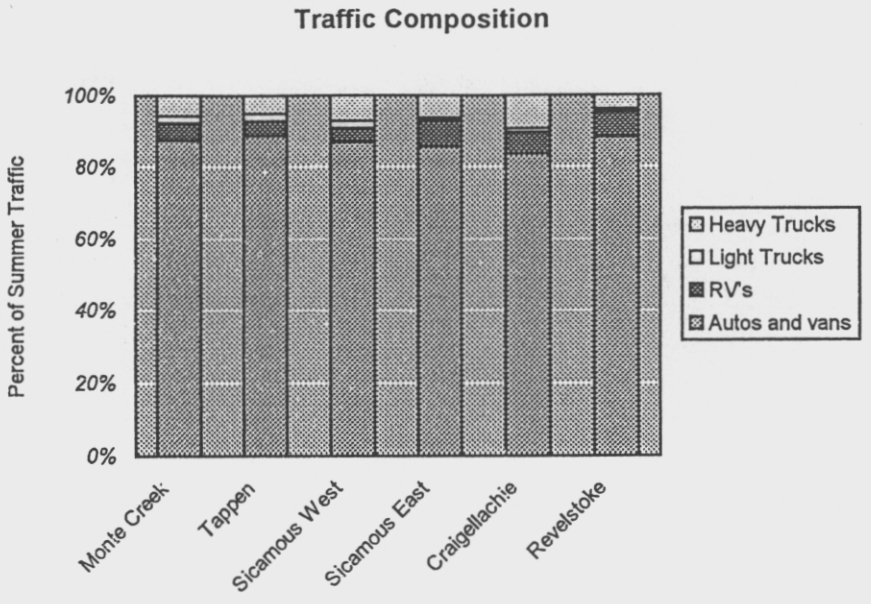
1996 Summer Average Daily Traffic



As shown in the chart, traffic volume on an average day ranges from less than 5,000 vehicles at the B.C./Alberta border to nearly 30,000 vehicles on approaches to the City of Kamloops. Volume is also relatively high in the Salmon Arm and Revelstoke areas.

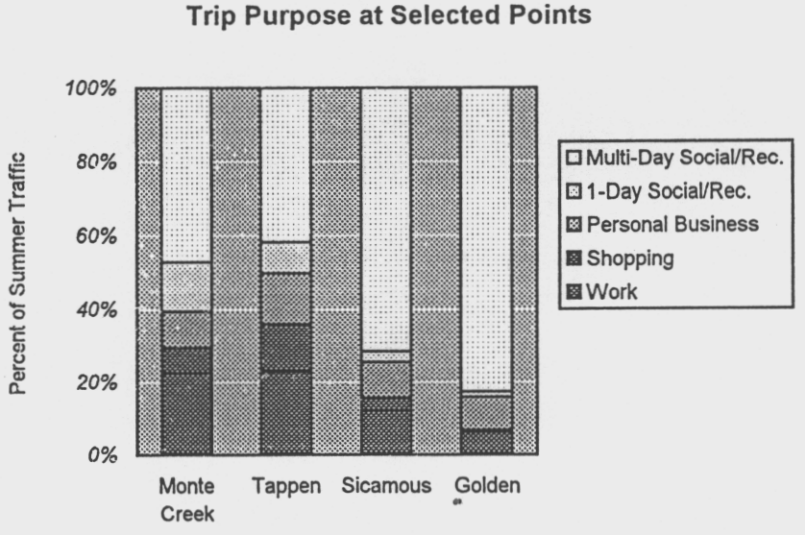
The mix of vehicles on the highway is fairly uniform over the full length of the corridor. The following chart shows that autos, vans and pick-up trucks account for 80 to 90 percent of summer traffic. Recreational vehicles make up a significant part of the traffic load, with 4 to 7 percent of the total, and heavy trucks account for as much as 10 percent.[2] On some sections, there are as many recreational vehicles on the highway as heavy trucks.

1. *Community Impact and Development Study – Traffic Forecasts*, Urban Systems, March 1998.
2. Figures are taken from vehicle classification counts carried out as part of origin-destination surveys west of Monte Creek (1993), east of Tappen (1995), west of Sicamous (1992), east of Sicamous (1995), at Craigellachie (1992), and Revelstoke (1993). The surveys understate the importance of truck traffic since they cover daylight hours only. All of the surveys were carried out during the summer months, generally at the end of July or beginning of August.



Logging trucks account for up to one percent of the traffic stream, while bus traffic approaches one percent of traffic at some points in the corridor.

The nature of auto, van and pick-up truck traffic varies across the corridor. As shown in the following chart, social/recreational travel dominates during the summer months and accounts for 50 to 60 percent of traffic at Monte Creek and Tappen. This increases to 75 percent immediately east of Sicamous and 85 percent east of Golden.



Work-related trips account for more than 20 percent of the total at Monte Creek and Kamloops, and undoubtedly account for a still higher portion of the total in the Kamloops area. Shopping, personal business and medical trips account for 10 to 25 percent of summer travel at the survey locations.

2.2 Traffic Growth

Exhibit 1 shows average monthly traffic volume at three points in the corridor over the last ten years.[1] The growth trend that had been established through the last half of the 1980's was interrupted by completion of the Okanagan Connector and diversion of Okanagan-bound traffic from the Trans Canada Highway to the Connector. As a result, traffic volume between Kamloops and Monte Creek declined in 1991.

The exhibit shows the extent of peaking and the sharp increase in traffic during the summer months. In the Monte Creek area, traffic volume during the summer months is more than twice mid-winter volume. Peaking is more severe towards the east end of the corridor where summer traffic is four times as great as mid-winter traffic.

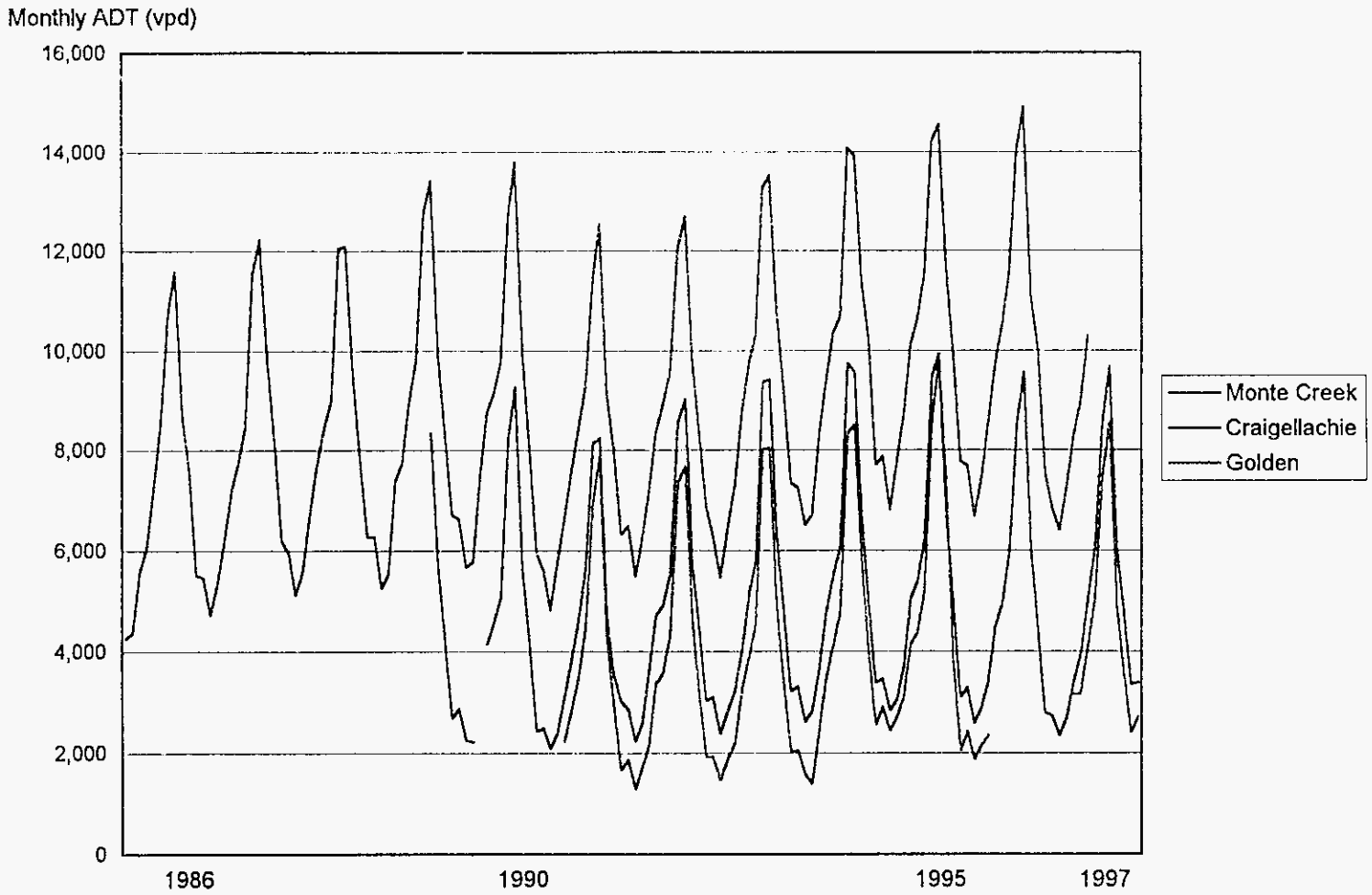
Growth patterns are more readily apparent if traffic volumes in Exhibit 1 are broken into two components:

1. Mid-winter traffic (which provides an indication of the year-round or basic traffic load on the highway); and
2. The difference between the summer peak and mid-winter traffic volume (as an indication of the added traffic load carried by the highway during the summer months).

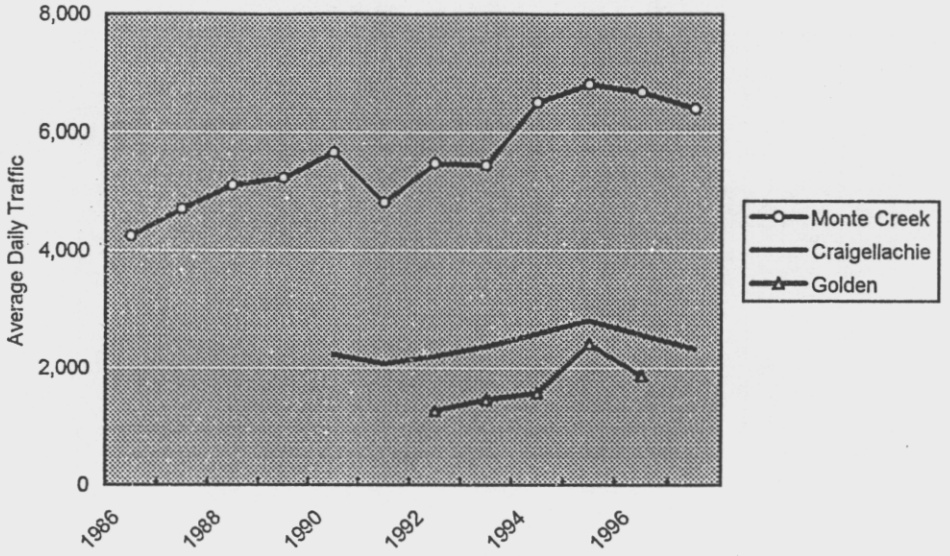
The following chart shows the first of these traffic components and the trend for mid-winter traffic at each of the count stations. This chart shows average daily traffic during the month of January, and includes "internal" trips (between points in the corridor) as well as "external" traffic.

1. Exhibit 1 shows available data for three "permanent" count stations that provide year-round traffic counts in the corridor. Station P-21-1 is at Monte Creek, west of the Junction with Highway 97. P-22-1 is west of Revelstoke at Craigellachie, and P-37-1 is east of Highway 95, to the east of Golden.

Exhibit 1. Traffic Volume at Permanent Count Stations on the Trans Canada Highway



Average Daily Traffic in January



As shown, mid-winter volume on the TCH at Monte Creek declined in 1991, likely as a result of the Okanagan Connector project. However, volume recovered through the early 1990's and increased by 35 percent between 1991 and 1997. Overall growth in the 11 years from 1986 to 1997 amounted to about 50 percent. Traffic at Craigellachie increased by an average of about 50 vehicles per day in each of the last several years. At Golden, growth has averaged about 150 vehicles per year.

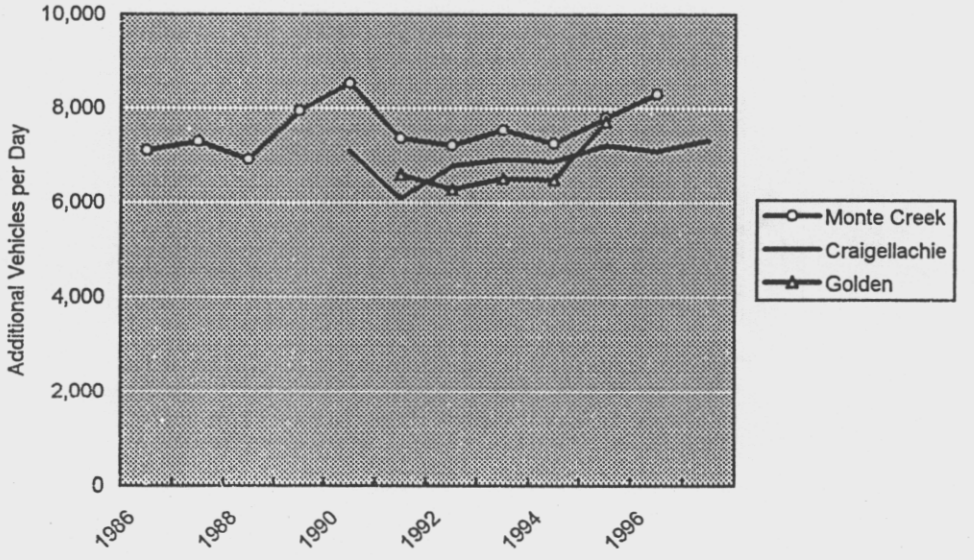
Growth rates for mid-winter traffic are summarized in the following table. Once again these figures indicate the rate at which the base traffic load is increasing.

Growth in Base Traffic

Location	Annual Increase in Daily Traffic	Rate of Increase (Annual increase/ 1996 Jan. ADT)
Monte Creek	215 vehs.	3.3%/year
Craigellachie	50	1.9%
Golden	150	8%

The effect of the second traffic component is shown in the following chart. This chart shows the difference between average traffic volume during the summer (August) peak and the average in January -- the added load that the TCH carries during the summer months.[1]

Difference Between August and January Traffic



It appears that the added traffic carried during the summer months is uniform across the full length of the corridor and amounts to 7,000 to 8,000 vehicles per day. This traffic component has increased by about 600 vehicles per day over the last 10 years or about 60 per year. At Monte Creek, this is equivalent to about 0.7 percent per year, and compares with a 3.3-percent increase for base traffic.

These patterns indicate that vacation trips and other seasonal travel are growing at a slower rate than year-round travel. In 1996 at Monte Creek, for example, there were 2.6 trips during the summer peak for every mid-winter trip. By 1996, this had fallen to 2.2.

1. Values shown in the chart are the difference between August ADT and the average volume for January in that year and in the following year.

2.3 Travel Patterns and Traffic Mix

The Ministry of Transportation and Highways has conducted several travel surveys in the TCH corridor over the last six or seven years. It has also conducted surveys on principal connecting routes, including Highway 5 north of Kamloops, the Coquihalla, and Highways 97 and 97A. Truck traffic has also been surveyed at the Kamloops and Golden weigh scales. Together with the Ministry's traffic count data, information from these surveys provides the basis for an understanding of current travel patterns and the role and function of this section of the Trans Canada Highway.

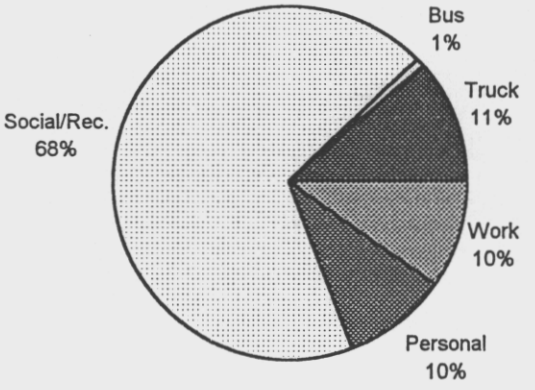
The Ministry's survey data was used to develop an overview of TCH travel in 1996. This takes the form of "origin-destination" tables showing how the highway was used during the summer months and, on average, over the entire year. The tables are approximations based on limited survey data at a few points in the corridor. The estimates were developed for eight trip purposes or trip types, generally following the traffic breakdown that is commonly used in the Ministry's surveys:

- Work trips (which include business trips as well as commuter trips)
- Shopping trips
- Personal business and medical trips
- One-day social/recreational trips
- Multi-day social/recreational trips
- Bus trips
- Resource industry truck trips
- General freight truck trips.

The procedure used to arrive at the origin-destination tables is outlined in Appendices 1 and 2, and the resulting trip tables are included in Appendix 3.

The following chart shows the mix of external traffic in the corridor on a typical summer day. These figures represent all external travel in the corridor rather than traffic at a particular point on the route. For example, it includes business trips from Vancouver to Kamloops that cover only 10 or 12 kilometres of the route as well as those from Vancouver to Calgary that cover the full 441-kilometres of the corridor.

"External" Traffic During the Summer Months

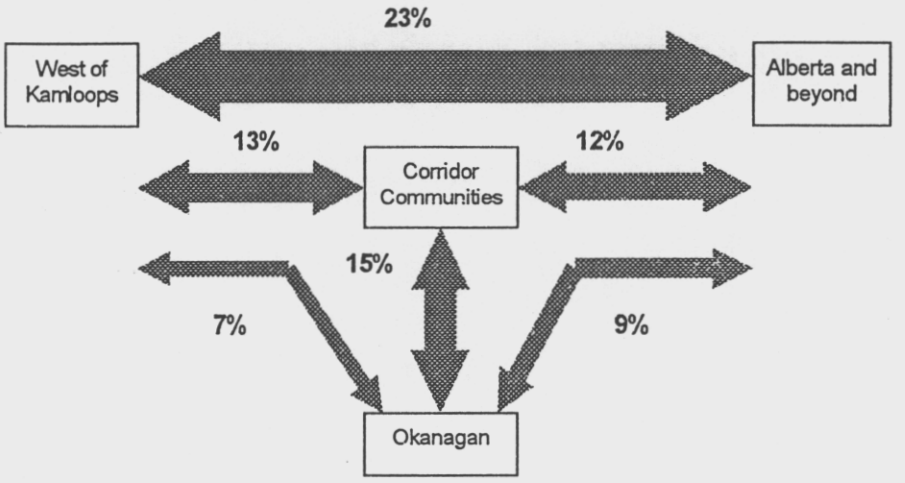


Trip Type		% of External Trips
Work		9.7
Personal		
Shopping	0.5	
Personal Business/Medical	9.1	
Total Personal Travel		9.6
Social/Recreational		
One-day	4.1	
Multi-day	64.4	
Total Social/Rec. Travel		68.5
Bus		0.7
Truck		
Resource-related	2.2	
Other Truck Traffic	9.3	
Total Truck Traffic		11.5

As shown in the chart and table, close to 70 percent of external trips during the summer months are social/recreational trips. Taken together, truck and bus account for about 12 percent of the total, and shopping and personal business account for about 10 percent. Work-related trips also make up a significant part of the total with about 10 percent of external trips.

The general pattern of external travel on the TCH during the summer months is shown in the following chart and table.

Principal External Traffic Flows



Between:	And:	% of External Traffic
Points west of Kamloops	Alberta & beyond	23
	Okanagan	7
	Kootenays	1
	North Thompson & beyond	13
	Corridor communities	13
Okanagan	Alberta & beyond	9
	Corridor communities	15
Kootenays	Corridor communities	2
Corridor communities	Alberta and beyond	12
All other movements		5

In total, about 45 percent of external traffic is to or from Alberta and the other provinces. About half of this traffic runs the full length of the corridor from the Afton interchange to the Alberta border. Similarly, about 57 percent of external trips are to or from the Lower Mainland and other points to the west of Kamloops.

All of the Ministry's origin-destination surveys are carried out during the summer months and provide a direct measure of the highway travel market at that time of the year. However, the corridor planning process requires forecasts of average annual daily traffic (AADT) as well as summer traffic. Since no information is available on trip purpose, traffic flows, or origin-

destination patterns outside the summer months, it was necessary to make some broad assumptions in order to approximate travel patterns on an "average" day. Those assumptions are set out in Appendix 2.

The analysis of summer and year-round travel leads to the following estimates of external traffic in the corridor.

Estimated 1996 External Traffic

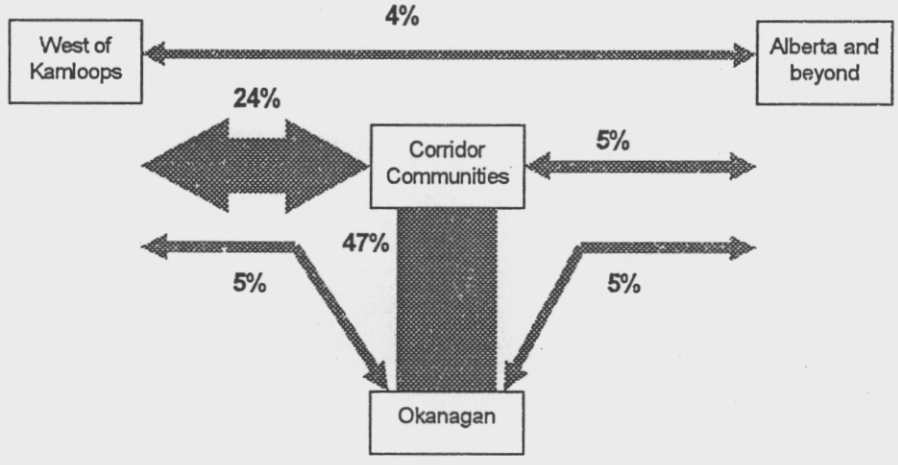
Section	1996 SADT	1996 AADT
Afton-Kamloops	10,450	6,600
Kamloops-Monte Creek	9,050	5,600
Monte Creek-Salmon Arm	7,600	4,500
Salmon Arm-Sicamous	6,300	3,650
Sicamous-Revelstoke	8,550	5,100
Revelstoke-Golden	8,250	4,750
Golden-Yoho National Park	8,100	4,750

The next six sections of the report deal with travel patterns and competitive factors in greater detail. That information forms the basis for travel forecasts that are presented in Section 9.

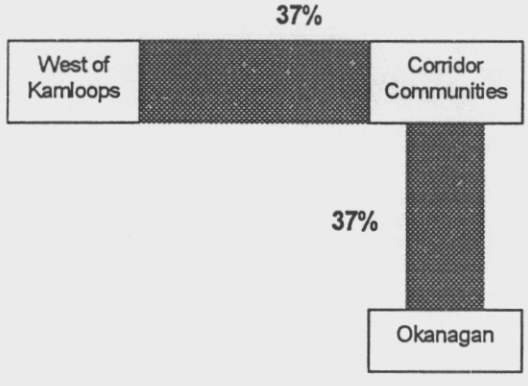
3. Personal and Business Travel

Work-related travel, shopping and personal business account for close to 20 percent of external trips on the TCH during the summer season and about 30 percent year-round. Trip patterns for the summer months are illustrated below. The exhibits highlight principal traffic flows, but relatively small traffic flows such as those to and from the Kootenays are not included. A detailed tabulation of trip patterns is included in Appendix 3.

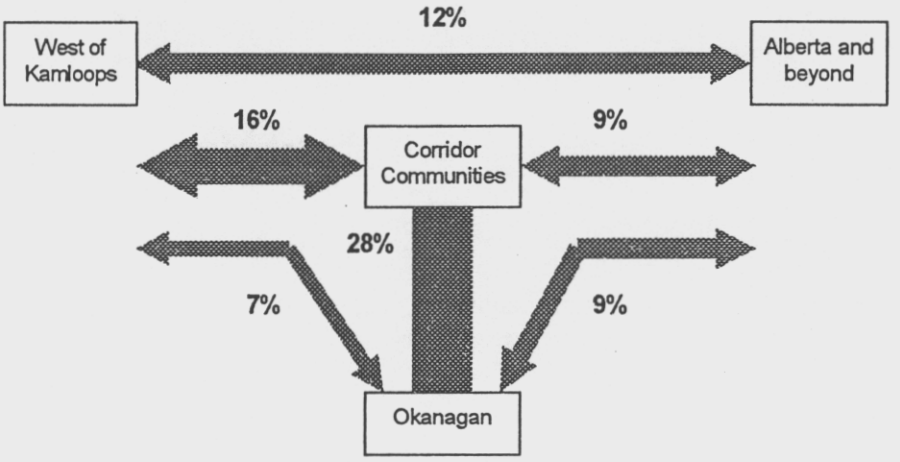
Work Trips (10% of external SADT)



Shopping Trips (0.5% of external SADT)



Personal Business and Medical Trips (9% of external SADT)



The dominance of corridor communities and the Okanagan Valley in these travel markets is readily apparent. The Ministry's origin-destination surveys do not identify place of residence, and consequently it is not clear where this traffic originates. For example, people making "personal business" trips between the corridor and the Okanagan could be either Okanagan residents or corridor residents. However, it is likely that most of this travel originates in the corridor, as local residents travel to service centres in the Okanagan Valley.

The Okanagan is in a strong position to compete with Kamloops as a regional shopping and service centre for corridor communities. For residents of Salmon Arm, the driving distance to Kelowna is the same as the distance to Kamloops. For Sicamous (and all points to the east of Sicamous) Kelowna is about 20 kilometres closer than Kamloops.

The growth that is expected to take place in the Kamloops area over the next 25 years will strengthen the City's position as a regional centre for employment, shopping and personal services. However, strong growth is also expected in the Okanagan Valley, and consequently the importance of the Okanagan as a service "centre" for corridor communities will not be diminished.

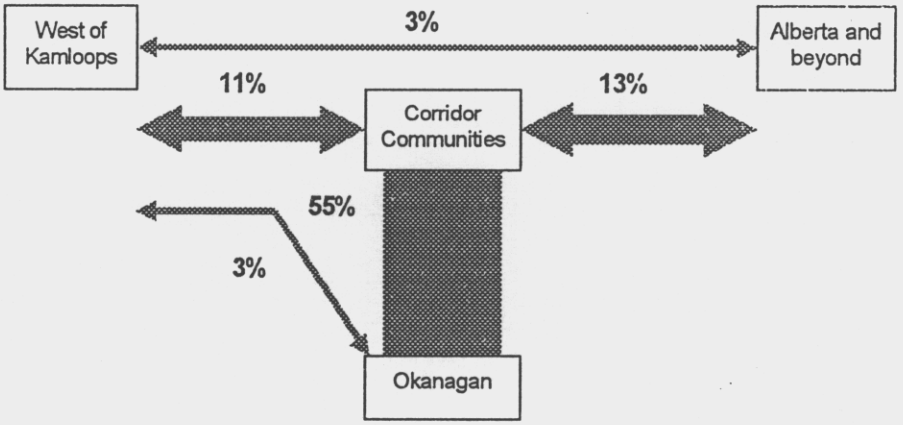
4. Tourist Travel

Tourism is one of the primary travel markets in the Trans Canada Highway corridor. This is apparent from the fact that social and recreational travel accounts for 65 to 70 percent of all external traffic on the highway during the summer months.

The tourist industry in the TCH corridor and throughout southeast B.C. is heavily dependent on highway travel, and about 90 percent of visitors to the region travel by car, recreational vehicle, or bus. The industry is an important part of the regional economy and generates about $500 million in economic activity each year.[1]

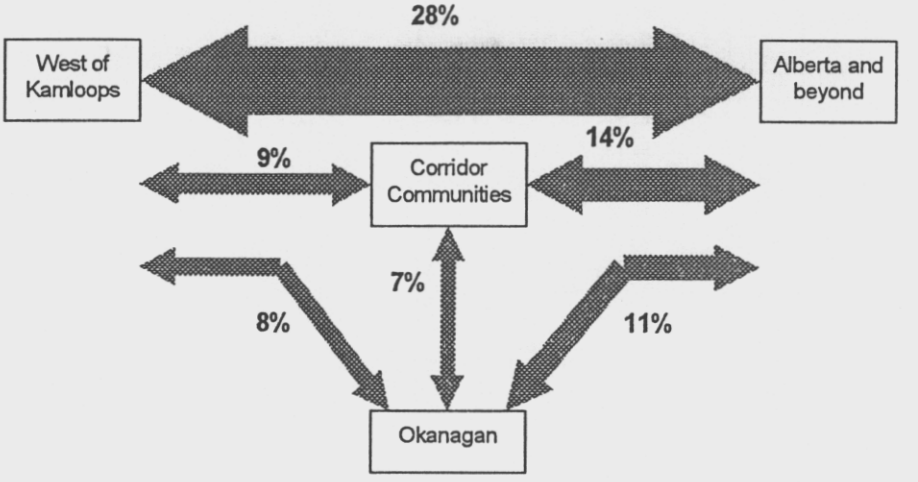
The general pattern of social/recreational travel is shown in the following exhibits. The first chart shows the distribution of short (one-day) trips, which account for only 4 percent of external traffic and 6 percent of social/recreational travel. The second chart shows the general pattern for multi-day trips. Once again, minor traffic flows are not shown in these charts, but are included in origin-destination tables that are presented in Appendix 3.

One-Day Social/Recreational Trips (4% of external SADT)



1. Hotel and motel revenue in the Thompson-Nicola, North Okanagan, Columbia-Shuswap, and East Kootenay Regional Districts amounted to about $107 million in 1996 (BC Stats). Travel surveys carried out in 1989 and 1995 indicate that accommodation represents 18 to 22 percent of the average visitor's daily expenditure (*Resident Travel in British Columbia*, Marktrend Research Inc. and The Tourism Research Group, 1991, *Visitors to B.C. from Regional Canada*, and *Visitors to B.C. from Long Haul Canada*, Tourism British Columbia, 1997. If accommodation accounts for 20 percent of tourist expenditure, then total expenditure in these regions is in the order of $550 million per year.

Multi-Day Social/Recreational Trips (64% of external SADT)



The charts highlight the fact that short social/recreational trips are primarily to and from the Okanagan. As shown in the origin-destination table in Appendix 3, most of these trips are to and from the Salmon Arm area.

Multi-day travel is more widely distributed. As shown in the chart, more than half of multi-day trips are to or from Alberta and the other provinces. Close to 30 percent of trips begin west of Kamloops and travel the full length of the corridor. Another 14 percent connect from the west, through Kamloops to the Yellowhead Highway north of Kamloops.

Once again, the Ministry's origin-destination surveys do not provide information on place of residence. As a result, the mix of B.C. and Alberta residents, for example, is not apparent from the survey data. However, other data sources provide additional insight into the tourist market. Information is fragmented and does not refer specifically to the TCH. However, it does provide a broader understanding of travel markets that are served by the corridor.

4.1 Travel by British Columbians

Recreational trips, pleasure trips, and visits with friends and relatives are major travel markets in British Columbia, and British Columbians account for a large part of that market. In total, British Columbians took about 12 million pleasure trips in 1995.[1] About 8 million of those trips were within B.C. and 1.7 million were road, rail and air trips to other provinces.

1. *Domestic Tourism Market Research Study: British Columbia and Yukon Report*, Coopers & Lybrand for the Canadian Tourism Commission, 1996.

The Ministry of Tourism conducted an extensive survey of travel in British Columbia in 1989. Although tourism and travel have changed substantially since 1989, the survey results provide useful insight into travel patterns.[1] The survey dealt with all trip purposes. Although social/recreational travel dominates, the figures cover all travel with at least one night away from home, including business trips and travel to attend conferences.

The following table shows the distribution of trip origins for British Columbians travelling into southeast B.C. and the TCH corridor as estimated from the 1989 survey.

Distribution of Trip Origins for Travel by B.C. Residents

Trip Origin	To the Kootenay and Rocky Mountain Tourist Regions*	To the High Country Tourist Region*
Vancouver Island	8%	5%
Southwest	32	50
Okanagan	9	9
Kootenays	22	4
Thompson	6	16
Cariboo	4	9
North by Northwest	3	3
Peace River	1	1
Rocky Mountain	16	4

* The area covered by the Kootenay, Rocky Mountain and High Country tourist regions is shown in Appendix 7.

These figures show that the Lower Mainland is the principal source of travel to the Kootenay/Rocky Mountain and High Country Tourist Regions. Taken together, Vancouver Island and the Lower Mainland accounted for 40 to 55 percent of travel into the region by British Columbians. The data also shows that the Thompson and Kootenay regions generate a substantial volume of social/recreational travel within the region.

Results of the 1989 survey also highlight the importance of auto and RV travel in the region. As shown below, 70 to 80 percent of B.C. residents travelling in the region used their own car. Another 10 percent used a recreational vehicle. Taken together, cars, recreational vehicles and buses handle more than 90 percent of travel to the region from elsewhere in the province.

1. *Resident Travel in British Columbia: a Survey of Residents Travelling in British Columbia*, Marktrend Research Inc. and the Tourism Research Group, March 1991. The results of a 1995 travel survey for B.C. residents have not yet been released.

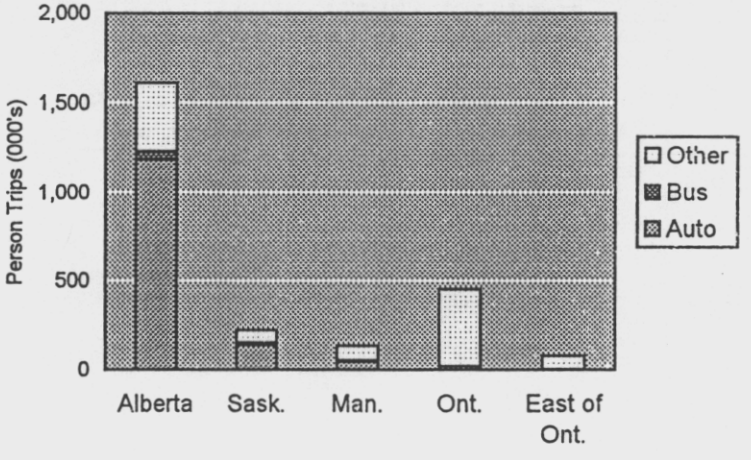
Travel Mode – B.C. Residents

Travel Mode	Visitors to the Kootenay and Rocky Mountain Tourist Regions	Visitors to the High Country Tourist Region
Own Car	69%	78%
Rented Car	--	--
Camper (rented or owned)	10	8
Bus	7	5
Air	7	2
Train	--	1
Other	6	5

4.2 Inter-Provincial Travel

Canadians from other provinces make about 2.5 million trips to B.C. each year.[1] Of these, Alberta accounts for about 65 percent, Manitoba and Saskatchewan another 15 percent, and Ontario about 20 percent. As shown in the following chart, 50 to 60 percent of that travel is by road, and Alberta accounts for 85 percent of all highway travel to British Columbia from the other provinces. In total, about 1.4 million people travel to B.C by car every year, while 67,000 travel by bus.

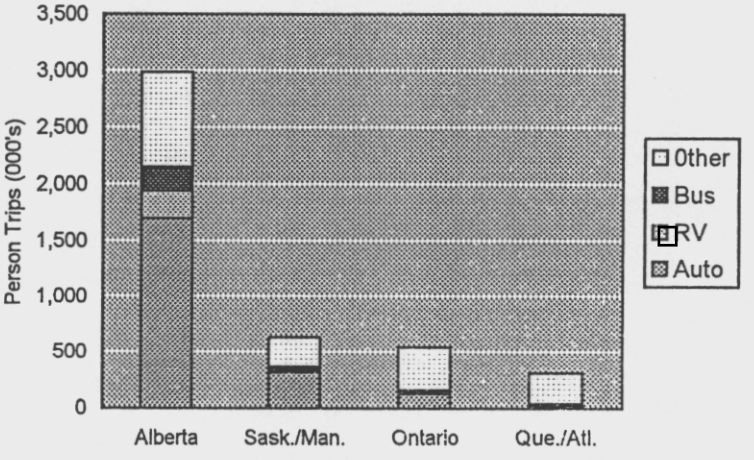
Travel to British Columbia - 1996



1. Custom tabulation prepared by Statistics Canada from the Canadian Travel Survey data base. Travel surveys completed for B.C. Tourism in 1995 produced substantially different results than the Statistics Canada survey. In this case, total visits from other provinces were estimated at 4.6 million or nearly twice the Statistics Canada estimates. (*BC Visitor Study: Visitors to B.C. from Regional Canada*, Tourism British Columbia, 1997.)

The Ministry of Tourism carried out a similar survey for travel in 1995.[1] Although the travel estimates produced in the provincial study are substantially different from the Statistics Canada results, travel patterns are similar.[2] Once again, travel by road from Alberta is highlighted in the results of that survey as shown in the following chart.

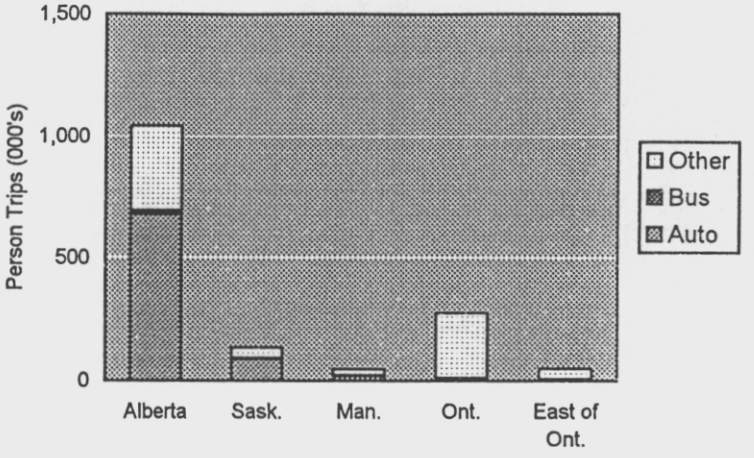
Travel to British Columbia - 1995



Out-of-province travel by British Columbians also impacts the Trans Canada Highway and other inter-provincial highways in B.C. British Columbia generates about 1.6 million person-trips to the other provinces each year.[3] As shown in the following chart, about 65 percent of those trips are destined for Alberta. Of roughly 825,000 inter-provincial highway trips by British Columbians in 1996, 85 percent are destined for Alberta.

1. *Visitors to B.C. from Regional Canada* and *Visitors to B.C. from Long Haul Canada*, B.C. Visitor Study, Tourism British Columbia, 1997.
2. It appears that the differences in survey results are related to sample size, survey design, and the definition of "visitor" that is used in each survey.
3. Special tabulation from the Canadian Travel Survey, Statistics Canada and *Domestic Tourism Market Research Study: British Columbia and Yukon Report*, Coopers & Lybrand for the Canadian Tourism Commission, 1996.

Travel from B.C. by B.C. Residents - 1996



Roughly 27,000 British Columbians travel by bus to the other provinces each year. When these are combined with bus trips to B.C. by residents of the other provinces, total inter-provincial bus travel amounts to about 100,000 2-way trips each year.

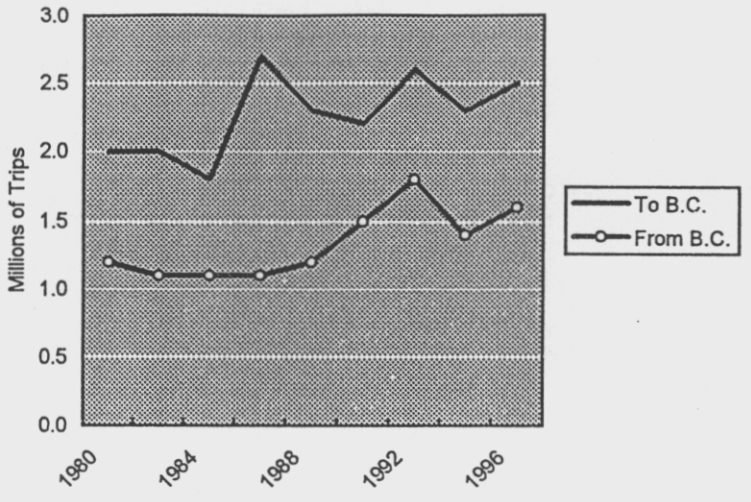
Based on the Statistics Canada travel survey, it appears there is one inter-provincial highway trip by a British Columbian for every 1.75 trips by road from the other provinces.

Although historic data on inter-provincial highway travel is not available, the general trend in travel by all modes of transport provides an indication of long-term trends that affect the Trans Canada Highway. The following table and chart show the rate of growth in inter-provincial travel over the last 18 years.[1] As indicated, volume has fluctuated from year to year, but the overall increase since 1980 is in the order of 25 to 30 percent.

Travel Between B.C. and the Other Provinces (millions of person trips)

	1980	1982	1984	1986	1988	1990	1992	1994	1996
To B.C.	2.0	2.0	1.8	2.7	2.3	2.2	2.6	2.3	2.5
% of 1980		*98*	*88*	*134*	*115*	*109*	*127*	*113*	*124*
From B.C.	1.2	1.1	1.1	1.1	1.2	1.5	1.8	1.4	1.6
% of 1980		*87*	*86*	*88*	*99*	*118*	*142*	*114*	*127*

1. *Domestic Travel - Canadians Travelling in Canada*, Statistics Canada Catalogue 87-504-XPB.



In addition to interprovincial tourist traffic, the corridor handles a substantial volume of B.C. residents who are touring the region or visiting friends and relatives. The Ministry of Tourism's 1989 survey indicated that about 15 percent of tourist activity in B.C. was centred in the southeast region of the province -- 2 percent in the Kootenays, 6 percent in "High Country," and 9 percent in the Rockies.[1] As shown in the following table, visitors from Alberta accounted for 35 to 50 percent of that activity.

Distribution of Trip Origins for Out-of-Province Visitors (based on party nights)

Trip Origin	To the Kootenay Tourist Region	To the High Country Tourist Region	To the Rocky Mountain Tourist Region
Alberta	45%	35%	54%
Ontario	10	7	8
Other Canada	21	8	14
Washington	5	11	6
Oregon	5	5	1
California	1	5	2
Other West U.S.	4	5	6
Other U.S.	2	7	3
Overseas	9	17	6

"Visiting friends and relatives" and "touring" were the dominant reasons for travelling to or through this region from outside British Columbia. As shown below, these trip purposes accounted for about 80 percent of out-of-province visits.

1. *Visitor '89 -- A Survey of Visitors to British Columbia*, The Tourism Research Group, BC Research and Campbell, Goodell and Associates, 1990.

Main Trip Purpose for Out-of-Province Visitors (based on party nights)

Trip Origin	To the Kootenay Tourist Region	To the High Country Tourist Region	To the Rocky Mountain Tourist Region
Conference	2%	2%	2%
Other Business	8	4	5
Visiting Friends and Relatives/Personal	42	39	34
Touring	38	43	44
City Trip	--	1	--
Outdoors Trip	11	12	15

Most out-of-province visitors to the region arrived in B.C. by road, and many who arrived by air used a rented vehicle once they were in the province. The following table shows the travel modes used to reach B.C. Note that the table includes some double counting. This likely results from mixed-mode travel. For example, visitors who flew into Calgary and travelled into B.C. in a rented car likely appear twice in this tabulation.

Mode of Travel to B.C.

Travel Mode	For Visitors to the Kootenay Tourist Region	For Visitors to the High Country Tourist Region	For Visitors to the Rocky Mountain Tourist Region
Own Auto	68%	56%	72%
Rented Auto	3	9	5
Own Camper	21	21	19
Bus	--	2	2
Air	13	20	9
Train	--	--	--
Ferry	3	6	1
Other	1	1	3
Total	110	114	112

As indicated, 85 to 90 percent of visitors to the region served by the Trans Canada Highway arrived in B.C. by road.

This review highlights the importance of highway travel to the tour and travel industry. Estimates vary, but it is apparent that the Trans Canada Highway and, to a lesser extent, the Yellowhead, Crowsnest and Peace River highways handle 50 to 60 percent of all inter-provincial travel and 85 to 90 percent of out-of-province travel to the corridor region. The review also highlights the importance of travel from other points in B.C. to the corridor itself and to the Okanagan and Kootenay regions via the Trans Canada Highway. Most of those trips are social/recreational trips involving visits with friends and relatives, touring, and outdoor recreation.

5. Resource Industry Traffic

The regional economy in the TCH corridor is highly dependent on the resource industries – particularly logging and timber processing. This is apparent from the following table showing employment distribution in the corridor. For example, forestry, mining and agriculture account for about 25 percent of basic sector employment in the Revelstoke area and more than 40 percent in the Golden area.[1] These are low estimates of the resource industries' contribution to the regional economy, since both "tourism" and the "public sector" include activity that is actually generated by the resource industries. For example, employment created by mineral exploration crews staying in hotels appears as tourist industry employment rather than mining industry employment.

Basic Sector Employment Estimates

Forest District	Percent in Each Sector					
	Forestry	Mining	Agriculture	Tourism	Public	Other Basic
Kamloops	15%	9%	4%	7%	34%	30%
Salmon Arm	23%	3%	12%	9%	27%	26%
Revelstoke	20%	3%	1%	18%	22%	37%
Golden	39%	2%	1%	18%	21%	19%

Source: *Revised Forest District Tables*, Ministry of Finance and Corporate Relations, March 1996, based on the 1991 Census

As indicated, the forest industry is the dominant resource-industry sector, but mining and agriculture also make substantial contributions to the regional economy.

5.1 The Forest Industry

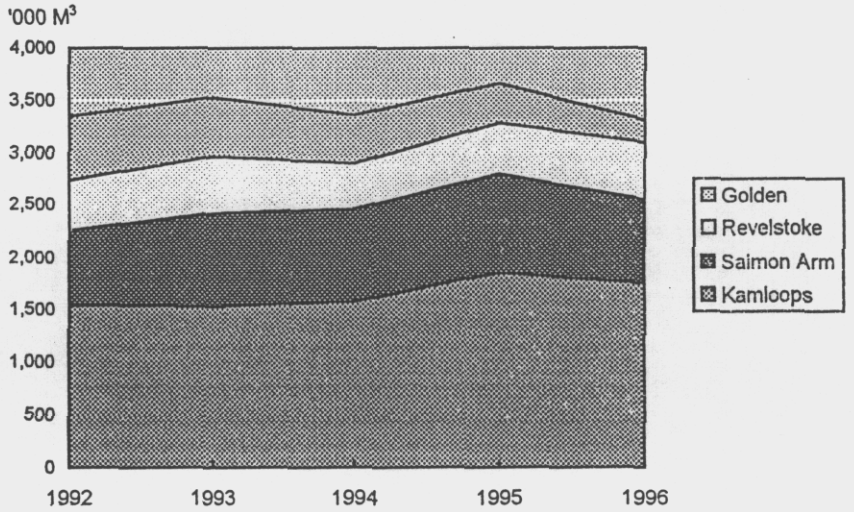
Much of the land that is accessed from the Trans Canada Highway east of Kamloops is highly productive forest land. Changes in climate and topography over the length of the corridor create a variety of growing conditions. Douglas fir, lodgepole pine, and spruce are the dominant species in the western section of the corridor, while cedar and hemlock dominate in the east. Forest characteristics also vary. For example, there are large areas of over-mature hemlock to the east of Salmon Arm and north of the TCH. That timber has relatively low commercial value, and much of it is used for pulp. These forest characteristics have a direct effect on haul patterns

1. A "basic sector" is defined in the Ministry of Finance and Corporate Relations analysis as one that draws revenue from outside the region through the sale of goods and services or, in the case of the public sector, tax revenue transferred to the region.

because species and log size must be matched with the needs and capabilities of each mill or processing plant.

Four Ministry of Forests district offices are responsible for managing the Crown forest land that is adjacent to the corridor.[1] The timber harvest in these districts has averaged 3.3 million cubic meters over the last five years and accounts for about five percent of the total harvest in British Columbia. As shown in the following chart, harvest levels peaked in 1995, but declined once again in 1996. The Kamloops district produces the largest volume in the region with about 45 percent of the total.

Harvest Volume (by Forest District)



Source: Valuation Branch, Ministry of Forests.

Each mill operator in the corridor holds Crown land licenses as a primary source of timber for their operations. However, some of the timber on Crown land is reserved for small operators under the Small Business Forest Enterprise Program (SBFEP). These operators can sell their timber anywhere in the province or process it themselves in small mills. Harvest rates under the SBFEP averaged 580,000 cubic meters through the last five years or 15 to 20 percent of the total harvest in the four forest districts. The remainder of the harvest is from private land.

Most of the wood that is harvested in the region is processed in 20 sawmills in the corridor. The location of the largest of these mills is shown in Exhibit 2. Other producers include pulp and paper mill in Kamloops

1. The Revelstoke and Golden district offices were recently amalgamated. The old district boundaries are used in this presentation because they support a more detailed level of analysis.

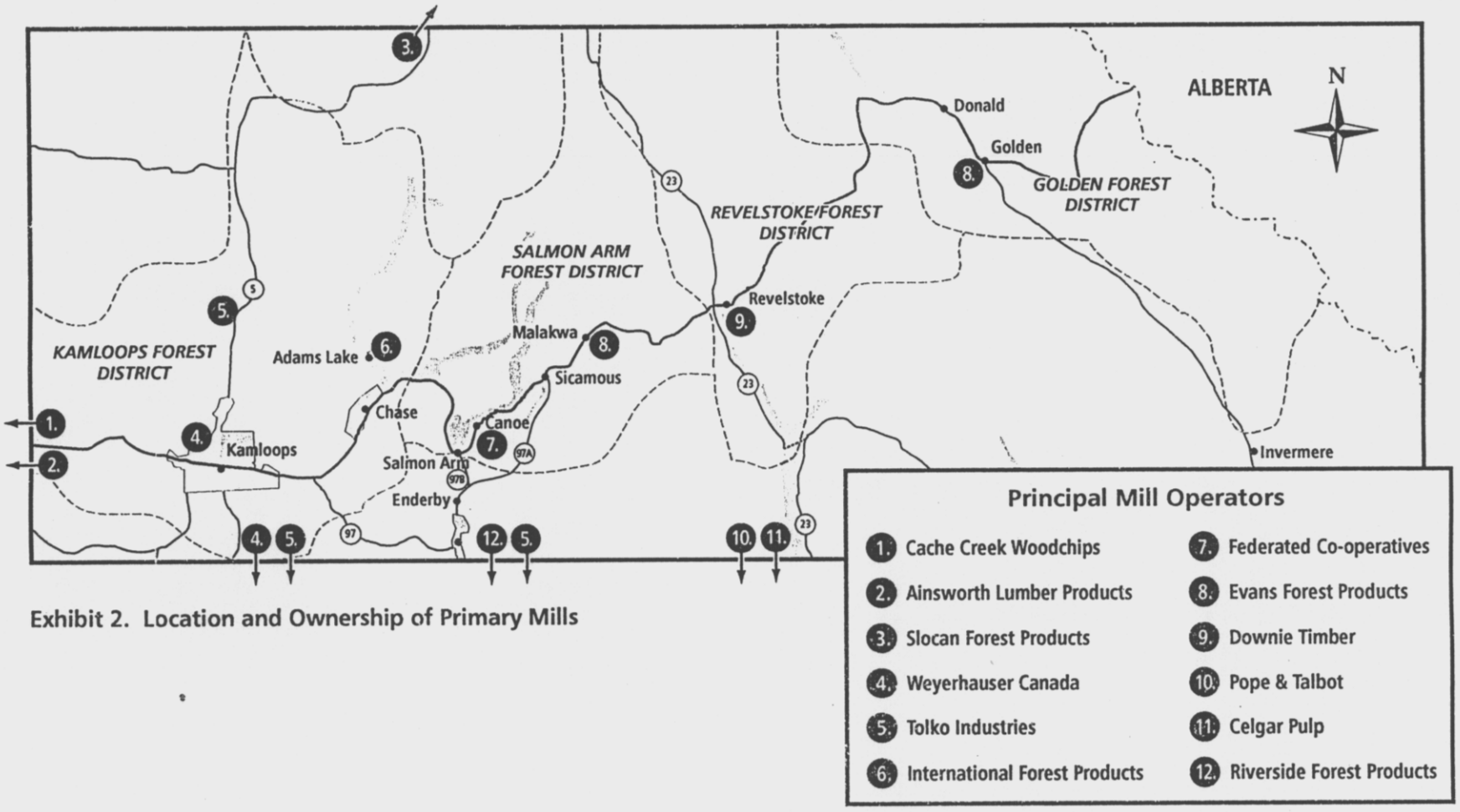


Exhibit 2. Location and Ownership of Primary Mills

and five plywood mills. In total, the primary lumber mills in the region have an annual production capacity of about 700 million board feet.[1]

Eight of the larger mills are located on or near the Trans Canada Highway between Kamloops and Golden. These mills are listed below, together with an estimate of their annual capacity.

Primary Forest Products Plants in the TCH Corridor

Location	Operator	Product	Annual Capacity		
			Million board feet	Thousand tonnes	Million square ft.
Kamloops	Weyerhaeuser	Lumber	106		
		Pulp		420	
	Paul Creek Slicing	Veneer			22
Adams Lake	International Forest Products	Lumber	108		
Canoe	Federated Co-op	Lumber	86		
		Veneer			96
		Plywood			108
Malakwa	Evans Forest Products	Lumber	48		
Revelstoke	Downie Timber	Lumber	53		
	Joe Kozek Sawmills	Lumber	14		
Golden	Evans Forest Products	Veneer			120
		Plywood			144

In addition to the primary mills, there are several smaller lumber mills in Kamloops, Revelstoke, Sorrento, and Golden; pole manufacturing plants in Sicamous and Revelstoke; and shake and shingle mills in Revelstoke.

When they are operating at capacity, sawmills and plywood mills in the region consume about 4.75 million cubic metres of timber each year. As noted earlier, the annual harvest rate is about 3.5 million cubic metres -- substantially less than the volume required at full capacity. Timber is hauled into the area from other forest districts and other provinces to meet the shortfall.

In addition to the primary mills, there are several "value-added" operations in the corridor. Exhibit 3 provides an overview of this component of the forest products industry.

1. *Major Primary Timber Processing Facilities in British Columbia -- 1996.* Ministry of Forests, Economics and Trade Branch, Victoria, April 1997.

Exhibit 3. Value-Added Forest Products Manufacturing

Location	Operator	Products	Markets (%)				Mode
			B.C.	Other Can.	U.S.	Other	
Kamloops	A&A Post and Rail	Post, rails, treated lumber, orchard props, landscape ties	95		5		
	Classic Woodcraft	Cabinets					
	Mastercraft Cabinets	Cabinets	95		5		
	Noberg Truss Ltd.	Roof trusses	100				
	RL Palmer Manuf. Ltd.	Toy parts	5	70	25		
Chase	North End Timber	Custom planing and resawing					Truck
Sorrento	Darnell Industries	Vents, shutters, shims	75	25			
	Notch Hill Forest Products	Kiln drying, laminating	60	20		20	
	Timberland Supply	Garage doors, mill work blanks	80	10		10	
Tappen	Lakeside Timber	Log home squares, siding					Truck, rail
Salmon Arm	Be-Ja Cabinets	Cabinets, furniture	100				
	Cooper Creek Cedar	Decking, fencing	10	69	20	1	
	Custom Log Homes Ltd.	Log homes and furniture	10			90	Container, truck, and rail
	Custom Window and Door	Windows and doors					By truck to the U.S.
	Custom Glass and Millwork	Windows and doors	96			4	
	Ideal Export Log Homes	Log homes, furniture components	3			97	Truck
	Lakeside Timber	Log home squares, siding, fencing	30	15	55		Truck, rail
	MKM Manuf.	Siding, decking, channel, panel					Truck, rail
	Salmon Arm Truss Systems	Roof trusses, I joists	100				
	Timberland Supply Co. Ltd.	Custom remanuf., export stock prep.					Truck
Golden	Glacier Value Added Wood Products	Window components, molding, furniture stock	60	5		35	
	Golden Truss Products	Roof trusses	95	4	1		
	Interact Wood Products	Finger joint blocks and products					Truck

Source: *Madison's Canadian Lumber Directory*, 1997 and *Directory to Secondary Manufacturing of Wood Products in British Columbia*, Working Paper 96-02, Pacific Forestry Centre, Canadian Forest Service, May 1996.

As indicated, a wide variety of wood products are manufactured in the corridor. Market location depends on the nature of the product. For example, cabinets and roof trusses are aimed at local markets while log homes are destined for offshore markets. Molding, windows, doors and other milled products find a market in B.C., the other provinces and the U.S. In most cases, these goods are shipped by truck.

Most of the major mill operators in the corridor were contacted for information on their log-hauling operations and the way they transport lumber, wood chips and other products. That survey covered about 70 percent of sawmilling capacity and 95 percent of plywood manufacturing capacity in the area. The results of that work are discussed below. The findings provide a general view of forest industry trucking activity, but are not a precise measure. The survey concentrated on transportation of logs and forest products and did not deal with other traffic generated by lumber and pulp producers (e.g. transportation of heavy equipment, fuel and chemicals) or the "value-added" segment of the industry.

Current patterns and practices for log hauling and transportation of forest products, wood chips and hog fuel are outlined below.

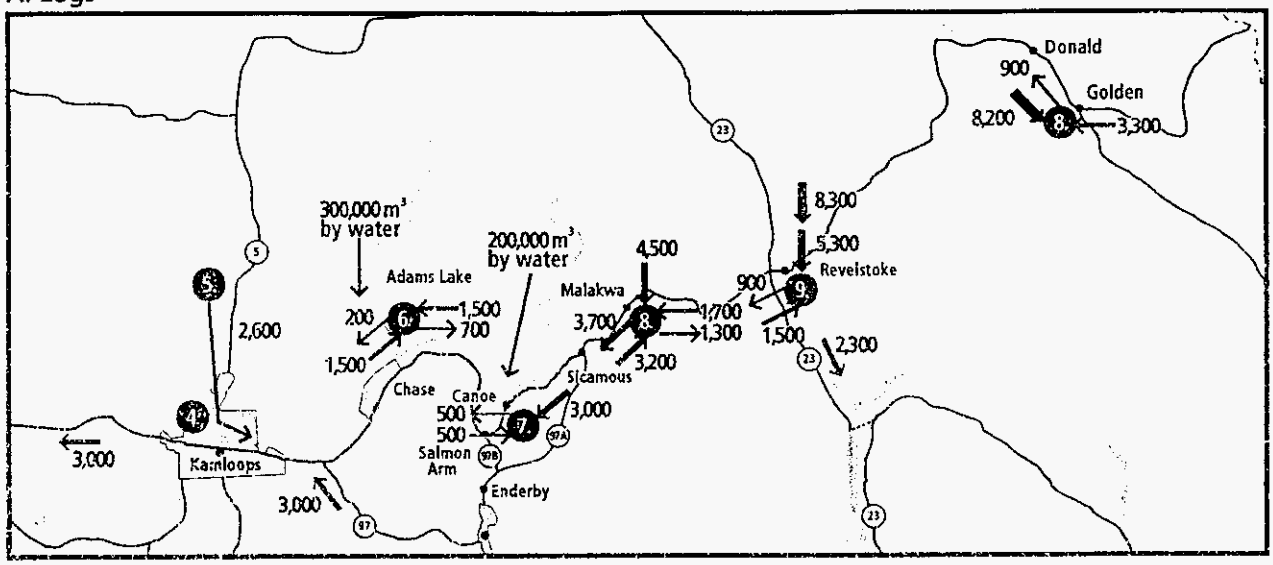
5.2 Log Transportation

The general pattern of log shipments is shown in Exhibit 4. Use of the TCH is lower than might be expected. There are two reasons for this.

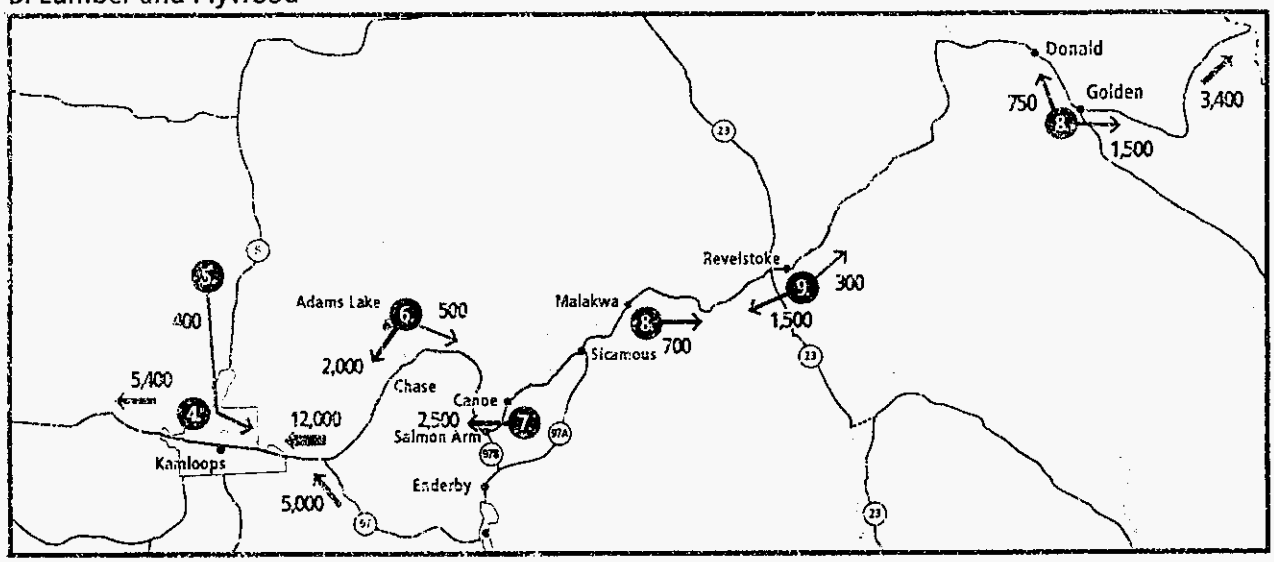
- Many of the mills in the region do not use the TCH for their primary log hauls. Mills to the west and north of Kamloops do not draw timber from the Trans Canada corridor. Ainsworth Lumber, Tolko Forest Products, Weyerhaeuser, and Slocan Forest Products, for example, all rely on forest roads, Highway 5, or the TCH west of Kamloops for their principal log hauls. Similarly, mills to the south of the corridor make little use of the TCH. For example, the Tolko and Riverside mills in the Okanagan draw most of their timber from the area to the south of the highway and consequently do not rely on the TCH.
- Mills that are located on or near the TCH generally use only short segments of the highway for log hauls. The Adams Lake mill relies on forest roads and barge transport for most of its log deliveries. About two thirds of the logs shipped to the mill at Canoe are shipped by water over Shuswap Lake and then over a short section of the TCH from a log dump to the mill site. The Malakwa mill relies on forest roads rather than the highway, and most of the logs that are destined for Revelstoke move over Highway 23 rather than the TCH. Logs for the Golden mill are moved in rafts over Kinbasket Lake, then over the TCH from Donald to Golden. The mill at Golden is also supplied via the TCH from an area to the west of Yoho National Park.

Exhibit 4. Forest Industry Traffic Flow
(Truck Loads per year)

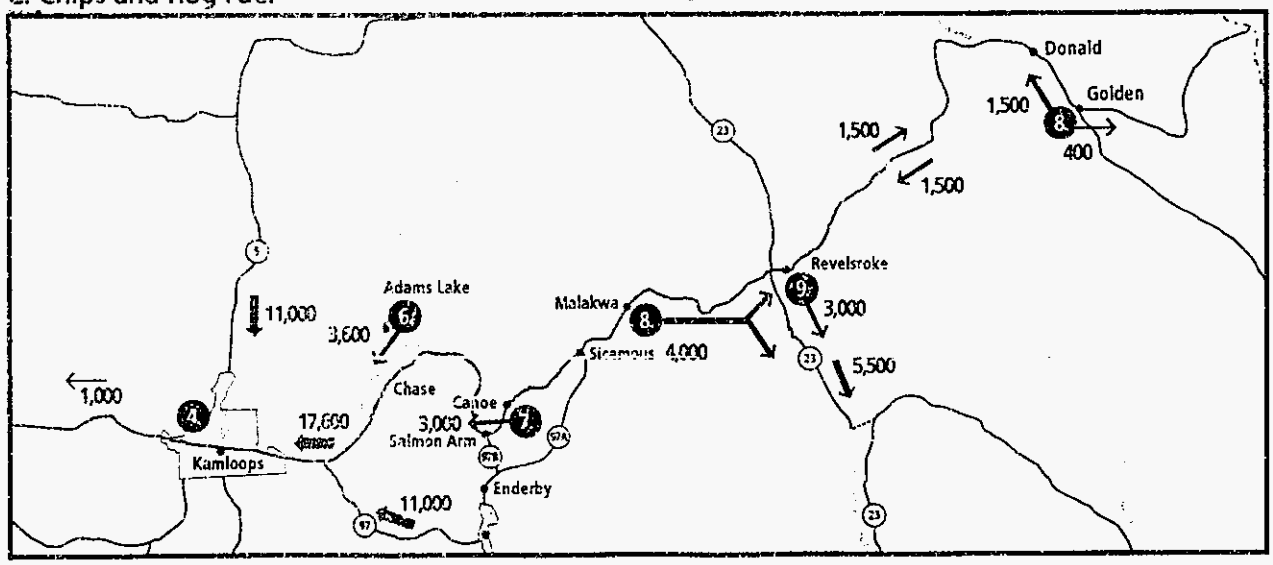
A: Logs



B: Lumber and Plywood



C: Chips and Hog Fuel



Total Loads Single Mill Loads

The use of forest roads, highways and water transportation is summarized in Exhibit 5 for principal operators in the region.

As noted earlier, mill operators often supplement their own log supply with timber from other sources. These alternative sources of supply include:

- Licenses held in other areas of the province.
- Small business operators in the area.
- Private landowners.
- Suppliers in Alberta or Saskatchewan. (For example, a substantial volume of timber was "imported" from other provinces between 1993 and 1995, mainly from Alberta. This "imported" supply dwindled to a very low level by 1996.)

Many of the logs that are purchased from other areas are shipped via the Trans Canada Highway. Log trading is another source of logging truck traffic on the TCH. In this case, logs are traded with other mills or other operators when a company's log harvest is not well suited to the configuration of a particular mill. For instance, Weyerhaeuser Canada trades logs among its mills in Princeton, Merritt, and Kamloops, while Tolko Industries trades logs between its Heffley Creek and Lavington mills. The Evans' mill at Malakwa also depends on log trading. This mill specializes in cedar products, and yet the operator cuts several types of timber in addition to cedar. Evans then trades that timber for cedar logs that are available from other mill operators.

Purchased and traded logs are generally transported over longer distances on the TCH than the mill operators' own log harvest. As a result, they account for a disproportionate part of log traffic on the highway.

As indicated in Exhibit 4, logs move over the highway in both directions. The heaviest volume is on the Sorrento-Malakwa section, where the TCH is used for traded and purchased logs as well as timber harvested by Federated Co-op and Evans Forest Products. About 15,000 loads per year move over this section of the highway.[1]

1. Taken together, eastbound and westbound traffic over this section of the highway amounts to about 500,000 cubic metres of timber each year.

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Exhibit 5

Timber Supply and Log Haul Patterns for Primary Mills

Mill Operator	Crown Forest Licenses By Forest District	Mill Site	Annual Capacity			Log Hauls
			Lumber (mmbf)	Plywood/ veneer (m. ft^2)	Other	
Downie Timber	Revelstoke: 430,000 m^3 Golden: 50,000 m^3	Revelstoke	53			Timber in the Golden Forest District is in the Wood River area; logs are transported down Highway 23.
Evans Forest Products	Salmon Arm: 300,000 m^3 Revelstoke: 100,000 m^3 Golden: 380,000 m^3	Golden Malakwa	 48	144/120		The Golden mill handles large logs. Cedar and smaller logs are trucked to Malakwa.
Federated Co-operative	Salmon Arm: 320,000 m^3	Canoe	86	108/96		About 2/3 of logs are barged down Shuswap Lake. There is a short haul on the TCH from the lake site to the mill.
International Forest Products	Kamloops: 250,000 m^3	Adams Lake	108			Only purchased and traded logs are hauled over the TCH. Own timber is moved by water or forest road.
Riverside Forest Products	Kamloops: 340,000 m^3 Salmon Arm: 750,000 m^3	Kelowna Lavington Armstrong	125 67 115	216/94 0/158 216/127		Logs are hauled south to the mills without using the TCH.
Tolko Industries Ltd.	Kamloops: 640,000 m^3	Heffley Creek Lavington Louis Creek	 77 79	96/166	65,000 BDU chips	Intra-company log trades between Lavington and Heffley Creek are via the TCH.
Weyerhaeuser Canada	Kamloops: 590,000 m^3	Mission Flats Lumby Merritt OK Falls Princeton Vavenby	106 96 89 115 120 96		423,000 tonnes of pulp	Chips are shipped to Kamloops by truck from Weyerhaeuser lumber mills in the region and from mills owned by other operators in the TCH corridor and to the west and north of Kamloops.
Revelstoke Community Forest	Revelstoke: 100,000 m^3					Hauled by truck over Highway 23, mainly to Revelstoke mills.

mmbf = million board feet

Source: *Major Primary Timber Processing Facilities in British Columbia*, Ministry of Forests, 1996.

Low-quality wood also accounts for a significant volume of traffic. Roughly 15 to 20 percent of the timber that is harvested in the region is low-quality hemlock that is not suitable for lumber. These "pulp" logs are hauled by truck to Cache Creek for conversion to wood chips.[1] The chips are then shipped to mills in Washington State as backhaul for garbage moving from the Lower Mainland to Cache Creek. About 900 loads of pulp logs are shipped from Golden to Cache Creek each year, and other mills add to this volume. In total, mills in the corridor ship about 3,000 loads of pulp logs over the Trans Canada Highway each year.

The movement of logs is generally spread evenly over ten months of the year. Logging operations are cut back or curtailed for a period of about two months each spring as a result of poor conditions at harvest sites and on forest access roads.

5.3 Forest Products Transportation

Mills along the corridor produce lumber, plywood and pulp. In contrast to log transport, where hauls over the TCH cover relatively short distances, most shipments of forest products are long-haul shipments. Most of the lumber and plywood manufactured in the region moves by truck while the pulp produced in Kamloops is shipped by rail.

The direction of haul for forest products depends on the market that is served by each mill operator. Primary hauls are:

- West to the Lower Mainland and offshore markets.
- South to the United States.
- North and east to Canadian markets.

Many of the operators sell their product in more than one market and consequently depend on several highway routes. The general flow of forest products is shown in Exhibit 4.

As indicated in the exhibit, the region's mills generate about 3,400 eastbound loads per year. About half of this traffic originates at the Evans plywood mill in Golden. That product is shipped to Calgary where it is transferred from truck to rail. Plywood is also shipped from the Tolko mill at Heffley Creek over the Trans Canada Highway to Calgary. The Malakwa and Adams Lake mills also ship product over the TCH to Alberta.

1. This plant is operated by Cache Creek Woodchips and has an annual capacity of 168,000 "bone dry units" or "BDU's." BDU's are a volume measure that is commonly used for by-product material. On average, a BDU weighs 2.25 tonnes.

The volume of westbound lumber traffic increases as one moves to the west across the corridor. This product is destined for the B.C. market, offshore markets (through Vancouver and Fraser Port), as well as the rail reload centre at Campbell Creek (about 18 kms. east of Kamloops). Traffic volumes increase substantially at Monte Creek where Okanagan lumber enters the TCH from Highway 97, mainly destined for the Campbell Creek reload centre. Information gathered from the mill operators indicates that at least 12,000 truckloads of forest products move over the Monte Creek-Campbell Creek section of the highway each year.[1] About 5,400 loads per year continue west from Campbell Creek and through Kamloops en route to the Lower Mainland.

The mills that were contacted for the study ship very little product over the Trans Canada Highway to markets in northern B.C. or the U.S. The principal north-south flow is off Highway 5 and over the Kamloops-Afton section of the TCH en route to the Lower Mainland. This traffic was not addressed in detail in the survey, and the mill operators generally do not know whether their shipments move over Highway 1 or the Coquihalla Highway. That decision is made by the truckers, most of whom are independent operators working under contract to the mill operators.

5.4 Transportation of Mill By-Products

Mills in the region produce a large volume of wood chips, sawdust and hog fuel as a by-product of their sawmill operations. As a general rule, half of every log is converted to lumber and the rest to chips and hog fuel. At this rate, half of the timber harvested in the region is eventually moved as chips, sawdust or hog fuel and adds a significant volume of traffic to the Trans Canada Highway and other highways in the region.

The Weyerhaeuser mill in Kamloops and the Celgar mill in Castlegar are the principal buyers of chips and hog fuel in the region. These mills require large volumes of material on a continuous basis. The Weyerhaeuser mill, for example, consumes about 670,000 Bone Dry Units (BDU's) of wood chips, 250,000 BDU's of sawdust and 250,000 BDU's of hog fuel every year. If all of this traffic were transported by road, it would add about 54,000 truck loads to the highway system each year.

The shipping pattern for mill by-products is shown in Exhibit 4. Most of the chips and hog fuel that are produced in Malakwa and in mills further to the east are transported along the TCH to Highway 23 at Revelstoke. From this

1. This estimate assumes an average load of 45,000 board feet per load, considered by industry contacts to be a representative average load for the region.

point they move south to the Celgar mill. West of Malakwa, chips move west to the Weyerhaeuser mill or the Lower Mainland. The volume of wood chip traffic on the highway nearly triples at Monte Creek with the addition of shipments from the Okanagan to the Weyerhaeuser mill. Weyerhaeuser also draws chips from the Highway 5 corridor and mills to the west of Kamloops.

Other by-product traffic includes bark mulch that is shipped from Golden to Calgary for landscaping.

5.5 Overview of Forest Industry Trucking

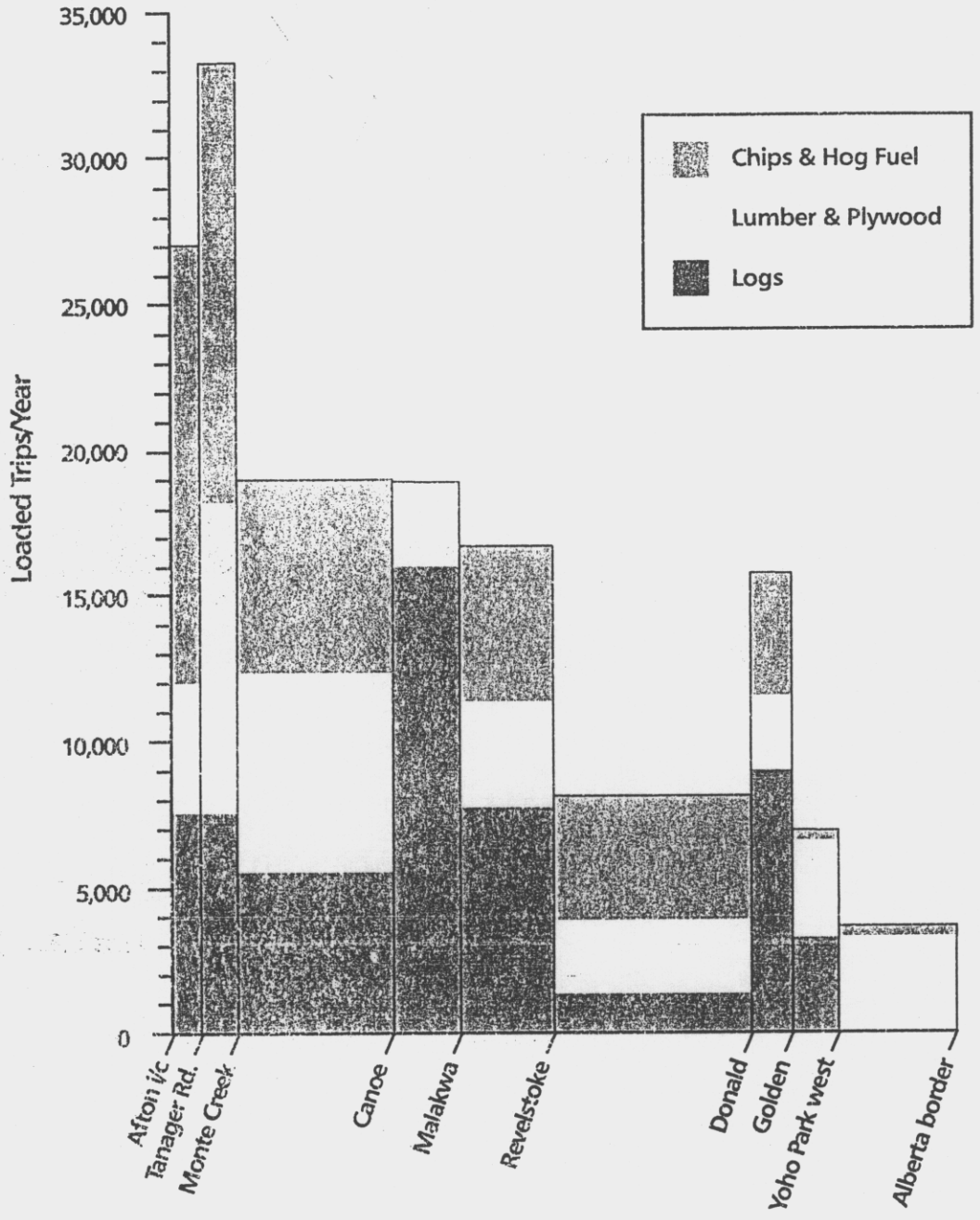
The overall pattern of forest industry traffic is shown in Exhibit 6. As noted earlier, this information is based on a survey of primary operators and does not provide 100-percent coverage. In particular, the exhibit understates volume on the Afton Interchange-Tanager Road section of the highway because traffic from mills north of Kamloops on Highway 5 and destined for the Lower Mainland is not included. Similarly, wood chips shipped to Kamloops from points to the west are not included in the total. Nonetheless, the chart indicates that the highest volume of forest products traffic appears on the Tanager Road-Monte Creek section of the highway.

The volume of forest products traffic at Monte Creek is about nine times the volume at Golden. The high volume at the west end of the corridor is the result of several factors:

- The cumulative effect of several mills shipping lumber to the Lower Mainland.
- The cumulative effect of pulp logs shipped to Cache Creek from several locations in the corridor.
- The addition of lumber moving from the Okanagan to the rail reload centre at Campbell Creek.
- The cumulative effect of several lumber mills shipping wood chips to the Weyerhauser mill.

The last two factors account for most of the forest sector traffic towards the Kamloops end of the corridor. At the point where forest products traffic is heaviest, the TCH is handling 30,000 to 35,000 truck loads per year. Logging trucks account for most of the forest industry traffic in the central section of the corridor between Canoe and Malakwa. This results from primary log hauls as well as traffic generated by log trading and log purchases by corridor mills.

Exhibit 6. Forest Industry Traffic Volume



In total, about 660,000 thousand board feet of lumber are shipped over the highway each year. At $480 per thousand board feet, the total value of that product is in the order of $300 million.[1] Similarly, about 460,000 BDU's of chips, sawdust and hog fuel are transported to Kamloops and Castlegar over the highway each year. At $70 per BDU, each year's truck shipments of wood chips have a value of about $30 million.

5.6 The Mining Industry

The TCH corridor has a long history of mineral production and support for the mining industry. Several mines have closed over the last few years but the Highland Valley copper mine at Logan Lake is still the province's largest operating mine.[2] There are also several small operations producing flagstone, silica, barite, and other industrial minerals in the corridor. The location of active and recently-closed mines is shown in Exhibit 7.

Mining does not generate a significant volume of traffic on the Trans Canada Highway at the present time. Concentrate from the Highland Valley mine is shipped by truck over Highway 97C to Ashcroft where it is transferred to rail for the trip to Vancouver and offshore markets. Concentrate was also shipped from Afton to Ashcroft until the Afton mine was closed early in 1997.

The corridor holds potential for new developments similar in scale to the Highland Valley or Ajax mines. However, the scale and pace of mineral development is highly uncertain. This uncertainty relates to several factors including:

- The size and characteristics of mineral deposits.
- Development costs.
- International mineral prices.

Major mine developments are subject to intensive public and government review, and the impact on the TCH and other transportation facilities would be considered as part of the review process.

There are three general areas in the corridor with geological characteristics that might support a large body of ore:

1. The $480 figure is a 1997 "all species" average for the region while the chip price is the delivered value at Kamloops. Source: Ministry of Forests.
2. The Ajax copper mine to the south of Kamloops and the Goldstream copper-zinc mine to the north of Revelstoke are among those that have closed in recent years.

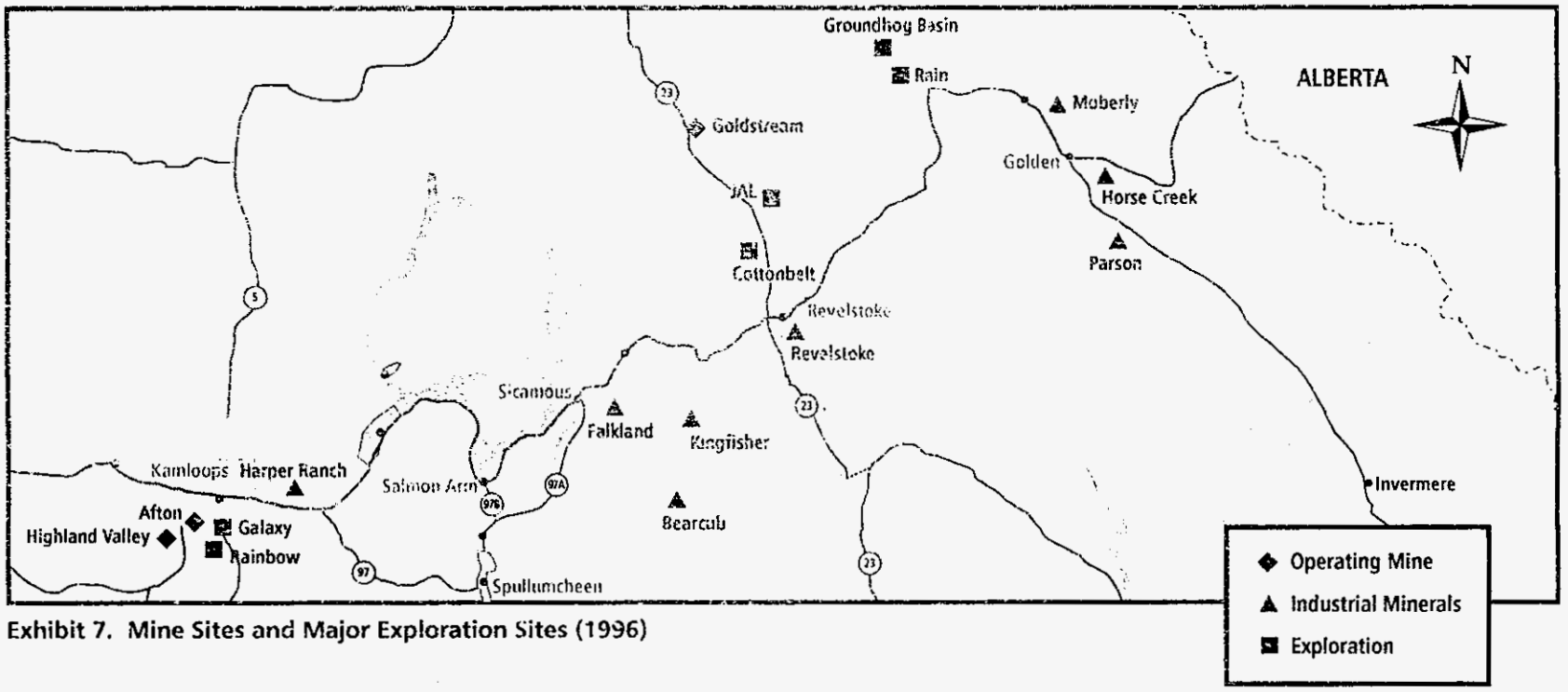


Exhibit 7. Mine Sites and Major Exploration Sites (1996)

- The area to the south of Kamloops in the vicinity of the Ajax workings (the Iron Mask batholith).
- The Eagle Bay Assemblage of rock which lies between Shuswap Lake, Adams Lake and Clearwater.
- The area north of Revelstoke.

Extensive exploration work has been completed on several properties in the region. In 1996 alone, at least $100,000 in exploration work was completed on each of the properties listed in the following table.

Major Exploration Projects in the Vicinity of the TCH -- 1996

Property Name	Commodity
Rainbow	Copper, silver, gold, molybdenum
Galaxy	Copper, silver, gold
Cottonbelt	Lead, zinc, copper, silver
JL	Lead, zinc, copper, silver
Groundhog Basin	Gold, silver
Rain	Copper, lead, zinc, silver

Source: Mines Branch, Ministry of Employment and Investment.

Exploration on the Rainbow and Galaxy properties has been reduced substantially with the closure of the Ajax pit. While significant occurrences have been found at both of these properties, the ore bodies are too deep to be economically developed in the near term. Exploration is continuing at the Cottonbelt and JL properties.

It is not possible to determine whether or where a major mine might be developed. However, some general conclusions can be drawn about the potential impact of a major mine:

- Mineral processing technology and the nature of the mineral deposits in the region suggest that a concentrator would be built as part of a new base metal mine development.[1]
- Concentrates are usually shipped to offshore smelters, and consequently product would likely be shipped to the Lower Mainland, regardless of where the mine is located.
- Concentrate is a low-value, high-volume commodity whose international price generally cannot support a long truck haul.
- The operator would keep transportation costs to a minimum by shipping concentrates by truck to the nearest railway line where they would be transferred to rail. For example, concentrate from a mine site to the north of Revelstoke would be shipped via Highway 23 to Revelstoke

1. Typically, concentrate volume is about 10 percent of the mine's ore production.

where it would be loaded into railcars with little or no impact on the Trans Canada Highway.

Although volumes are relatively small, there are several industrial mineral operations in the corridor that make occasional or periodical shipments over the TCH. These are summarized below.

Industrial Mineral Operations in the TCH Corridor

Name	Commodity	Market
Falkland	Gypsum	Kamloops
Moberly	Silica	
Harper Ranch	Limestone	Kamloops
Horse Creek	Silica	
Kingfisher	Marble	Vancouver
Revelstoke	Flagstone	Vancouver/Calgary
Parson	Barite	
Bearcub	Feldspar	Vancouver

Source: Ministry of Employment and Investment, Mines Branch

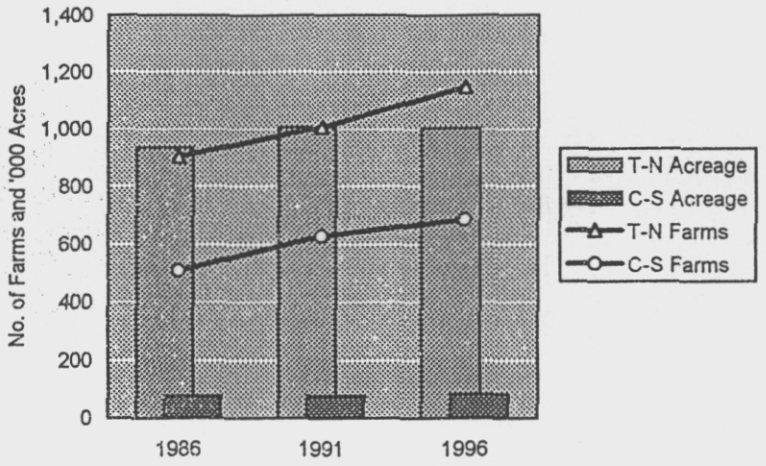
The amount of traffic from mines of this sort is usually quite low, and is generally no greater than one or two truckloads per day.

5.7 Agriculture

Agriculture has been an important part of the regional economy for decades, particularly in the area between Kamloops and Sicamous. Farming has traditionally been centred on forage and livestock operations, including beef, sheep, and dairy operations. It has become more diverse in recent years with the addition of game farming (i.e. fallow deer and bison), seed crops, and ginseng.

The total area of land under cultivation in the Thompson-Nicola and Columbia-Shuswap Regional Districts has shown little change over the last ten years. However, the number of farms has increased substantially. Regional differences are apparent in the following chart and the fact that the average farm in the Thompson-Nicola region is 875 acres in size, compared with 125 acres in the Columbia-Shuswap. Average farm size declined by 15 percent between 1986 and 1996 as a result of subdivision and changes in the farm economy.

Trends in Agriculture

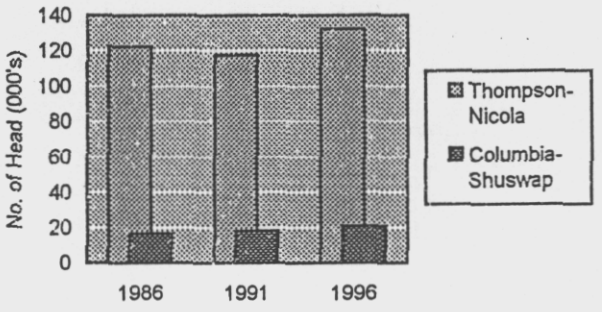


T-N = Thompson-Nicola Regional District,
C-S = Columbia-Shuswap Regional District

Source: Census of Agriculture, Statistics Canada

Ranching is the largest farming activity in the region. The following chart shows that the total cattle and calf population has been fairly steady over the past ten years, with about 120,000 head in the Thompson-Nicola Regional District and 20,000 in the Columbia-Shuswap Regional District. In the latter case, there is a large proportion of dairy cows. Given the importance of the beef and dairy industries, "external" transportation requirements associated with agriculture include transportation of feed grain and hay that are shipped into the area and calves that are shipped out of the region for "finishing."

Cow and Calf Population



Cattle sales occur year around. However, most of the sales take place in a ten-week period from the middle of September to the end of November. At this time, calves are transported to feed lots in Alberta, Saskatchewan or the Fraser Valley. According the Census of Agriculture, there were about 45,000 calves in the Thompson-Nicola Regional District and 2,000 in the

Columbia-Shuswap Regional District in 1996. Industry sources indicate that about 35,000 calves are transported over the TCH to Alberta during the ten-week sales period in the fall.[1] Most of this traffic is concentrated on three days each week -- Tuesday, Wednesday and Thursday – in order to fit with cattle sale schedules. This translates into 400 eastbound loads over ten weeks or 40 loads per week, and 12 to 15 loads per day on heavy-haul days.[2] Livestock is also shipped from the Cariboo to Calgary over the TCH.

Feed grain is transported by truck over the Trans Canada Highway to supply poultry, hog, dairy, and beef operations in the TCH corridor, the Okanagan, and the Fraser Valley. Grain is shipped to feed mills in the region by both rail and truck from Alberta and by truck from northern B.C. Feed mill operators then transport mixed feed to farm sites and retail outlets throughout southeast B.C. Two of the area's larger feed suppliers were contacted regarding their use of the TCH. Taken together, these firms purchase about 80,000 tonnes of grain each year. Of that amount, roughly 12,000 tonnes are delivered by truck to Kamloops from Alberta via Highway 5. Another 40,000 tonnes are delivered by rail. The remaining 28,000 tonnes are shipped from Alberta by truck across the Trans Canada route to Highway 97 for delivery to Grinrod. For these two firms, the total inbound truck volume over the TCH is about 800 loads per year.[3] Both operators indicated that about 30 percent of their own shipments to farms and ranches are over the Trans Canada Highway. This is equivalent to 24,000 tonnes or roughly 1,000 loads per year.[4]

In addition to feed grain deliveries to and from feed mills, there are also direct farm-to-farm shipments from Alberta to producers in the region. These shipments could account for an additional 100 truckloads per year (i.e. 2,800 tonnes of grain delivered in 25 tonne trucks). Deliveries to the region are heaviest during the six-month period between mid-October and mid-April. However, there is a year-round movement of feed grain for poultry and hog producers. Activity is concentrated in the western half of the corridor, between Kamloops and Salmon Arm.

In addition to feed grain that is consumed in the corridor, a substantial volume is shipped by truck from Alberta to feed mills in the Fraser Valley and on Vancouver Island. Volume fluctuates with market conditions and

1. Sources include: the District Agrologist in the Ministry of Agriculture, Fisheries and Food; the Range Officer with the Kamloops Forest District; the B.C. Livestock Co-op (re cattle sales); and Inland Livestock Trucking.
2. The standard cattle-hauling rig will carry about 90 calves, each weighing about 550 lbs.
3. This assumes a B-train configuration and an average load of 35 tonnes.
4. Loads range from 12 to 30 tonnes. An average of 25 tonnes is used here.

rail/truck competition, but the volume handled by truck is generally in the order of 65,000 tonnes per year.[1] Most of this traffic moves over the Trans Canada Highway. At 35 tonnes per load, this represents 1,900 truckloads per year.

A summary of the external traffic associated with the livestock sector is provided below.

Selected External Traffic Related to the Livestock Industry
(loads/year)

Description	Highway Section	
	Kamloops to Sicamous	Sicamous to Alberta
Livestock	400	400
Feed Grain		
- Inbound	125	800
- Local distrib.	1,000	
- Through	1,900	1,900
Total	3,400	3,100

Traffic is seasonal, and generally peaks in the fall when livestock is being transported east and grain is moving west. Other agricultural products shipped over the highway include fruit and juices (e.g. from the Okanagan to Alberta), meat, vegetables (e.g. from the Lower Mainland and the Okanagan Valley to Alberta), dairy products, and frozen food.

5.8 Energy

Power generation projects could have an impact on the corridor, particularly if new power plants are fuelled by wood waste. Weyerhauser has proposed a 50-megawatt co-generation plant to be built adjacent to its pulp mill in Kamloops. This plant would be used to generate heat and electricity for use in the mill, and would consume about 325,000 BDU's of hog fuel. This is roughly half of the hog fuel that is produced in the Thompson Okanagan region but is not being used at the present time. This surplus is now stock-piled or is disposed of by burning at lumber mills. However, burning is being phased out under provincial air quality regulations, and one purpose of the co-generation project is to help the industry meet current standards by burning waste more efficiently. The project is in the planning phase, and a number of critical issues are yet to be addressed. These include: negotiating long-term supply agreements with mill operators; arranging financing; and reaching a long-term sales agreement with BC Hydro.

1. *Offsetting the Loss of Feed Freight Assistance*, Actran Consultants and Trans International Research for the B.C. Federation of Agriculture, November 1995.

If the project were to proceed, it is likely that half of the hog fuel required for the plant (or about 160,000 BDU's per year) would be delivered from points to the east of Kamloops. About half of that volume would be hauled from Okanagan mills via Highway 97 and onto the TCH at Monte Creek. The remainder would be shipped from Adams Lake, Canoe, Malakwa, and Revelstoke to Kamloops. This translates into about 8,000 loads/year on the Trans Canada Highway between Kamloops and Monte Creek. To the east of Monte Creek, traffic volume would build from Revelstoke west, with most of the traffic originating in the Salmon Arm area.

In another proposal, a district heating plant is under consideration for the City of Revelstoke. This plant would use waste wood from local mills to generate heat for distribution via underground ducts to local businesses and public buildings. As the project is currently conceived, it would not have a significant effect on the Trans Canada Highway.

Projects that are now being considered by the Columbia Power Corporation are not expected to affect the highway. For example, a proposed cogeneration plant at Skookumchuk would likely have local effects only.

6. General Freight

While the resource industries generate a significant amount of trucking activity on the Trans Canada Highway, most trucks on the highway are carrying food, beverages, general freight, fabricated metal products, household goods and other consumer products and industrial goods.

There is no comprehensive data on corridor trucking or the value of the goods that are transported over the route. However, available data suggests that about $1 billion worth of goods are shipped over this section of the Trans Canada Highway each year.[1]

Three data sources provide an indication of shipping patterns and the type of freight that is moving over the highway:

1. Statistics Canada publishes data on inter-provincial trucking based on an annual survey of for-hire trucking companies.[2] The Trans Canada Highway handles a large part of that traffic, and the survey results provide an indication of recent growth trends.
2. Statistics Canada also produced a special tabulation of truck shipments from the Lower Mainland to each of the other provinces for use in this study. Once again, most of this traffic moves over the Trans Canada Highway.
3. The Ministry completed one-day truck surveys at the Kamloops and Golden weigh scale stations in 1995 and 1996. This is the only data that relates specifically to the corridor and includes both "private" trucking and "for-hire" trucking.

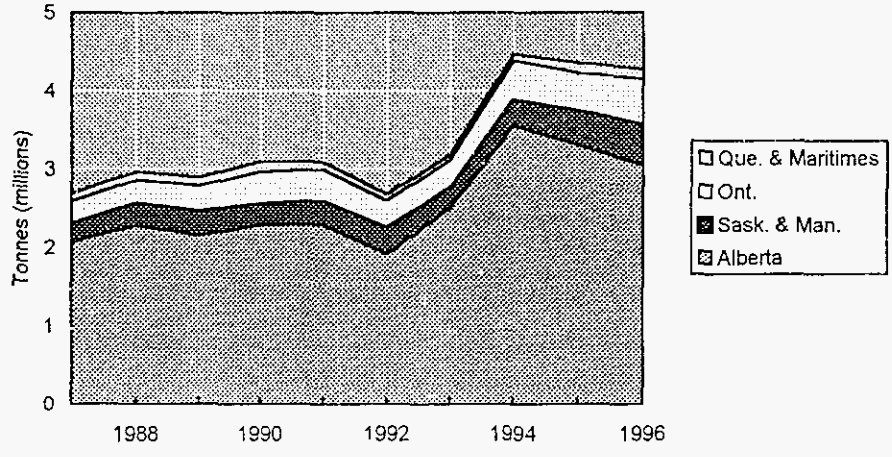
Recent trends in "for-hire" trucking from the other provinces to British Columbia are shown in the chart at the top of the following page.[3]

Trends are affected by a number of factors apart from traffic volume. For example, any widespread shift in the use of "for-hire" and "private" trucking

1. The origin-destination tables developed for this study indicate that about 1,600 transport trucks operate over part or all of this section of the TCH on a typical summer day, or roughly 560,000 per year. With 12 percent empty (based on Ministry surveys), an average load of 20 tonnes, and an average value of $100 per tonne, the value of the goods being transported over the highway is in the order of $1 billion per year.
2. "For-hire" trucking refers to all trucking firms that carry goods for others whereas "private" trucking refers to shippers who transport goods in their own trucks.
3. Source: *Trucking in Canada* (Statistics Canada Catalogue 53-222) and tabulations provided by Statistics Canada. The Statistics Canada survey has not been entirely consistent from one year to the next and consequently the results must be used with caution. For example, prior to 1992 the survey was designed to cover for-hire truckers with more than $25,000 in annual revenue. The cut-off point was increased to $1 million per year in 1992.

affects apparent growth trends. Trends are also affected by short-term activity such as logs shipped from Alberta to B.C. lumber mills or equipment and supplies moving to the Peace River region in support of oil and gas exploration or pipeline construction.

For-Hire Truck Shipments *to* B.C.

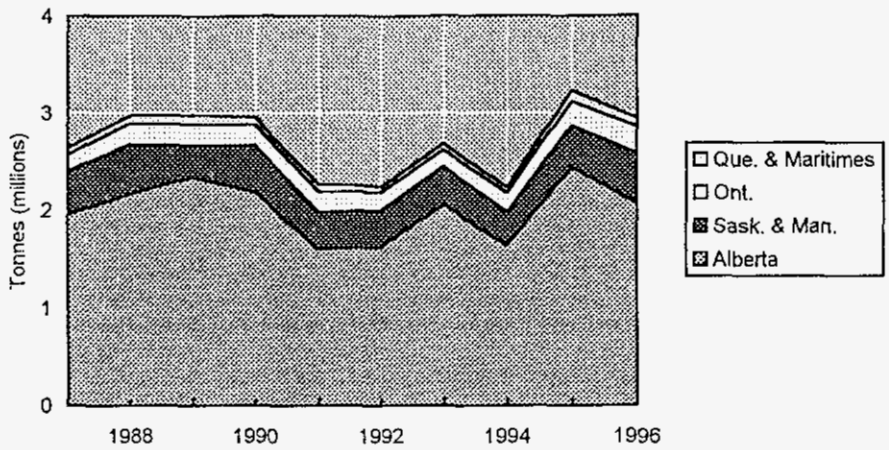


As shown in the chart, about 75 percent of truck shipments into B.C. originate in Alberta.

The sharp increase in tonnage in 1994 is not fully explained. Private landowners in Alberta shipped a large volume of logs to B.C. mills in 1994 and 1995, and that traffic contributed to the overall increase in those years. However, log imports from Alberta all but disappeared in 1996 and yet the volume shipped from Alberta remained about 35 percent higher than 1992 and the previous six years. Once again, the data in this chart includes all "for-hire" truck traffic to British Columbia, and it is not possible to determine whether the recent increase has occurred on the TCH or other inter-provincial highways.

The recent trend in truck shipments in the reverse direction -- from B.C. to the other provinces -- is illustrated in the following chart. As indicated, volume fell by about 25 percent from 1990 to 1991 and through the recession of the early 1990's. It recovered in 1995, however, and returned to the same level as the late 1980's.

For-Hire Truck Shipments *from* B.C.



Traffic destined for the Lower Mainland is an important component of truck traffic on the Trans Canada Highway, and provides one indication of the volume and type of freight that moves over the highway.[1] Except for shipments from northern Alberta, most freight that is shipped by truck from other provinces to the Lower Mainland is routed over the Trans Canada Highway.

By adjusting the Alberta traffic figures for traffic that uses the Yellowhead Highway, the Statistics Canada data can be used to estimate the volume of inter-provincial truck traffic moving over the TCH en route to the Lower Mainland. The Ministry's truck surveys indicate that 60 percent of truck traffic from Alberta to the Lower Mainland travels over the Trans Canada Highway.[2] If this estimate is applied to the Statistics Canada figures for B.C.-Alberta truck traffic, the volume of freight moving over the TCH to and from the Lower Mainland can be estimated as follows.

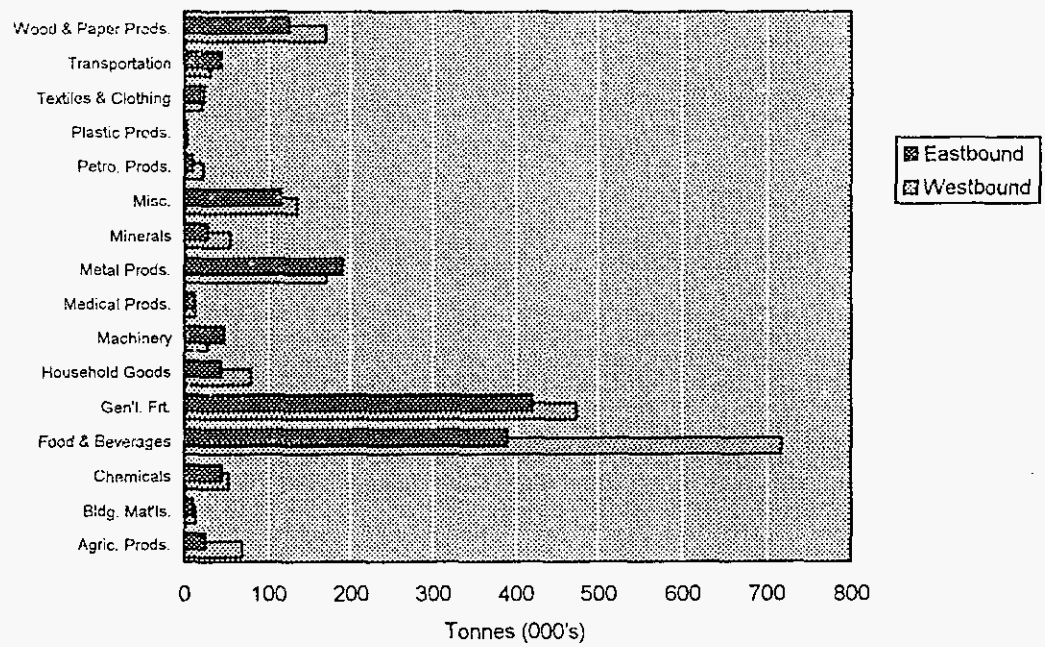
1. One-day surveys completed for the Ministry in 1995 and 1996 indicated that 30 percent of trucks on the TCH at Golden were destined for the Lower Mainland.
2. One-day surveys conducted at the Kamloops weigh scale station (between Afton and Kamloops) in 1995 and 1996.

Freight Moved Between the Lower Mainland and Other Provinces by For-Hire Truckers - 1996

Origin/Destination	Eastbound (million tonnes)	Westbound (million tonnes)
Alberta (60% of Alta.-Vancouver traffic)	0.58	0.68
Saskatchewan	0.11	0.15
Manitoba	0.19	0.21
Ontario	0.21	0.47
Quebec	0.05	0.08
Atlantic Provinces	0.005	0.004
Total	1.15	1.59

This traffic represents about $400 million per year in revenue to the trucking industry, and includes the following mix of commodities.[1]

For-Hire Trucking between the Lower Mainland and Other Provinces - 1996



As indicated, westbound shipments to the Lower Mainland outweigh eastbound shipments by about one third. Food, beverages and general freight

1. Source: Special tabulation produced by *Statistics Canada* on the basis of the 1996 For-Hire Trucking Survey. An overview is included in Appendix 5. Data is for the Vancouver Census Metropolitan Area (which covers the same area as the Greater Vancouver Regional District).

are the dominant commodity groups. Taken together, they account for about 55 percent of the total.[1] With the exception of agricultural products and food and beverages, eastbound and westbound traffic flows are generally balanced for each commodity group.

The Ministry's surveys provide additional information on the nature of truck traffic in the TCH corridor. The data must be used with care since it is based on one-day surveys at only two points on the route. However, it provides insight into the type of freight that is moving over the TCH and is the only source of data that covers both for-hire and private trucking and local as well as inter-provincial traffic.[2] The following table provides an overview of origin-destination patterns drawn from the survey data.

Primary Origins and Destinations
Trucks Passing the Kamloops and Golden Weigh Scale Stations

	1995		1996	
	Kamloops	Golden	Kamloops	Golden*
Origins				
S&W of Kamloops	66%	29%	39%	--
N&W of Kamloops	5%	1%	4%	--
South	3%	12%	6%	2%
TCH Corridor	13%	14%	21%	2%
Alberta & beyond	10%	42%	29%	46%
Destinations				

* Eastbound traffic was not included in the 1996 survey at Golden.

S&W of Kamloops =The area to the southwest of Kamloops including: the Hwy. 1 & 5 corridors, the Lower Mainland and Vancouver Is.
N&W of Kamloops = the Cariboo, northern B.C. and Yellowhead Highway #5
South = the Okanagan and Kootenay regions
TCH Corridor = The TCH from Kamloops to the Alberta boundary
Alberta & beyond = Alberta, the other provinces and the U.S.

The survey results reflect some of the difficulties of a short-term survey. For example, origins and destinations should balance each other and yet results of the 1995 survey at Kamloops indicate that 66 percent of trucks originated at points to the south and west, while only 23 percent were destined for that area. There are also substantial differences between results for 1995 and 1996.

1. Less than Truckload (or LTL) freight would account for a large part of the volume shown as general freight. LTL truckers consolidate freight from several shippers in order to make up a load.
2. Surveys were carried out at the Golden and Kamloops weigh scales on summer weekdays during 1995 and 1996. A total of 5,100 interviews were completed and the interviewers collected information on 13 items related to the truck, the trip, the load, and the route that was being used. For this study, the survey data was used to construct origin-destination tables with a 28-commodity breakdown. An overview is included in Appendix 6.

The survey tends to overstate the importance of external truck traffic in the corridor because the survey points are at the extreme east and west ends of the corridor. Nonetheless, the importance of external traffic is apparent from the origin-destination patterns shown above, and by the relatively small volume of "local" traffic that was captured in the survey. As shown in the following table, less than 15 percent of trucks on the TCH at Golden have an origin or destination in the corridor. The two surveys at Kamloops produced different results, but it appears that less than 30 percent and possibly as little as 15 percent of truck traffic at Kamloops has an origin or destination in the corridor. From these figures it appears that 75 to 85 percent of trucks entering the corridor from the east or west are destined for a point that is external to the corridor.

Breakdown of Internal and External Truck Traffic

	% To *and* From the Corridor	% To *or* From the Corridor	% External to External
Golden 1995 survey	2	11	87
Golden 1996 survey (this survey covered westbound traffic only)	4	17	79
Kamloops 1995	0.0	27	73
Kamloops 1996	0.3	14	86

7. Bus Transportation

Very little information is available on bus travel in the TCH corridor. As a general rule, the inter-city bus industry does not release information on individual routes and treats traffic data as highly confidential. As one indication of the sensitivity associated with bus data, Statistics Canada is unable to publish regional traffic data because of confidentiality concerns. As a result, this review is limited to operating schedules for scheduled bus services and general observations based on industry trends.

The inter-city bus industry has two distinct components:

- Scheduled service
- Motor coach tours and charters

Some of the operators who provide scheduled service are also active in the tour and charter business. However, much of the tour and charter industry is entirely independent of the scheduled operators. As discussed below, growth prospects for the two sectors are very different.

The following table provides an indication of the scope of the inter-city bus industry in British Columbia.

Licensed Buses and Operators

Operations	No. of Operators
Licensed Scheduled Operators	22
Charter Operators	220

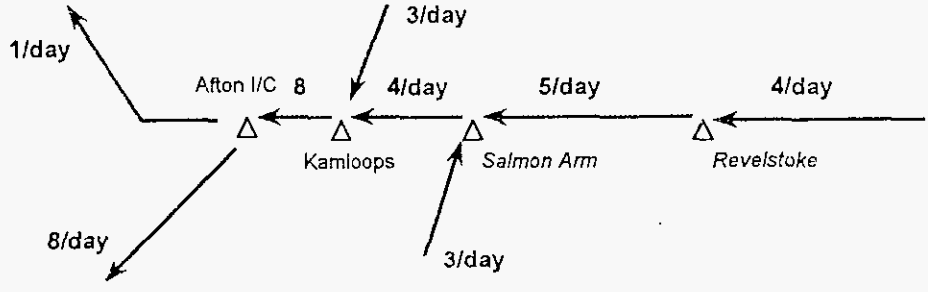
Fleet	No. of Buses
B.C.-based Buses	954
Other Canadian Buses Licensed to Operate in B.C.	308
U.S. Buses Licensed to Operate in B.C.	314

Source: B.C. Motor Carrier Commission.

As shown, there are ten charter operators for every scheduled operator in the province. For every three buses that are based in B.C. there are two out-of-province buses that are licensed to operate in British Columbia. As one indication of the state of the bus market, the number of buses licensed to operate in B.C. has remained unchanged throughout the last 10 years.

Greyhound Canada provides scheduled bus service along the full length of the corridor.[1] As shown below, they operate four or five buses in each direction with connections to the Okanagan. They also operate three buses per day over the Afton-Kamloops segment of the TCH en route from Vancouver to Edmonton and one per day to Prince George.

Scheduled Bus Service – Buses per Day

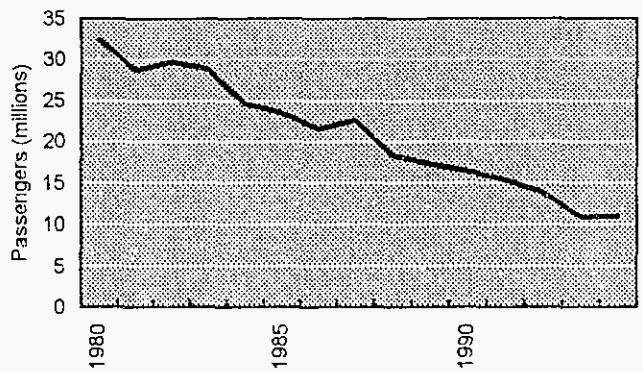


A recent study estimated the traffic load on Kamloops/Kelowna – Banff/Calgary scheduled services at 100,000 passengers per year.[2]

Greyhound and other scheduled carriers have been faced with declining markets as a result of increased auto ownership and more competitive air fares. Their long-haul markets have been particularly weak, and Greyhound's airline operation was an attempt to gain a stronger position in that market. Increasingly, the operators have focussed on regional travel while maintaining the schedule and route integrity that is required to handle long-haul travel. Although no traffic information is available for the TCH corridor, the following chart shows that the national market has been declining for several years. This trend is expected to continue.[3] Even if volume were to increase, existing schedules can absorb some growth without a need to increase service frequency or put additional buses on the highway system.

1. The Greyhound Canada bus system has been sold to Laidlaw Transportation.
2. *BC Intermodal Passenger Transportation Study*, IBI Group, Actran Consultants and Pannell Kerr for Transport Canada, 1998.
3. This outlook is reflected in a recent assessment of the state of transportation in Canada. A report tabled in the House of Commons says: "Scheduled intercity bus services and ridership continue to contract, as they have for 50 years, with increased private ownership of cars and growth in air travel." *Transportation in Canada, 1996 Annual Report*, a report submitted to the House of Commons by the Minister of Transport, Ottawa, 1996.

Passengers Travelling by Scheduled Inter-City Bus in Canada



Source: Statistics Canada

There is no evidence that this trend applies to the TCH corridor. However, it is apparent that the market is relatively weak and operators are having difficulty maintaining current service standards. Faced with these market conditions, operators are deeply concerned about proposals to "de-regulate" the inter-city bus industry. Their concern centres on the possibility that new operators would capture traffic on primary routes, making it difficult to sustain service on lightly-travelled routes and maintain regional and inter-provincial networks.

With this background, it seems apparent that scheduled bus operations are unlikely to expand or add significant volumes to the highway network.

While the scheduled service sector has been declining, the charter and tour component of the bus industry has been growing. As noted earlier, about 70 percent of buses that are licensed to operate in British Columbia are licensed for charter operations. These buses are used for conventional charter services that cater to groups such as school classes, sports teams and seniors organizations. They are also used for motor coach tours, including circle tours to and through the Rocky Mountains. Most of the Rocky Mountain tour packages use the Trans Canada Highway. About 100,000 passengers per year travel over the TCH corridor each year in charter coaches or on a motor coach tour. As one indication of bus passenger volume, roughly 50,000 bus passengers stop at the Parks Canada Information Centre at Rogers Pass every year.[1]

1. *BC Intermodal Passenger Transportation Study*, IBI Group, Actran Consultants and Pannell Kerr for Transport Canada, 1998.

While the scheduled and charter services are year-round operations, the tour market is concentrated in the May-September tourist season. As one example of motor coach itineraries that include the Trans Canada corridor, Brennan Tours sells an eleven-day package that extends from Seattle through Vancouver to the Rocky Mountains and return. The itinerary for that tour is outlined below.

Day 1	Arrive in Seattle
Day 2	Ferry to Victoria
Day 3	Victoria to Vancouver
Day 4	Vancouver to Whistler
Day 5	BC Rail from Whistler to 108 Mile House
Day 6	108 Mile to Jasper
Day 7	Jasper to Banff
Day 8	Banff
Day 9	Banff to Lake Louise
Day 10	Lake Louise to Penticton via Highways 1 and 97
Day 11	Penticton to Seattle

Americans make up the largest part of the tour market. However, Ontario and Europe are also important markets for motor coach tours through the Rocky Mountain region. This market is expected to continue growing and to add additional pressure to rest stops and points of interest in the corridor.

When scheduled services and motorcoach tours and charters are combined, a total of 200,000 people travel over the corridor by bus each year.

8. Competitive Routes and Modes

All of the external travel "markets" that are served by the Trans Canada Highway have been considered in previous sections of this report. Those markets are affected by many factors including the performance of other modes of transport, the TCH corridor itself, and other highway routes that compete with the TCH. Changes in any of these factors could affect future growth in highway traffic, and the potential for change is considered in this section.

8.1 Interaction Between the TCH and the Railways

The railways and the trucking industry compete aggressively for certain types of traffic, and a shift from one mode to the other can have a significant effect on highway use. Passenger travel by rail is also increasing, again with potential implications for the Trans Canada Highway.

Although they compete with each other for freight traffic, the rail and highway systems are also highly inter-dependent. For example, much of the lumber and plywood that is manufactured in the TCH corridor and shipped by rail moves first by truck to "reload" centres at Campbell Creek and Calgary. In addition, a substantial volume of long-haul truck traffic moves as "trailer-on-flatcar" traffic over the rail network. The railways and the TCH also share a common corridor and contend with similar topography, environmental constraints, and development-related pressures. With this level of inter-dependence, future developments in the rail market could have a significant effect on highway needs.

The Railway Network

The Canadian Pacific mainline parallels the Trans Canada Highway and has the most direct influence on the Trans Canada Highway. However, Canadian National Railway has three operations that affect the corridor.

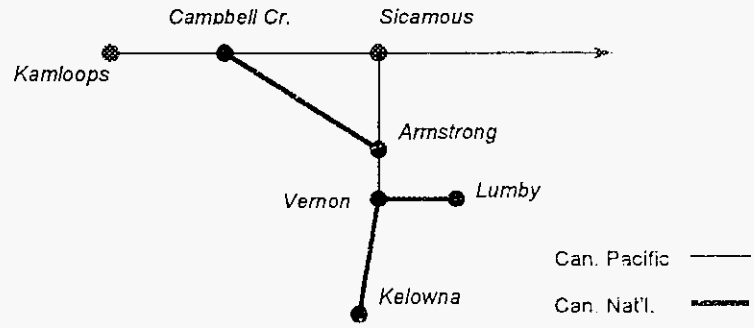
- The CN Mainline. CN's main line approaches Kamloops from the west along the north shore of the Thompson River and then follows Highway 5 and the North Thompson to Jasper and Edmonton. This line does not have a direct effect on the Trans Canada Highway. It does, however, compete for traffic that might otherwise move by truck over the TCH.
- Access to the Okanagan Valley. A secondary CN line crosses the Thompson River to downtown Kamloops and a connection with the Canadian Pacific mainline. CN has a "running rights" agreement with CP that allows it to operate over Canadian Pacific track to Campbell Creek and the junction with CN lines in the Okanagan Valley. With this

arrangement, both CN and CP trains operate over the 18 kilometres of track between Kamloops and Campbell Creek.

- Okanagan Lines. CN's Okanagan lines extend from Campbell Creek to Armstrong and from Vernon to Kelowna and Lumby. In order to reach Kelowna and Lumby, CN trains operate over Canadian Pacific track from Armstrong to Lumby.

The inter-dependence of CN and CP rail lines is apparent from the following graphic.

Rail Lines in the TCH Corridor and the Okanagan



CN's Okanagan operations are being run as an "internal short line" in an effort to rebuild the rail market in the region. With a local manager overseeing operations in the Okanagan, the railway has managed to re-establish its position in the region and recover lumber and other freight that had been lost to truck.

Canadian Pacific's operations extend the full length of the corridor and have a more direct effect on the Trans Canada Highway than CN's. There are three main components to the CP system east of Kamloops.

- The CP mainline. The Canadian Pacific mainline extends through Kamloops and over the full length of the Trans Canada Highway corridor to the B.C./Alberta border.
- Access to the Okanagan. CP's Sicamous-Vernon line provides access to the Okanagan. By agreement with CN, Canadian Pacific also has access to Kelowna and Lumby. Canadian Pacific has served notice that it intends to dispose of its Sicamous-Vernon line within the next three years.
- Access to the Crowsnest Pass coal mines. A CP line runs south from Golden to the Crowsnest Pass and a connection with the Union Pacific Railroad at Kingsgate. The line is used for coal, lumber and other traffic from the Kootenay region. It is also used for export traffic to the U.S.

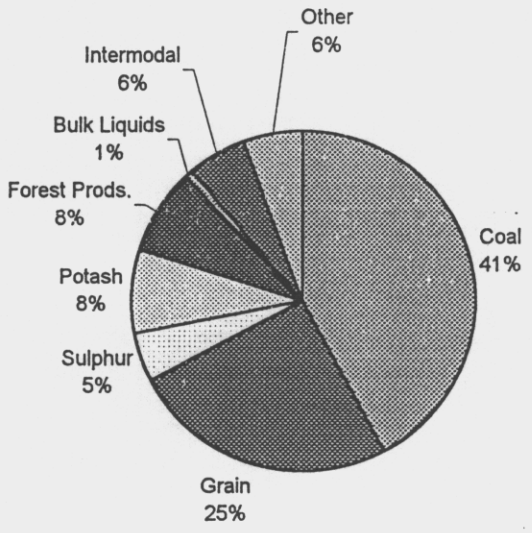
For example, Saskatchewan potash is moved over this line en route to Portland, Oregon and overseas markets.

Railway Freight

No information is available on the volume of freight moving over rail lines in the corridor. The railways are not prepared to release data on specific movements and markets. However, trends and patterns in rail traffic between British Columbia and the other provinces provides a general indication of the nature of the rail traffic that is moving in the corridor. Exhibit 8 shows inter-provincial rail traffic to and from British Columbia. Most of this traffic moves over the CN and CP mainlines through Kamloops. However, a substantial volume of grain moves over the CN "north" line from Jasper to Prince Rupert. Traffic also moves from Alberta on the CP line through the Crowsnest Pass and the CN line into Dawson Creek.

As shown in the exhibit, rail movements destined for overseas markets account for most of the rail traffic in the province. This includes coal, grain, sulphur, potash and forest products which, when taken together, represent about 85 percent of the rail transportation market in British Columbia. The dominance of these commodities is apparent from the mix of traffic on CP's lines in B.C. as shown in the following chart and table.[1]

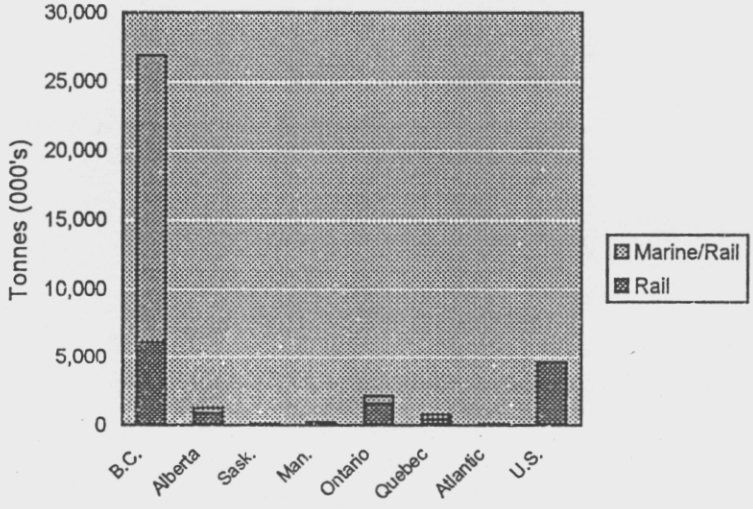
Traffic on CP Rail Lines in B.C. - 1994



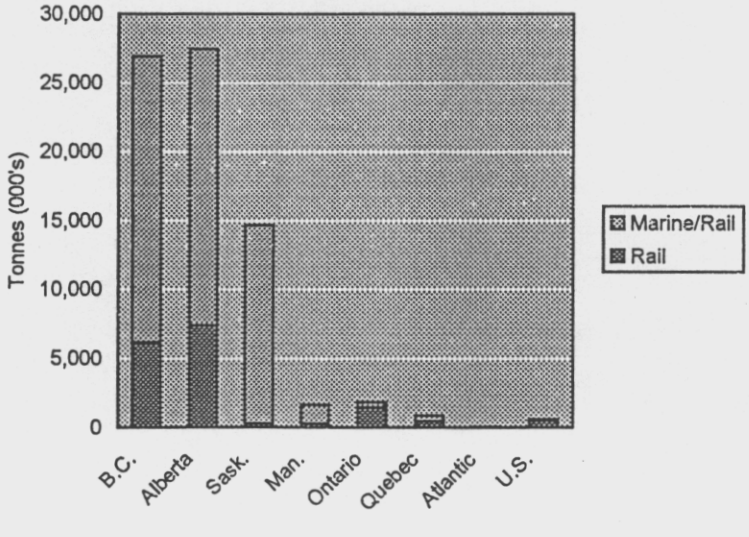
1. *British Columbia Freight Transportation System Study*, KPMG Management Consulting, Sandwell Inc. and Acres International for Transport Canada, 1996.

Exhibit 8. Rail Shipments to and from B.C.

Distribution of Rail Shipments from B.C. - 1995



Distribution of Rail Shipments to B.C. - 1995



Traffic on the CP Rail System in B.C.

Commodity	Volume (million tonnes)
Coal	16.2
Grain	9.6
Sulphur	1.8
Potash	3.1
Forest Products	3.0
Bulk Liquids	0.3
Intermodal	2.1
New Automobiles	0.1
Other Commodities	2.0
Total	38.3

Intermodal traffic is of particular interest. The railways' "intermodal" operations include containerized traffic moving to and from the Port of Vancouver as well as highway trailers on flatcars (known as "trailer-on-flatcar" or TOFC traffic). Although the intermodal market accounts for only 6 percent of CP Rail traffic in B.C., 2.1 million tonnes per year represents a substantial volume of freight and an important source of revenue for the railway.

Of all rail freight, intermodal traffic is most easily diverted from rail to truck and vice versa. The importance of the competitive relationship for intermodal traffic is apparent from the fact that 2.1 million tonnes of freight is equivalent to about 100,000 truckloads per year, assuming an average load of 20 tonnes per truck. That is, if all of the intermodal traffic moved by Canadian Pacific in British Columbia were diverted to the highway system it would add about 100,000 truckloads per year to the highway system.

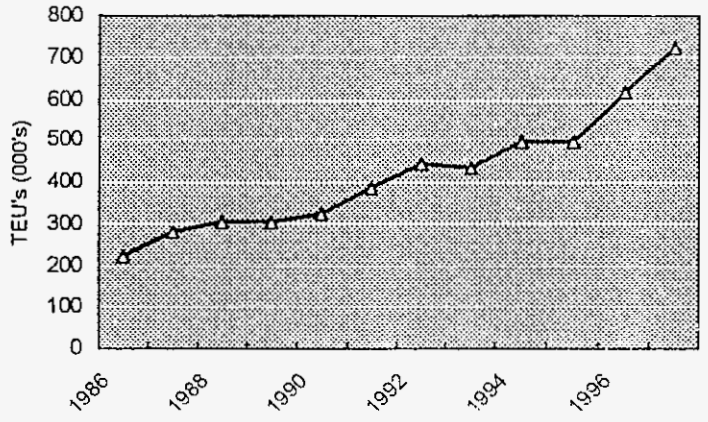
The railways have made major investments in intermodal facilities in B.C. and Alberta. CN built a new intermodal facility in the Lower Mainland in the early 1990's and Canadian Pacific is building a 43-acre terminal in Pitt Meadows that is due for completion in 1998. CP is also building a new intermodal terminal in Calgary. The new Calgary terminal is designed to handle 100,000 containers and trailers every year.

The increase in intermodal traffic is illustrated by the growth in container traffic that has taken place in the Port of Vancouver as shown in the following chart.[1] Growth rates shown in this chart are reflected in the

1. Traffic volumes are shown in "Twenty-foot Equivalent Units." This is the number of 20-foot containers that is equivalent to the actual number and size of containers handled through the port.

volume of intermodal traffic that is handled by the railways. For example, CN's intermodal traffic increased by 12 percent in 1996 and a further 17 to 19 percent in 1997.[1]

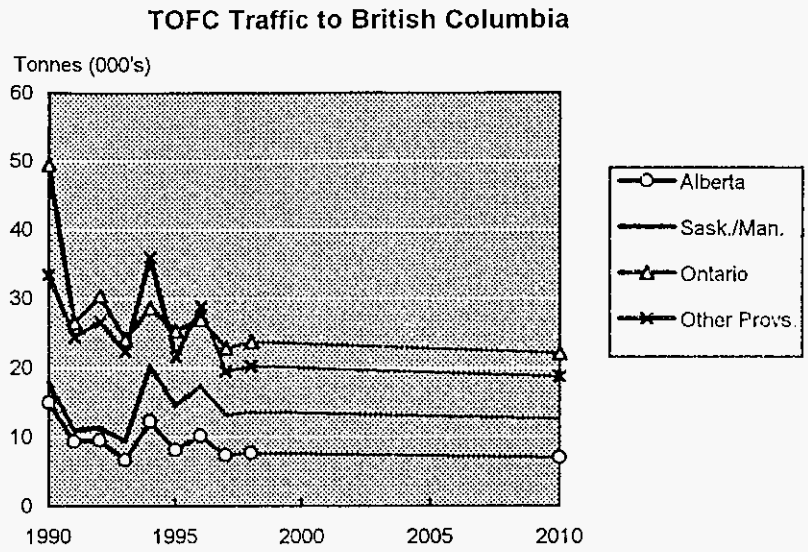
Container Traffic through the Port of Vancouver



The new investment that is being made by port authorities and the railways reflects industry's confidence in the international container market. The railways have captured most container traffic that moves beyond 700 or 800 kilometres, and consequently there are relatively small volumes moving by road over the Kamloops-Alberta section of the Trans Canada Highway.

At the same time, major trucking companies in both Canada and the United States are using trailer-on-flatcar service as a means of controlling costs and dealing with a shortage of qualified drivers. The railways' view of TOFC traffic is mixed, and some are encouraging trucking companies to invest in containers rather than trailers in order to simplify terminal operations and improve railcar utilization. With these pressures at work, the railways will continue to hold a significant volume of long-haul trailer traffic off the highway system, but are unlikely to compete aggressively for this business. As a result and as shown in the following chart, the TOFC market is not expected to grow.[2] A "zero-growth" outlook for TOFC falls well short of expected growth in inter-provincial trucking and reflects a view that the railways will not make further inroads into the long-haul trucking market.

1. *Traffic World*, January 12, 1998. These increases compare with 24-percent growth in the Port of Vancouver in 1996 and 17-percent growth in 1997.
2. Forecasts developed by Transport Canada in March, 1998.



Passenger Travel by Rail

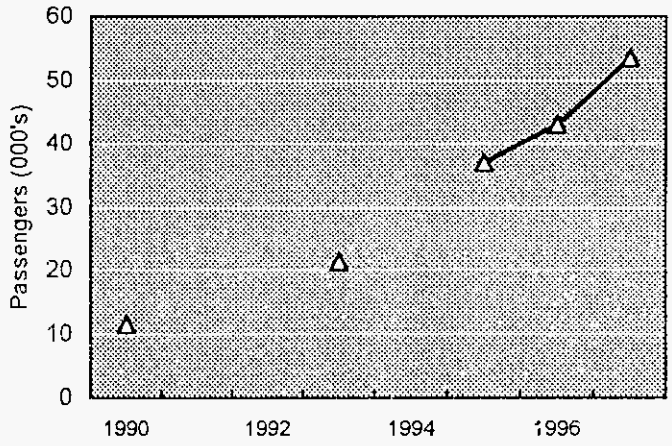
Rail passenger travel in the corridor has taken on less importance as a result of cutbacks in VIA Rail's passenger service. VIA reduced and restructured its services in 1989 as part of an effort to reduce its operating subsidies. Prior to this change, VIA's *Canadian* provided daily year-round service from Vancouver through Calgary to Winnipeg and Toronto. VIA also operated one train per week between Vancouver and Banff/Calgary as a daylight train known as the *Rocky Mountaineer*. In total, there were eight trains per week in each direction during the summer months.

Today there are only three trains per week in each direction during the summer. Outside the five-month period from May to October, there are no passenger train services in the corridor. The *Canadian* was moved from the Banff/Calgary route to the North Thompson/Jasper route as part of VIA Rail's system restructuring, leaving the *Rocky Mountaineer* as the only rail passenger service in the TCH corridor east of Kamloops. At the same time, the *Rocky Mountaineer* was privatized and is now operated by the Great Canadian Railtour Company.

The design of the *Rocky Mountaineer* reflects a major shift in long-haul rail passenger markets and a strong emphasis on "tourism" rather than "transportation." The service is designed as a Vancouver-Rocky Mountain package with no intermediate stops apart from an overnight stay in Kamloops. Two classses of service are provided, with 1998 one-way rates of $585 to $1,085 for the 2-day trip. Passengers are also offered a wide variety of options in addition to the rail trip. These include Kamloops-based tours to

Wells Gray Park and the Okanagan and car or RV rentals for the return trip from the Rocky Mountains. The train operates from the beginning of May to mid-October, with three trains per week in each direction. The *Rocky Mountaineer* carried about 11,000 passengers in 1990 -- its first year under the Great Canadian Railtour Company. Volume increased to about 53,000 passengers in 1997. Traffic figures are incomplete, but the following chart provides an indication of the rate of growth on the *Rocky Mountaineer*.

Passenger Loads on the *Rocky Mountaineer*



The U.S. is Great Canadian's strongest market, but Ontario and Europe are also important markets. Most passengers make a one-way journey by rail, and continue their trip by air or rental car.[1]

Great Canadian has the capacity to grow. They have a sizeable fleet of spare equipment, have recently built a maintenance complex in Kamloops, and have shown they are able to attract capital funding for expansion.

In spite of Great Canadian's success, the *Rocky Mountaineer* has little effect on highway use. This is illustrated by the following points.

- The *Rocky Mountaineer* is not diverting travel from bus, auto or RV travel in the corridor. It is an expensive package that appeals to people who are otherwise unlikely to travel over the route.
- The train adds traffic to the highway, but the effect is small. In a total of 53,000 passengers, about 45,000 continue their trip by air or rented vehicle. If 25 percent rent a car or RV, traffic is evenly split between Jasper and Banff, and there is an average of two passengers per vehicle, then the *Rocky Mountaineer* would add roughly 3,000 vehicles to the

1. About 16 percent of *Rocky Mountaineer* passengers travel both ways by rail.

traffic load on the TCH east of Kamloops over a 5½-month operating season.

Even with two or three times the current volume of rail traffic, the effect on the highway system will be small. It will, however, have a significant effect on the hotel and hospitality industry in Kamloops, and has already enabled hotel owners to expand and upgrade their facilities. These improvements will likely attract additional tourist traffic to Kamloops, and re-inforce the City's position as a stop-over point for highway travellers -- contributing to an apparent trend towards greater concentration of tourist activity at a small number of centres in the corridor.

There is potential for entirely new rail passenger services in the corridor. For example, a group in the Kootenays is pursuing the possibility of new passenger services through Cranbrook, including an excursion train that would run from Spokane, Washington through Cranbrook to Golden, Banff and Calgary.[1] This train would be aimed at the same market as the *Rocky Mountaineer*, and would have limited effect on the highway. In a "worst case" situation, the train would turn back at Golden and passengers would continue to Banff by bus. If the operator developed a 50,000-passenger market over the next 15 years, the train could add about 3,000 auto and RV trips and 1,000 motorcoach trips to the TCH corridor over a 5-month operating season.

There will be no return of conventional rail transportation as an alternative to auto and bus travel in the corridor. Subsidies for rail passenger service have been sharply reduced, and any new or expanded service in the corridor will be aimed at "premium," seasonal tourist markets rather than traditional rail "transportation" markets.

8.2 Technology, Regulation, and their Effect on Truck Transportation

Technology and regulation affect the cost and performance of rail and truck transportation and their ability to compete with each other. Any significant change in these areas could shift corridor traffic from rail to truck (or vice versa) during the next 25 years. For example, any increase in the allowable size and weight of trucks could result in a shift of freight from rail to truck as a result of lower trucking costs. Areas of potential change are discussed below.

- Economic Regulation. The federal government has constitutional authority over inter-provincial trucking but has delegated that authority

1. *Kootenay/Rocky Mountain Rail Excursions*, Actran Consultants, XCel Consulting Limited, and Wolfe Creek Management for the Rail Excursions Action Plan Committee, January 1998.

to the provinces. For the last decade, they have been encouraging the provinces to "de-regulate" inter-provincial trucking by eliminating most restrictions on new services and new routes and putting increased emphasis on safety. British Columbia was slower than other provinces to introduce these changes. However, the transition is now virtually complete, and the industry has adjusted to the new regulatory regime. British Columbia has also been slower than the other provinces to "de-regulate" intra-provincial trucking. However, new regulatory policy that concentrates on safety and "fitness" came into full effect in October 1997.

Regulatory change has created a new competitive environment and consequent restructuring within the trucking industry. However, it has not had a significant effect on traffic volume or haul patterns. Some changes will occur as a result of deregulation in B.C., but any effects are expected to be relatively small. For example, inter-provincial truckers may be able to improve their overall return by competing for Vancouver-Okanagan freight, in a market where rates have been relatively high.[1] This could lead to a small reduction in truck traffic on the Kamloops-Sicamous section of the TCH as trucks are diverted from the TCH to the Okanagan.

Competition between the rail and truck industries remains unchanged, and there is no evidence that "deregulation" of the trucking industry has led to larger or smaller loads, forced the industry to log more miles with empty trucks, or otherwise affected the number of trucks that are needed to move a given amount of freight over the Trans Canada Highway. Looking ahead, there are no impending regulatory changes that might affect industry efficiency or the competitive relationship between rail and truck transportation.

The inter-city bus industry remains under tight control as provincial motor carrier authorities continue to regulate bus routes and rates in British Columbia and between the provinces.

- Vehicle Size and Weight. The ability of the railways to compete for certain types of traffic is sensitive to the allowable size and weight of trucks. This is apparent from the intense effort that the U.S. railroad industry has made to resist any increase in allowable truck lengths or weights.

  Vehicle size and weight limits are set by each of the provinces, and a great deal of progress has been made over the last ten years in an effort to achieve a common standard across the country. The following table shows that requirements in B.C. and Alberta are essentially the same.[2] Among the four examples cited here, limits are identical for all but the 8-axle B Train.

1. *Motor Carrier Regulatory Review – Intra-Provincial Trucking Deregulation Labour Impact Study*, KPMG 1997.
2. *1997 Canadian Sizes and Weights Chart*, "Motor Truck," May 1997.

Maximum GVW for Selected Truck Configurations

	B.C.	Alberta
5-axle Semi-trailer	39,500 kg.	39,500 kg.
6-axle Semi-trailer	46,500 kg.	46,500 kg.
7-axle B Train	56,500 kg.	56,500 kg.
8-axle B Train	63,500 kg.	62,500 kg.

Alberta permits long combination vehicles (e.g. triple trailers) on certain routes and under special permits. The trucking industry in B.C. has pressed for freedom to operate longer trucks, but any change of this sort will likely be resisted because of concerns about highway safety in mountainous terrain.

The weight limit for trucks operating in most areas of the United States is considerably lower than the Canadian standard, and there is strong resistance to change. There are notable exceptions, however, including higher limits in a corridor that extends from Alberta to Texas. Alberta could relax its weight and dimensions regulations in order to enhance its position in that corridor, and this, in turn, could put additional pressure on British Columbia's standard. However, no broadly-based pressure for more liberal weight limits is expected in the foreseeable future.

The railways are moving towards higher load limits for track and railcars. However, they have a massive investment in track and structures and any change will occur over an extended period of time. Shippers who are already moving bulk commodities by rail will be most affected, and it is expected there will be little effect on rail/truck competition or the volume of truck traffic on the TCH.

- Technology. Both rail and truck technology will change over the next 25 years. Changes in the trucking area will include improved engine efficiency, reduced emissions, collision avoidance systems, and wider use of weigh-in-motion systems in place of conventional weigh scale operations. However, it appears that changes will be incremental in nature and will not have a major effect on mode choice.

- Policy. Rail/truck competition could be affected by policy change in a number of areas. For example, with support from port authorities and shippers, the railways have argued that property taxes and fuel taxes put them at a competitive disadvantage. British Columbia has responded by reducing property taxes while other provinces have adjusted their taxes on rail diesel fuel. The primary effect of these changes is to keep Canadian products competitive in world markets, rather than shifting freight from truck to rail. Policy affecting taxes, tolls and license fees could affect the economics of truck and rail transportation in the future. However, change in these areas is unlikely to shift traffic between modes or have a significant effect on traffic volume.

The inherent efficiencies of truck and rail will continue to determine what traffic moves by what route and mode. Expected change in technology and

regulation will have little effect on the competitive position of rail and truck or the volume of freight moved by each mode.

8.3 Interaction Between the TCH and Airline Services

Air Travel

The Trans Canada Highway corridor is not well served by the airlines. This reflects several factors that work together to discourage airline travel:

- Corridor residents are road- and highway-oriented, and are prepared to drive relatively long distances to centres such as Vancouver, Kelowna or Calgary for business, entertainment, and other purposes. They are also prepared to drive long distances to connect with less expensive airline services.
- Fares to small and medium-sized communities are relatively high. One effect of those fares is to encourage travellers to drive rather than fly.
- The airlines have developed a "hub and spoke" route network. This route structure forces passengers to travel through Vancouver, Calgary or Edmonton in order to connect with flights to smaller centres. For example, a trip from Kamloops to Williams Lake requires a connection at Vancouver International Airport.
- With the exception of Kamloops, corridor communities do not have the population or level of commercial activity needed to support frequent, attractive airline service.

Kamloops and Salmon Arm are the only points in the corridor that have scheduled airline service. As shown below, Vancouver and Calgary are the primary service points for flights from Kamloops. This reflects the importance of these centres as destinations and as hubs for airline connections to other destinations.

Direct and 1-Stop Airline Connections

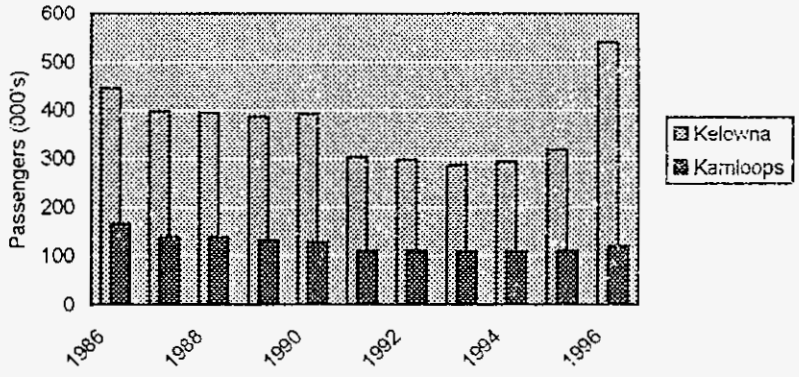
Service Point	Carrier	To:	Flights per Day
Kamloops	Air B.C./Central	Calgary	3
	Mountain Air	Cranbrook	2
		Edmonton	1
		Prince George	2
		Vancouver	4
		Victoria	2
	Canadian Airlines	Calgary	2
		Cranbrook	1
		Vancouver	6
		Victoria	1
Salmon Arm	Shuswap Air	Vancouver	2

Under the summer 1997 schedule, there were 105 scheduled flights per week from Kamloops and 11 per week from Salmon Arm, compared with 225 per week from Kelowna.

About 120,000 people fly to or from the Kamloops Airport each year, and about 7,000 through the Salmon Arm Airport. Revelstoke and Golden also have airports. However, they have no scheduled services and are used primarily by private aircraft and small charter airlines. The Revelstoke Airport is also a satellite base for tanker aircraft used to fight forest fires.

The effect of highway improvements on airline travel is apparent from the following chart of passenger traffic through the Kamloops and Kelowna airports over the last ten years.

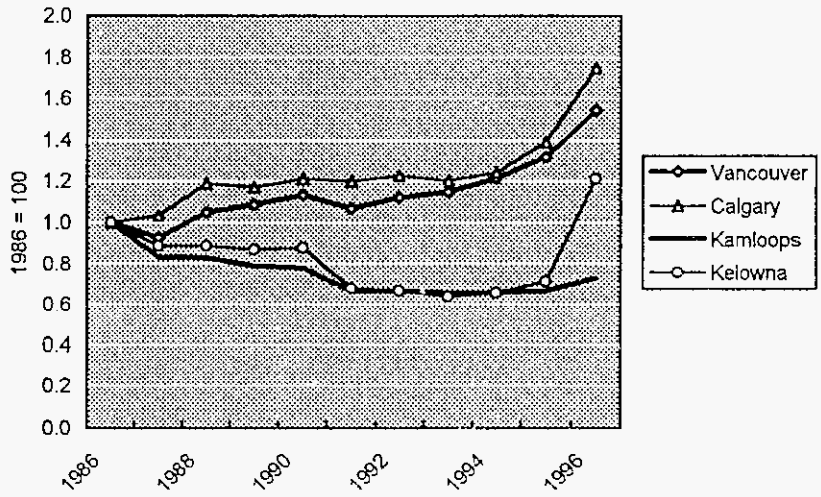
Passenger Traffic
at Kamloops and Kelowna Airports



The effect of the Coquihalla and Okanagan Connector projects is apparent in the chart. Together with the recession during the early 1990's, those highway improvements held air travel down in spite of substantial population growth in the region. Traffic began to recover in 1995, in part because of increased competition between the airlines. With Greyhound and Westjet offering low-cost flights, volume at Kelowna rebounded sharply in 1996. An increase in the number of charter flights to and from Kelowna also added new traffic. These new services expanded the area served by Kelowna Airport. Westjet, for example, is drawing traffic from Kamloops, Salmon Arm and other points along the Trans Canada corridor as well as the southern Okanagan. On the other hand, air travel through Kamloops has remained essentially unchanged. In this case, traffic has been increasing since 1994, but has not yet recovered to pre-Coquihalla levels.

Both Vancouver and Calgary offer a wider array of airline connections than Kamloops or Kelowna, and a recent "open skies" agreement with the U.S. has led to substantial improvement in transborder service from both of those points. These improvements have generated a significant increase in traffic through both Vancouver and Calgary. This is apparent from trend lines in the following chart.[1]

Growth in Air Travel Since 1986

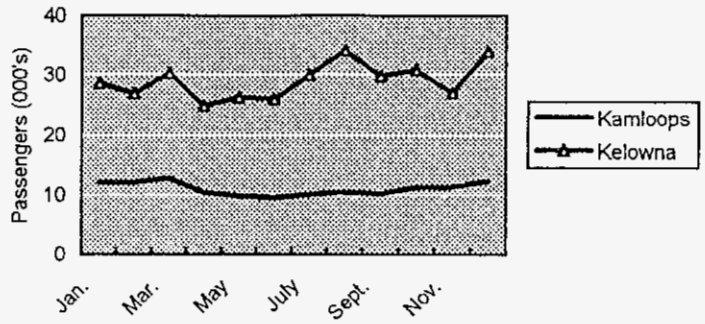


The chart highlights the rapid growth that has taken place in Vancouver, Calgary and Kelowna in contrast with apparent weakness in the Kamloops market. The growth that has occurred over the last three or four years could be slowed or reversed. Failure of the Greyhound air service, for example, will lead to slower growth in Kelowna beyond 1997. Nonetheless, it is expected that growth in airline service will be centred in Vancouver, Kelowna and Calgary, while corridor residents use the TCH to access those services.

Travel by air is relatively stable throughout the year, without the sharp seasonal fluctuations that are characteristic of highway travel. This is apparent from monthly volume handled through Kamloops and Kelowna airports as shown in the following chart.[2] The "flat" seasonal pattern reflects the fact that business trips account for a large part of the air travel market, and poor driving conditions tend to increase air travel during the winter months.

1. *Airport Activity*, Statistics Canada Catalogue 51-005, 1986-1996.
2. Source: Kelowna and Kamloops airport managers. The figures for Kamloops Airport are for 1996. 1995 figures have been used for Kelowna because 1996 was not a typical year for that airport.

Seasonal Variations in Airline Travel



The area served by each airport is not clearly defined. However, the primary service areas are generally as follows.

- Kamloops Airport. Serves Kamloops and surrounding area; used primarily for business travel to and from Vancouver and Victoria and for flight connections at Vancouver and Calgary International Airports.
- Salmon Arm Airport. For Salmon Arm and surrounding area; used for business travel to and from Vancouver and to connect with other flights at Vancouver International Airport.
- Kelowna Airport. For business travel from the Okanagan Valley, particularly Kelowna and Vernon, but with a much broader service area for personal travel via charter flights and Westjet. Kelowna had a wider area of influence while Greyhound was operating. However, the Westjet service and charter flights to Reno, Las Vegas and Mexico attract passengers from a wide area including the Trans Canada Highway corridor.
- Vancouver International Airport. Vancouver's service area extends to Kamloops and beyond. The full cost of an airline trip between Vancouver and Kamloops is about $600. Reduced fares are available under certain conditions. However, rates are sufficiently high that they provide a strong incentive to drive to Vancouver to connect with charter or scheduled flights. This is particularly true for people who are travelling as family groups. A 3½-hour drive to save several hundred dollars in airline fares is an attractive option that limits growth potential at Kamloops Airport.
- Calgary International Airport. Calgary is the preferred point of departure for air travellers from the eastern segment of the corridor. Cranbrook is an option. However, Calgary and Cranbrook are the same distance from Golden, and Calgary offers more direct flights as well as lower fares.

This pattern is unlikely to change. Kamloops Airport will likely experience modest growth and the Trans Canada corridor will continue to provide an

alternative to air travel and a means of accessing flights from Kelowna, Vancouver and Calgary.

Air Cargo

In terms of its effect on the TCH, the air cargo/courier business in the corridor is limited. The following table shows the volume of air cargo handled through Kamloops Airport in relation to volumes through Kelowna, Vancouver and Calgary. As indicated, volume through Kamloops is in the order of 300 tonnes per year, and has increased significantly over the last few years.[1]

Air Cargo (Tonnes)

	Vancouver	Calgary	Kelowna	Kamloops
1986	105,683	25,861	1,147	n.a.
1994	160,279	45,779	415	161
1995	166,944	43,970	701	305
1996	190,814	53,557	724	315

Since Kamloops and Kelowna are within a few hours driving time of Vancouver and Calgary Airports, most cargo and courier traffic moves by truck.

The airlines' cargo-carrying capacity depends on the frequency of scheduled flights and the type of aircraft that are used for those flights. The aircraft that are currently being used on Kamloops routes have limited freight and baggage capacity, and this is unlikely to change. In addition, there is little possibility that carriers will establish all-freight services to Kamloops or other corridor communities. The relatively short distance to Vancouver and the quality and frequency of bus parcel services, courier services, and trucking service to corridor communities all work against expanded air cargo service.

8.4 Alternative Routes

Traffic volume on the Trans Canada Highway is determined, in part, by the time and cost of travelling over other routes. Any change in the performance of the TCH or alternative highway routes could trigger a change in travel

1. Source: *Air Carrier Traffic at Canadian Airports*, Statistics Canada Catalogue 51-005/51-203, 1986-1996. These figures are primarily for scheduled carriers and include only those operators who report to Statistics Canada. Air mail is not included.

patterns and a shift of traffic to or from the Trans Canada Highway. It could also affect the cost of transporting goods to, from and through British Columbia. This section of the report explores the sensitivity of travel patterns to performance of the Trans Canada Highway. The analysis concentrates on goods movement, since this traffic would be most sensitive to change in travel speeds and the cost of operating over the highway.

Exhibit 9 shows the estimated cost of truck hauls from Ontario and the prairie provinces to Kamloops, Kelowna and Vancouver. It also includes estimates for truck hauls to Seattle and over the U.S highway system to Vancouver. The estimates are based on distance only, and do not take full account of differences in average travel speed over alternative routes. For example, the same cost per mile is used for the Trans Canada Highway and the southern trans-provincial (Highway 3), although a lower average speed on Highway 3 would increase the cost of driver time as well as equipment costs. The exhibit includes cost estimates for 5-axle semi-trailer vans and 8-axle B-train vans and flat deck trucks.[1]

A number of observations can be drawn from the exhibit.

- For shipments from Calgary to the Lower Mainland, the Trans Canada Highway has a cost advantage of about $430 or 30 percent for a typical semi-trailer load. This difference accounts for trucking costs alone, and does not include costs related to the value of the freight.
- On the other hand, the Yellowhead route has a 10-percent advantage over the Trans Canada Highway for shipments from Edmonton to the Lower Mainland.
- The Trans Canada Highway has a cost advantage over the Yellowhead for shipments from the main centres in Saskatchewan, Manitoba and Ontario. However, the difference is relatively small. For example, on a trip from Regina to Vancouver it amounts to about $280 per load or 10 to 11 percent of trucking costs. This difference is sufficiently small that other factors such as reliability (e.g the effect of congestion during the summer months or road closures during the winter months) could affect route choice.
- Routes through the United States are competitive for long hauls to and from British Columbia. As shown in the exhibit, the length of haul between Toronto and Vancouver is essentially the same for the Trans Canada Highway and alternative routes through the U.S.

1. Unit costs are from Trimac's 1996 report to Transport Canada on truck operating costs in Canada and the United States. B.C. costs are used for this analysis. The figures include the full cost of maintenance and operation as well as administrative costs and equipment ownership costs. There is also a 5-percent allowance for profit. Costs assume that trucks run an average of 160,000 kms. per year.

Exhibit 9
Trucking Costs Over Alternative Routes

Origin	Route	Distance (kms)				Estimated Trucking Cost		
		Kamloops	Kelowna	Vancouver	Seattle	Semi-Trailer Van	B Train Van	B Train Flat Deck
Calgary	TCH	620				$941	$1,190	$1,255
	TCH-97		602			$914	$1,156	$1,218
	2-3		939			$1,425	$1,803	$1,901
	TCH-5-TCH			975		$1,480	$1,872	$1,973
	2-3-TCH			1,258		$1,910	$2,415	$2,546
	2-16-(Tete Jaune)-5-TCH			1,450		$2,201	$2,784	$2,935
	TCH-5-TCH-(Abbotsford)-11-I5				1,092	$1,658	$2,097	$2,210
	2-3-(Kingsgate)-US95-I90				1,168	$1,773	$2,243	$2,364
Edmonton	2-TCH	915				$1,389	$1,757	$1,852
	16-5-TCH	800				$1,214	$1,536	$1,619
	2-TCH-97		897			$1,362	$1,722	$1,816
	16-(Tete Jaune)-5-TCH-97		963			$1,462	$1,849	$1,949
	2-TCH-5-TCH			1,270		$1,928	$2,438	$2,570
	16-(Tete Jaune)-5-TCH			1,155		$1,753	$2,218	$2,338
	2-TCH-5-TCH-(Abbotsford)-11-I5				1,387	$2,105	$2,663	$2,807
	16-5-TCH-(Abbotsford)-11-I5				1,272	$1,931	$2,442	$2,575
	2-3-(Kingsgate)-US95-I90				1,463	$2,221	$2,809	$2,961
Saskatoon	7-9-TCH	1,251				$1,899	$2,402	$2,532
	5-16-(Tete Jaune)-5	1,326				$2,013	$2,546	$2,684
	7-9-TCH-5-TCH			1,606		$2,438	$3,084	$3,251
	2-16-(Tete Jaune)-5-TCH			1,681		$2,552	$3,228	$3,402
	7-9-TCH-5-TCH-(Abbotsford)-11-I5				1,723	$2,616	$3,308	$3,487
	7-9-2-3-(Kingsgate)-US95-I90				1,799	$2,731	$3,454	$3,641
	5-16-(Tete Jaune)-5-TCH-(Abbotsford)-11-I5				1,798	$2,729	$3,452	$3,639
Regina	TCH-97		1,371			$2,081	$2,632	$2,775
	TCH-3-33		1,469			$2,230	$2,820	$2,973
	TCH-5-TCH			1,744		$2,647	$3,348	$3,530
	11-5-16-(Tete Jaune)-5-TCH			1,931		$2,931	$3,708	$3,908
	TCH-3-TCH			1,788		$2,714	$3,433	$3,619
	6-16-I94-I90				2,027	$3,077	$3,892	$4,103
Winnipeg	TCH-5-TCH			2,314		$3,513	$4,443	$4,684
	TCH-3-TCH			2,358		$3,579	$4,527	$4,773
	75-(Emerson)-I29-I94-I90-I5-99			2,400		$3,643	$4,608	$4,858
	TCH-(Regina)-11-5-16 (Tete Jaune)-5-TCH			2,502		$3,798	$4,804	$5,064
	75-(Emerson)-29-I94-I90				2,174	$3,300	$4,174	$4,400
Toronto	400-TCH-5-TCH			4,386		$6,658	$8,421	$8,877
	400-TCH-(Regina)-11-5-16-5-TCH			4,582		$6,955	$8,797	$9,274
	400-TCH-(Sault Ste Marie)-US2-I94-I90-I5-99			4,337		$6,584	$8,327	$8,778
	400-TCH-(Sault Ste Marie)-US2-I94-I90				4,112	$6,242	$7,895	$8,323
	401-(Detroit)-I94-I90				4,210	$6,391	$8,083	$8,521

Routes via the corridor are highlighted.

Unit Costs for Representative Truck Configurations

5 axle semi-trailer (van)	$1.518 per kilometre
8 axle B train (van)	$1.920
8 axle B train (flat deck)	$2.024

Source: Truck operating costs are based on *Operating Costs of Trucks in Canada-1996*, Trimac Consulting Services Ltd. for Transport Canada

These figures suggest that route choice for long-haul trucking could be sensitive to costs and service standards on the TCH. However, as shown below, it appears that a substantial change in highway performance would be needed in order to divert trucks to or from the corridor.

The Ministry conducted speed/delay surveys on the Trans Canada Highway during the summer of 1995 and 1996. Those surveys found that the average driving time from the Alberta border to the Afton Interchange was 5.1 hours with no allowance for rest stops. Average speed was 87 kilometres per hour over the 441-kilometre corridor. If the average speed for trucks were 5 kilometres per hour less than average auto speed, then the average running time for a truck would be about 5.4 hours.

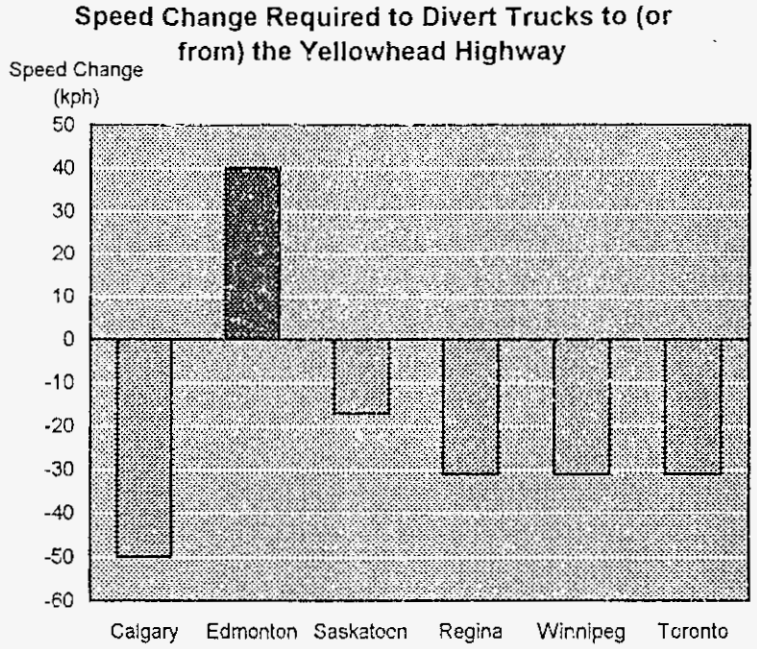
The sensitivity of trucking costs to conditions in the corridor is shown in the following table. As indicated, a 5 kph change in average speed changes average running time by about 20 minutes or 0.3 hours. A change of this magnitude would increase or decrease cost by $27 for a semi-trailer or $34 to $36 for a B-train.[1]

Sensitivity of Trucking Costs to Highway Performance

	Change in Average Speed	
	± 1 kph	± 5 kph
Change in Running Time	±0.06 hrs. (1.2%)	±0.32 hrs. (6.1%)
Change in Cost		
Semi-trailer	±$5.10	±$27.25
B Train (van)	±$6.45	±$34.50
B Train (flat deck)	±$6.80	±$36.35

By combining this information with cost data for alternative routes, it is possible to judge how sensitive a trucker's choice of routes might be to performance of the Trans Canada Highway. This is illustrated by the following chart which shows the change in average speed that would be required to divert traffic to (or from) the Yellowhead route.

1. *1996 Trucking Costs in Canada*, Trimac Consulting Services Ltd. for Transport Canada.



For example, the TCH has a cost advantage of about $280 over the Yellowhead route for a typical semi-trailer running from Regina to Vancouver. Travel time on the TCH would have to increase by about 3 hours before the Yellowhead was competitive with the Trans Canada route. This is equivalent to reducing average speed over the TCH corridor from 82 kph to about 50 kph – a reduction of more than 30 kph. On this basis, it appears that route choice is relatively insensitive to performance of the highway, and the most important effect of any gain or loss in highway performance may be its effect on trucking costs and the delivered cost of goods that are being moved over the highway.

On a typical day, about 550 trucks travel the full length of the TCH corridor. Expanded to a full year, this is equivalent to about 200,000 trucks per year. With this volume of traffic, the effect of a 5 kph reduction (or increase) in average running speed amounts to about $6 million per year before accounting for the value of the freight that is being carried. The 550 trucks per day represent about one third of "external" truck traffic on the highway. The remaining two thirds of external truck traffic uses only part of the highway, and the effect of any change in operating speed depends on which sections of the highway are affected. If the speed change were to occur uniformly over the full length of the highway, then a 5 kph reduction (or increase) would increase (or decrease) trucking costs by about $9 million per year.

The sensitivity of product value to delivery costs varies over a wide range and depends on the type of goods that are being moved, how far they are being transported, and many other factors. However, the figures shown in the following table provide a general indication of the effect of transportation costs on the value of commodities that are commonly moved over the Trans Canada Highway.

Delivery Cost as a Percent of Commodity Value - 1991
(Deliveries to Domestic Markets)

Commodity	Transportation as a Percent of Commodity Value
Forestry products	3.8
Meat products	2.3
Fruit and vegetable preparations	4.6
Soft drinks	4.4
Clothing and accessories	0.8
Lumber and timber	12.2
Veneer and plywood	7.2
Furniture and fixtures	1.8
Iron and steel products	3.9
Fabricated structural metal products	2.3
Motor vehicles	0.5
Household appliances	1.3
Cement and concrete products	7.6

Source: *The Importance of Transport Costs in the Goods-Producing Industries*, Transport Canada.

As indicated, the higher the processing or manufacturing content, the lower the sensitivity to shipping costs. Even where sensitivities are low, however, changes can have a large economic impact where large volumes are involved. Assuming an average of $1,500 in freight charges on each of the 200,000 trucks per year that operate over the full length of the corridor, the annual freight bill amounts to about $300 million. As noted earlier, a 5 kph change in average running speed in the corridor adds (or eliminates) $6 million per year in trucking costs. With $300 million in annual freight costs, $6 million represents a 2-percent change in transportation costs. If delivery costs are 3 percent of product value, then a 5 kph change in average speed over the full length of the corridor affects product price by less than one tenth of one percent.

9. Traffic Forecasts

The 1996 travel patterns that were described in Sections 2 through 7 provide a basis for forecasts of the external travel that is likely to develop over the next 25 years. The forecasts are developed for 5-year intervals to the year 2021 and presented as Summer Average Daily Traffic (SADT) and Average Annual Daily Traffic (AADT). The first of these represents the traffic load that would be expected on an average day during the months of July and August whereas AADT represents year-round traffic and is commonly used for highway planning purposes.

The forecasts are developed in two stages:

- Growth rates are developed for each trip purpose and trip type. Those growth rates are then applied to the 1996 origin-destination tables to arrive at estimates for the years 2001, 2006, 2011, 2016 and 2021.
- The trip tables are then used to estimate SADT and AADT for each section of highway and each of the forecast years.

The method used to develop forecasts for each trip purpose is outlined below.

Work Trips

- As shown in Section 3, most of the external commuter trips and business trips are between corridor communities and the Okanagan Valley. Work trips account for only 5 or 6 percent of all external trips, and consequently the forecast of total traffic on the Trans Canada Highway will not be sensitive to the assumptions that are used to estimate future work-related travel.
- Work-related travel will change over time as population grows, regional economies change, and job opportunities shift within the region.
- Population in the TCH corridor is expected to increase by about 60 percent over the next 25 years. The following table shows expected growth in four Local Health Areas that span the corridor.[1] As indicated, most of the increase will be concentrated at the west end of the corridor. For example, the population of the Kamloops Local Health Area is expected to increase by 65,000 people and account for 75 percent of growth in the corridor.

1. Local Health Areas are used by BC Stats as a basis for population forecasts. The BC Stats model uses a "survival cohort" technique that accounts for aging, fertility rates, and migration. The area covered by these Local Health Areas is shown in Appendix 7.

Population Forecasts for the TCH Corridor from Kamloops to the Alberta Border

	1996	2001	2006	2011	2016	2021	
Population							
Kamloops Local Health Area	99,050	112,800	125,200	137,200	150,900	164,900	
Salmon Arm LHA	34,640	39,200	43,000	47,000	50,800	54,200	
Revelstoke LHA	9,180	9,500	9,600	9,650	9,700	9,750	
Golden LHA	7,780	7,750	7,900	8,250	8,650	9,000	
Total	*150,650*	*169,200*	*185,700*	*202,100*	*220,000*	*237,800*	
Growth Rates							
		5-year Growth (%)					**25-year Growth (%)**
Kamloops LHA		13.8	11.0	9.6	10.0	9.3	*66*
Salmon Arm LHA		13.2	9.5	9.4	8.0	6.7	*56*
Revelstoke LHA		3.3	1.3	0.6	0.5	0.4	*6*
Golden LHA		-0.7	2.4	4.2	4.9	4.2	*16*
Four LHA's		*12.3*	*9.7*	*8.8*	*8.9*	*8.1*	*58*

Source: Population Section, BC Stats, PEOPLE 22 Projection, June 1997.

- For this analysis, work trips are expanded in proportion with expected population growth. This approach assumes that work-related trips are generated largely by population and economic activity in the corridor rather than in the Okanagan Valley or other areas outside the corridor.

Shopping

- Less than 2 percent of external trips during the summer months are shopping trips, and almost all of those trips begin or end in a corridor community. (About 15 percent are "through" trips to the Okanagan or Alberta.)
- About 65 percent of shopping trips are to or from the Okanagan. Once again, available data does not provide place-of-residence information. However, it is assumed that most of these trips are made by corridor residents who are shopping in the Okanagan rather than Okanagan residents travelling to Kamloops or other corridor communities to shop.
- The Okanagan is well positioned to compete with Kamloops as a shopping and service centre for communities in the Salmon Arm-Sicamous section of the corridor. As noted earlier, travel distance from Salmon Arm to Kelowna is the same as the distance to Kamloops. Sicamous (and all points east of Sicamous) are closer to Kelowna than Kamloops.
- Growth that is expected to take place in the Kamloops area over the next 25 years will strengthen the City's position as a regional centre, and reduce the "need" for area residents to travel outside the corridor to shop. However, Okanagan centres are expected to grow faster than those in the corridor, and can be expected to continue attracting shopping trips.

- It appears that future growth in shopping travel to points outside the corridor will be driven by population and economic growth in the corridor. On this basis, shopping trips are increased in proportion with population.

Personal Business

- Personal business and medical trips account for about 10 percent of external traffic during the summer months. That traffic is broken into three components as a basis for estimating future travel:
  - Travel to and from corridor communities – or 60 percent of the total. This travel will be most affected by growth and economic development in corridor communities, and is projected to grow at the same rate as corridor population.
  - Other travel to and from the Okanagan – or 20 percent of the total. This component is projected to grow at the same rate as population in the central and north Okanagan regions.
  - Travel over the full length of the corridor and to and from the Kootenays – or 20 percent of the total. This travel involves a wide variety of trip ends including the Lower Mainland, the Cariboo, Alberta and the other provinces. It is assumed that this segment of personal business/medical travel will grow at the same rate as British Columbia's population.
- Growth rates for the central and north Okanagan and for the entire province are shown in the following table.

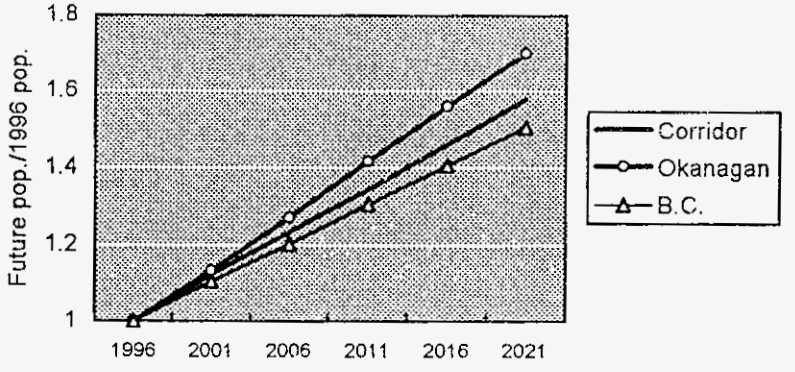
Population Forecasts for the Okanagan and the Province

	1996	2001	2006	2011	2016	2021	
Population							
Armstrong-Spallumcheen LHA	9,550	10,800	12,100	13,300	14,500	15,700	
Vernon LHA	59,250	67,300	74,900	82,300	89,300	95,900	
Central Okanagan Regional District	141,650	160,200	180,500	202,300	224,600	246,733	
Total, Central and northern Okanagan	*210,500*	*238,300*	*267,400*	*298,000*	*328,400*	*358,100*	
Province of British Columbia	3.85 m.	4.25 m.	4.63 m.	5.02 m.	5.41 m.	5.79	
Growth Rates							
		5-year Growth (%)					**25-year Growth (%)**
Central and northern Okanagan		13.2	12.2	11.4	10.2	9.0	*70*
Province of British Columbia		10.4	8.9	8.4	7.8	7.0	*50*

Source: Population Section, BC Stats, PEOPLE 22 Projection, June 1997.

- Expected growth rates for the entire province, corridor communities, and the central and north Okanagan are shown in the following chart. As indicated, B.C.'s total population is expected to increase by 50 percent over the next 25 years. At the other extreme, a 70-percent increase is forecast for communities in the central and north Okanagan regions.

Expected Population Growth



One-Day Social/Recreation

- Only three percent of external trips during the summer months are single-day social/recreational trips. More than 80 percent of those trips are to the Okanagan, and 85 percent to and from communities in the corridor. Given the close relationship between short social/recreational trips and the corridor communities, this component of summer traffic is projected in proportion with expected growth in corridor population.

Multi-Day Social/Recreation

- Multi-day social/recreational travel accounts for close to 70 percent of "external" summer traffic in the corridor. As a result, the forecast of total traffic is sensitive to assumptions made for this segment of the travel market.
- No data is available on the true origin of social/recreational travel. However, some broad assumptions can be made. For example, Lower Mainland residents account for most of the social/recreational travel between the Lower Mainland and the Okanagan, and Alberta residents make up most of the travel between Alberta and the Okanagan. However, these are mixed markets. For example, inter-provincial travel data suggests that there is one highway trip from B.C. to other provinces for every 1.75 trips to B.C. from other points in Canada.
- There is no direct measure of how social/recreational travel on the Trans Canada Highway is changing over time. The analysis in Section 2

indicated that recreational and other traffic that uses the highway only during the summer months has been increasing at a relatively slow rate. Over the last 5 years this additional traffic load increased by about 2 percent each year. The following table compares this increase with population growth in principal markets served by the highway. As indicated, summer-only traffic has increased at about the same rate as B.C.'s population.

5-Year Growth Rate

	1991	1996	% Increase
Added traffic at Monte Creek during the summer months	7,370/day	8,220/day	12
B.C. population	3,282,000	3,725,000	13
Alberta population	2,546,000	2,697,000	6
Corridor population	128,000	151,000	18
Okanagan population	173,000	210,500	22

- Where there is no direct measure of how travel markets are changing, it is useful to consider other indicators that are closely related to those markets. In the case of multi-day social/recreational travel, these include overnight park use, tourism room revenues, and the number of tourism room facilities that are available in the corridor.

- Park use has increased significantly over the last ten years. However, figures must be used with care since they reflect changes in park capacity and data collection methods, as well as numbers of vacationers and travellers. As shown in the following table, the number of party nights at parks in the Thompson Plateau area increased by more than 100 percent over the last 10 years. In other areas of the corridor, growth has ranged as high as 55 percent in some locations. Once again, there is no means of separating these visits into "internal" and "external" travel. However, it appears that increased campground use in some sections of the corridor relates to local rather than external travel. On the other hand, growth of about 2 percent per year in the Shuswap area is consistent with growth rates for seasonal external traffic in the corridor.

Campground Use in the TCH Corridor

	Party Nights		%
	1987	1996	Increase
Thompson Plateau	4,200	9,200	118
Bonaparte Plateau	3,800	3,700	Nil
Shuswap West	17,700	21,600	22
Shuswap East	8,200	9,900	21
Revelstoke	2,700	4,200	55

- The relatively slow growth in external traffic appears to be reflected in tourism room revenues and changes that have taken place in the motel

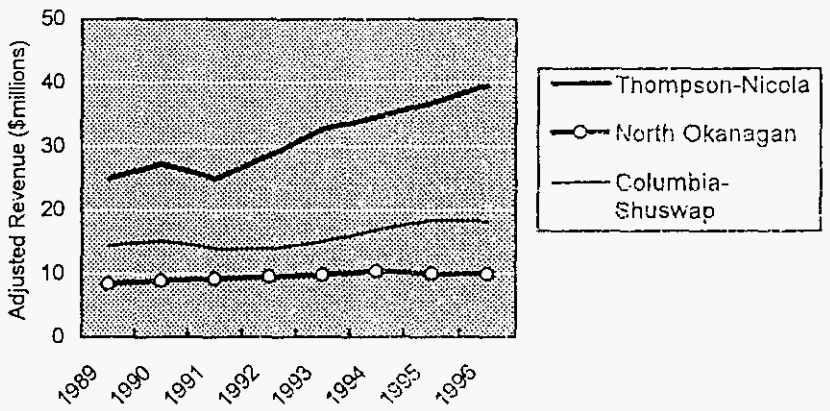
and hotel industry within the corridor. The number of hotel and motel rooms has increased in the Kamloops area but declined over the eastern part of the corridor. This is apparent from figures in the following table, where the number of hotel and motel rooms in the Thompson-Nicola region increased by 20 to 25 percent but declined in other areas.[1] It appears that new investment is concentrated in a few centres. For example, while these figures show a decline in the number of tourism rooms in the Columbia-Shuswap Regional District, Golden experienced a 75-percent increase in hotel and motel rooms between 1994 and 1998.[2]

Change in Tourism Room Capacity
1989 to 1996

	Thompson -Nicola	North Okanagan	Columbia-Shuswap	Entire Province
Fishing Lodges	-49%			-28%
Hotel Rooms	18%	-22%	-31%	1%
Motel Rooms	26%	-28%	-9%	1%
Vacation Rentals	80%	47%		39%

A similar pattern is apparent for tourism room revenues. The following chart shows tourism room revenues for the period from 1989 to 1996. Figures have been adjusted in proportion to the Consumer Price Index to allow for increasing room rates and their effect on total revenue.[3]

Adjusted Tourism Room Revenue
by Regional District - 1989 $'s



The strongest growth appears in the Thompson-Nicola Regional District, while revenue in the North Okanagan remained essentially unchanged throughout the period. The *Rocky Mountaineer* rail service has

1. Source: BC Stats.
2. Town of Golden Economic Development Department.
3. The values shown for 1989 are actual revenue figures. Those for other years have been factored down in proportion with the Consumer Price Index.

contributed to the increase in room revenues in Kamloops. The service began in 1989 and now carries about 50,000 passengers per year, all of whom stay one night in Kamloops. Assuming two per room and an average room rate of $60, the *Rocky Mountaineer* generates about $1.5 million in room revenue each year without direct effect on the highway. However, even after accounting for rail-related tourism, the hotel/motel industry in the Thompson-Okanagan has experienced substantial growth over the last eight years.

- The indicators that are discussed above do not reveal clear or consistent trends or a close relationship between highway travel and tourism activity in the corridor. On the other hand, growth in seasonal traffic appears to follow population growth in the primary markets that generate social/recreational travel in the corridor.

- With 60 percent of trip ends in Alberta, traffic growth will be sensitive to development in that province. As shown below, Alberta's population increased by about 14 percent over the last ten years.

Population Forecasts for the Province of Alberta

	1986	1991	1996
Population	2.37	2.55	2.70
Increase over the Previous 5 Years		7.5%	5.9%
10-year Increase			14%

Source: Statistics Canada Catalogue Number 93-357-XPB.

Population forecasts published by Statistics Canada anticipate a population of 3.3 to 4.0 million by the year 2016, with a medium-growth projection of 3.5 million.[1] That population level would represent a 30-percent increase over 1996. More recent forecasts developed by the Province of Alberta show similar results. The following table shows the "medium" population forecasts for ten Census Divisions covering the area south of Red Deer – the region that is served most directly by the Trans Canada Highway.[2]

Year	Population	5-year Growth
1996	1.42 million	
2001	1.52 million	7.0 percent
2006	1.62 million	6.6 percent
2011	1.72 million	5.8 percent

As indicated, Alberta is projecting population growth of about 100,000 people in the southern area of the province every 5 years. For purposes

1. *Population Projection for Canada, Provinces and Territories 1993-1996*, Statistics Canada Catalogue 91-520. Forecasts are developed from a 1993 base.
2. *Alberta Population Projections: Census Divisions 1995 – 2011*, Alberta Treasury, 1997.

of this analysis, it was assumed that this rate of growth would continue to the year 2021.

- With this background, multi-day social/recreational travel is projected on the following basis:

Trip Type	Basis for Forecast
To and from Alberta and beyond	Population of southern Alberta
West of Kamloops to corridor communities	Population of the Lower Mainland
West of Kamloops to the Okanagan	Population of the Lower Mainland
All other trips	Population of British Columbia

- Applying these assumptions to external social/recreational travel leads to an increase of about 1,200 vehicles per day at Monte Creek every 10 years. In order to put this in perspective, the added (internal and external) traffic load carried by the TCH during the summer months increased by 2,100 vehicles per day at Monte Creek over the 10-year period from 1986 to 1996.

Bus Travel

- As noted in Section 7, long-distance travel on scheduled buses has declined, and this segment of the travel market is expected to remain weak. Operators of scheduled services have capacity to absorb an increase in passenger volume without adding buses or increasing frequency. As a result, little or no change is expected in this segment of the bus market.

- Tour bus activity is expected to continue growing, in part because of demographic change and an aging but active population. As a link to the Rocky Mountains and the Okanagan, the TCH corridor has a strong position in this market. However, no information is available on growth rates in the corridor. For purposes of this analysis, it is assumed that motor coach tour activity will increase at the same rate as multi-day social/recreational travel.

Resource Industry Trucking

- Resource industry trucking is dominated by the forest industry and the movement of logs, lumber, wood chips, and plywood. Recent Ministry of Forests timber supply reviews indicated that harvest rates in the region cannot be sustained at current levels. On that basis, the allowable annual cut in the region is expected to decline over the next 25 years, and the Forest Practices Code may lead to a further reduction of some 4 percent. Based on background analysis for the timber supply review and the expected effect of the Forest Practices Code, the following table shows projected harvest rates for the region.

Timber Supply Forecast for the Corridor Region

Year	2001	2006	2011	2016	2021
Total Volume (million cubic metres)	3.44	3.28	3.28	2.95	2.95
Percent of 1996 Volume	96%	92%	92%	82%	82%

- Mill operators could respond to the reduction in available Crown timber in a number of ways. They could increase their purchase of logs from elsewhere in the province in order to maintain current production levels. This response would lead to increased logging truck traffic on the highway. Alternatively, one or more mills could be closed in order to match the region's timber harvest with processing capacity. In this case, the total volume of logs and finished products would be reduced by mill closures, but some logs would also be transported over a longer distance than they are at the present time. As a result, forest industry traffic on some sections of the highway could be increased as a result of mill closures.
- The timing and extent of timber harvest reductions cannot be determined with certainty and the industry's response to those adjustments cannot be anticipated. For purposes of this analysis, forest industry traffic is adjusted in direct proportion with the timber supply forecasts shown above.
- Traffic generated by the agricultural industries is a relatively small part of resource-industry traffic. The forecasts assume that there is no growth in this sector.

General Freight Trucking

- Half of the external truck traffic on the Trans Canada Highway is moving to or from Alberta and a further 10 percent is destined for the other provinces. As discussed in Section 6, the Statistics Canada survey of for-hire trucking companies provides one indication of recent growth in inter-provincial trucking. However, there is no clear trend in traffic data from that survey, and figures for recent years have been affected by factors such as log shipments from Alberta to B.C. mills (a movement which has now been discontinued) and increased levels of gas exploration in the B.C. Peace River region (which has no effect on the Trans Canada Highway).
- It appears that increases in inter-provincial trucking have lagged population growth. This likely reflects a shift in trading patterns from east-west to north-south, with B.C. becoming more dependent on U.S. suppliers and markets. However, that adjustment may now be complete, in which case volume could begin increasing with population growth.

- Most of the freight moving in the corridor is general freight. For example, the 1995 survey at Golden showed that general freight, food, beverages and household goods accounted for 60 percent of shipments from the Lower Mainland. Similarly, about 60 percent of shipments from Alberta were general freight, food, beverages and household goods. This traffic would be expected to increase in direct proportion with population.

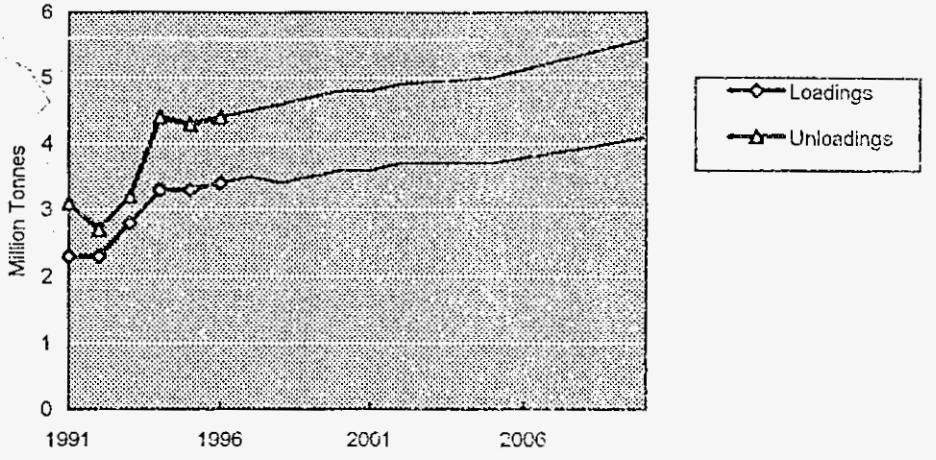
- Apart from forest products, little of the truck traffic in the corridor is destined for export markets, either to the U.S. (through Osoyoos or Vancouver), or to off-shore markets through Vancouver. The Ministry's trucking surveys, for example show that less than 2 percent of loads at Kamloops were moving to or from the United States. Similarly, the surveys carried out at Golden indicated that less than 1 percent of trucks were travelling to or from the U.S.

- Long-haul general-freight trucking depends on balanced traffic loads. Unless trucks are loaded in both directions, trucking costs become prohibitive and buyers are forced to look for other sources of supply. As a result, growth in eastbound truck traffic is closely linked to westbound traffic, and slow growth in one direction will act as a constraint on growth in the other direction.

- Trucking technology will continue to evolve over the next 25 years. The industry will continue to exert pressure on provincial regulators to permit longer and heavier trucks on the highway system. Any move in that direction would tend to reduce the number of trucks on the highway. As discussed in Section 8, it could also shift the competitive balance between rail and truck. However, any changes in this area are likely to be modest. Truck technology, safety concerns and highway alignment limit the potential for change in allowable weights and dimensions, and any adjustments in B.C. will likely be limited to "fine-tuning" rather than significant change.

- Transport Canada has produced forecasts of inter-provincial truck loadings for each province. Their forecasts for loadings and unloadings in B.C. are shown in the following chart.

Inter-Provincial Truck Loadings and Unloadings in B.C.



- Using 1996 as a base year, these forecasts suggest that inter-provincial trucking to and from British Columbia will increase at the following rates.

Percent Increase from 1996
Inter-provincial Trucking to/from B.C.

	2001	2005	2010
B.C. Loadings	6%	9%	21%
B.C. Unloadings	9%	14%	27%

In order to relate these forecasts to provincial growth, the following table shows the rate of expected population growth.

Expected Population Growth from 1996

	2001	2005	2010
Population Change	10%	18%	28%

This comparison suggests that trucking will lag behind population growth in British Columbia. For example, the Transport Canada forecasts point to a 20- to 25-percent increase in inter-provincial trucking by 2010 while population is expected to grow by 25 to 30 percent over the same period of time.

- With the lack of historic information on truck traffic on this section of the Trans Canada Highway there is little basis from which to relate population or other factors to general freight traffic. As noted earlier, historic data on inter-provincial truck traffic has been distorted by

movements that are unrelated to the TCH, and consequently does not provide a sound basis for projections.

- With this background, general freight traffic was projected on the basis of provincial population growth, recognizing that this leads to somewhat higher volumes than forecast by others.
- Projection in proportion with expected population growth leads to a 50 percent increase over the next 25 years. As a point of comparison, forecasts developed in Phase A of the Okanagan Valley Transportation Plan pointed to growth rates as shown in the following table.[1]

Truck Traffic Forecasts:
Okanagan Valley Transportation Plan, 'Phase A'

Truck Movement	Forecast Growth from 1994 to 2020
Between the Okanagan and Highway 1 west of Monte Creek.	175%
Between the Okanagan and Highway 1 east of Sicamous.	100%
Between Highway 1 west of Monte Creek and Highway 1 east of Sicamous.	100%
All internal and external truck traffic in the Okanagan.	110%

Clearly, the analysis carried out for the Okanagan Valley Transportation Plan led to much higher growth rates than those suggested in this study. As indicated, growth forecasts in the Okanagan Valley study range from 100 to 175 percent, compared with 50 percent in this analysis.

Forecasts of Total Traffic

Each component of external travel on the Trans Canada Highway was projected on the basis of the assumptions that have been set out in this section of the report. Those assumptions are summarized in the following table.

1. *Okanagan Valley Corridor: Transportation Overview and Assessment*, Okanagan Valley Transportation Plan Phase "A" Report, OVTP Project Team, August 1997.

Summary of Growth Assumptions Used in the Forecasts

Trip Type	Population Used to Develop Traffic Forecasts				
	Corridor	Central and North Okanagan	Lower Mainland	B.C.	Southern Alberta
Work (Business & Commute)	✓				
Shopping	✓				
Personal Business & Medical	✓	✓		✓	
1-Day Social/ Recreational	✓				
Multi-day Social/ Recreational	✓		✓	✓	✓
General Trucking				✓	

In addition, the forecast of resource industry truck traffic was based primarily on expected change in the allowable annual cut for timber in the region.

Building on these assumptions, origin-destination tables were developed for each traffic component and at five-year intervals from 1996 to 2021 for both summer traffic and average annual traffic. The resulting trip tables are included in Appendix 4.

The trip tables were then used to build up an estimate of "external" traffic on each section of the highway through to the year 2021. The results are summarized below.

Projected External SADT

Section of the TCH	1996	2001	2006	2011	2016	2021	25-year Increase
Afton i/c-Kamloops	10,450	11,500	12,500	13,500	14,400	15,400	47%
Kamloops-Monte Creek	9,050	9,900	10,700	11,600	12,400	13,200	46%
Monte Creek-Salmon Arm	7,600	8,300	8,900	9,600	10,300	10,900	44%
Salmon Arm-Sicamous	6,300	6,800	7,400	7,900	8,400	8,900	41%
Sicamous-Revelstoke	8,550	9,300	10,000	10,800	11,500	12,200	42%
Revelstoke-Golden	8,250	9,000	9,600	10,300	11,000	11,700	41%
Golden-Yoho National Park	8,100	8,800	9,500	10,100	10,800	11,400	41%

Projected External AADT

Section of the TCH	1996	2001	2006	2011	2016	2021	25-year Increase
Afton i/c-Kamloops	6,600	7,200	7,900	8,500	9,100	9,800	48%
Kamloops-Monte Creek	5,600	6,100	6,600	7,100	7,600	8,200	46%
Monte Creek-Salmon Arm	4,500	4,900	5,300	5,700	6,100	6,600	45%
Salmon Arm-Sicamous	3,650	4,000	4,200	4,600	4,900	5,200	42%
Sicamous-Revelstoke	5,100	5,500	6,000	6,400	6,900	7,300	44%
Revelstoke-Golden	4,750	5,200	5,600	6,000	6,400	6,800	43%
Golden-Yoho National Park	4,750	5,100	5,500	6,000	6,400	6,800	43%

Once again, a comparison can be made with forecasts from the Okanagan Valley Transportation Plan. The following table shows growth rates anticipated in that study, compared with those presented in this report. As indicated, the Okanagan Valley analysis led to much higher growth rates. For example, the Okanagan Valley analysis suggests that auto travel between the Okanagan Valley and the TCH west of Monte Creek will increase by more than 100 percent over the next 25 years. By comparison, the TCH corridor analysis points to increases of about 50 percent over a similar period of time.

Auto Traffic Forecasts:
Okanagan Valley Transportation Plan, 'Phase A'

Trip Type	All Auto Trips Okanagan Valley Study 1994 – 2020 Growth	All Trips As Forecast in this Study 1996 – 2021 Growth
Between the Okanagan and Hwy. 1 west of Monte Creek.	127%	50%
Between the Okanagan and Hwy. 1 east of Sicamous.	98%	50%
Between Hwy. 1 west of Monte Creek and Hwy. 1 east of Sicamous.	100%	n.a.
All internal and external truck traffic in the Okanagan.	96%	n.a.

10. Summary and Conclusion

More than half of the trips on the Trans Canada Highway start or end at a point that is outside the corridor. At Monte Creek, for example, about 60 percent of summer traffic is "external" traffic that has one or both trip ends west of Kamloops or in the Okanagan, the Kootenays, Alberta, the other provinces, or the U.S. East of Sicamous, about 85 percent of summer traffic is external. The nature of this traffic and its future growth is one of the key considerations in planning for future highway development in the corridor.

The report includes a detailed description of external traffic and the market forces that affect its growth. The make-up of the external travel market is outlined below.

- Close to 70 percent of external travel on the TCH during the summer months is multi-day social/recreational travel. Taken together, truck and bus account for about 12 percent of the total, and personal business accounts for about 10 percent. Work-related travel is also significant, and accounts for about 10 percent of external trips.
- During the summer months, about 25 percent of external trips cover the full length of the corridor -- from points to the west of Kamloops to destinations in Alberta and beyond. When this is combined with travel from corridor communities, the Okanagan and the Kootenays, roughly half of all external trips are to or through the Province of Alberta.
- The 20 percent of external travel that is related to work, shopping, and other personal business is heavily oriented to the Okanagan Valley. Fifty percent of these trips begin or end in the Okanagan.
- Social/recreational travel is more widely distributed. However, 50 percent of external social/recreational travel in the corridor is destined for Alberta and the other provinces.
- A 1995 travel survey showed that 55 percent of travel to B.C. from the other provinces is by road. Survey results highlight the importance of travel from Alberta, which accounts for roughly 85 percent of highway trips to B.C.
- Alberta is also an important destination for British Columbians. About 50 percent of inter-provincial travel by British Columbians in 1996 was by road, and 85 percent of those trips were destined for Alberta.
- The corridor is not a primary log-haul route. Most of the logs that are transported to mills along the corridor move by water or over forest roads and secondary highways. As a result, the principal log hauls on the TCH cover relatively short sections of the highway. However, there are some long-haul movements. These include pulp logs that are being transported to the chipping mill at Cache Creek and logs that are hauled longer distances in order to meet the size, quality and species requirements of a particular mill.

- Lumber, plywood and wood chips – rather than logs – have the greatest forest industry impact on the highway system. Lumber moves over the TCH directly to regional markets and to "reload" centres at Campbell Creek and Calgary where it is transferred to rail for delivery to Canadian and U.S. markets. Wood chips are hauled from sawmill sites in the TCH corridor and the Okanagan Valley to the Weyerhaeuser pulp mill in Kamloops.
- Consumer goods and fabricated products account for most of the long-haul truck traffic moving over the highway. Food, beverages and general freight account for 55 percent of the total. On an average day, about 40 percent of external truck traffic in the corridor is destined for Alberta. Another 10 percent is destined for points beyond Alberta.

There is no direct measure of the economic contribution of the highway. However, each year this section of the Trans Canada Highway carries forest products that are valued at more than $300 million as well as about $1 billion worth of other commodities. It also supports a highway-oriented tourist industry that generates about $500 million per year in economic activity over a broad region that is centred on the TCH.

The future of the TCH as a trucking route depends on many factors including truck/rail competition and the performance of the Trans Canada Highway in relation to other routes.

It appears unlikely there will be a significant shift of traffic between rail and truck, and shipping patterns for forest products are not expected to change unless mills are closed because of reduced timber supply. Expansion of "value-added" forest products manufacturing in the corridor will be truck-oriented.

Most of the rail traffic in the corridor is bulk commodities such as grain, coal, and potash that are destined for off-shore markets. This traffic is essentially "captive" to rail and has no effect on the highway. The railways will continue to offer "trailer-on-flatcar" service as an alternative to long-distance, over-the-highway truck hauls. However, they are not expected to divert a significant amount of traffic from the highway system.

Growth will also be affected by performance of the Trans Canada Highway, relative to other highway routes. It appears, however, that a trucker's decision to use the TCH is insensitive to standard of service on the highway.

Slower speeds or higher costs could affect the split of B.C.-Alberta truck traffic between the Yellowhead and the Trans Canada Highway. Poor performance could also lead to some diversion through the United States.

For most traffic that now moves over the TCH, however, it appears the route has sufficient advantage that a change in performance would not have a significant effect. For example, on a shipment from Regina to Vancouver, average speed would have to be reduced by about 30 kph over the full length of the corridor before traffic is diverted to the Yellowhead route.

Although a performance change may not trigger a diversion of traffic to other routes, it could have a significant effect on trucking costs. For example, a 5 kph change in average running speed over the length of the corridor would increase the cost of inter-provincial truck transportation by about $9 million per year. For a typical truck haul, this represents a 2-percent change in transportation costs and a small change in the delivered value of goods that are shipped over the highway.

One of the main goals of this study was to produce a 25-year forecast of "external" traffic moving over this section of the Trans Canada Highway. The analysis of current use of the highway was a critical part of the forecasting process since it provided an understanding of the markets that are being served. Most travel on the highway reflects population growth and economic activity in particular markets. For example, most trucking activity in the corridor is related to domestic consumer markets and construction and industrial activity rather than offshore exports.

The following factors were used to develop traffic projections for the next 25 years.

- Work and shopping trips: expected to grow at the same rate as population in corridor communities.
- Personal business and medical trips: increased in proportion with population in the corridor, the Okanagan and the entire province, depending on trip origin and destination.
- Single-day social/recreational travel: expected to increase at the same rate as population in the corridor.
- Multi-day social/recreational travel: expanded on the basis of population growth in southern Alberta, the Lower Mainland, and the entire province, depending on trip origin and destination.
- Inter-city bus travel: no growth in travel on scheduled bus services, while charter and tour traffic is increased at the same rate as multi-day social/recreational travel.
- Resource-industry trucking: projected to decline in proportion with expected change in timber harvest rates.

- General freight trucking: expected to increase at the same rate as population growth for British Columbia.

Forecasts developed on this basis lead to the following estimates of "external" traffic on the highway during the summer months.

Projected External SADT

Section of the TCH	1996	2001	2006	2011	2016	2021	25-year Increase
Afton i/c-Kamloops	10,450	11,500	12,500	13,500	14,400	15,400	47%
Kamloops-Monte Creek	9,050	9,900	10,700	11,600	12,400	13,200	46%
Monte Creek-Salmon Arm	7,600	8,300	8,900	9,600	10,300	10,900	44%
Salmon Arm-Sicamous	6,300	6,800	7,400	7,900	8,400	8,900	41%
Sicamous-Revelstoke	8,550	9,300	10,000	10,800	11,500	12,200	42%
Revelstoke-Golden	8,250	9,000	9,600	10,300	11,000	11,700	41%
Golden-Yoho National Park	8,100	8,800	9,500	10,100	10,800	11,400	41%

With these forecasts, "external" traffic on the Salmon Arm-Sicamous section of the highway would increase by about 100 vehicles per day in each of the next 25 years. West of Monte Creek and east of Sicamous, the volume increase from one year to the next would amount to about 150 vehicles per day on a typical summer day. Over the full 25 years, external traffic would increase by about 45 percent.

Appendix 1

Estimation of Summer Travel Patterns

Estimation of Summer Travel Patterns

This appendix describes the method used to develop estimates of summer average daily traffic in the Trans Canada Highway corridor.

The analysis deals with "external" traffic only, and excludes all travel that begins and ends in the corridor. It also excludes three types of "external" trips that have only a local effect on the Trans Canada Highway:

- Trips to Kamloops from points on the Yellowhead route (Highway 5 north).
- Trips from the Okanagan to Salmon Arm via Highway 97B.
- Trips from the Okanagan to Sicamous via Highway 97A.

Origin-destination tables for summer travel were developed by the following procedure.

Non-commercial Traffic

- A data base was created using trip purpose tables drawn from the Ministry's origin-destination surveys. The analysis relied most heavily on three surveys:

  1. 1993 west of Monte Creek.
  2. 1995 east of Tappen.
  3. 1995 east of Sicamous.

  Information was also extracted from eight other origin-destination surveys:

  1. 1990 east of Golden.
  2. 1992 west of Sicamous.
  3. 1992 at Craigellachie.
  4. 1993 at Revelstoke.
  5. 1993 on the Coquihalla Highway.
  6. 1994 on Highway 97A, north of Enderby.
  7. 1994 on Highway 97 north of Falkland.
  8. 1994 on Highway 5 at Heffley Creek.

- Each of the origin-destination tables was expanded to conform with 1996 Summer Average Daily Traffic (SADT) (i.e. traffic volume for every O-D pair was expanded in proportion with the ratio of 1996 SADT over survey year SADT at or near the survey point).
- Preliminary 1996 origin-destination tables for the entire corridor were developed by combining the results of the origin-destination surveys. Separate O-D tables were developed for work, shopping, personal

business, 1-day social/recreational trips, and multi-day social/recreational trips.

Bus Traffic

- An origin-destination table for bus traffic was developed from routing patterns for scheduled buses and the Ministry's classification counts at Tappen and Sicamous. This approach assumed that trip patterns are identical for scheduled buses, charter buses, and motor coach tours.

Truck Traffic

- An origin-destination table was constructed for resource-related truck traffic on the basis of information collected from the Ministry of Forests, mill operators, and operators of the "reload" centre at Campbell Creek. This table also takes account of agricultural products such as feed grain and livestock.
- An origin-destination table was constructed for all truck traffic in the corridor, relying on data from the Ministry's 1995 and 1996 surveys at the Kamloops and Golden weigh scale stations. Those surveys do not capture truck traffic from the Yellowhead Highway or the Okanagan to points on the corridor (e.g. Blue River to Sicamous or Vernon to Kamloops). As a result, trips to and from intermediate points in the corridor are not fully accounted for. The table was adjusted for known movements of forest products. However, it does not provide a complete picture of external traffic to and from points between Kamloops and Golden.
- The difference between "total trucking" and "resource-related trucking" was taken as the O-D pattern for "general freight trucking."

Trips were then assigned to segments of the Trans Canada Highway and compared with traffic count data for summer, 1996. In theory, if the origin-destination tables provided a complete picture of traffic patterns, then traffic estimates based on the tables would be identical to traffic count data. (Some differences would be expected since the origin-destination data is based on one-day surveys only. In most cases, they were carried out at the end of July or the beginning of August and consequently do not necessarily represent "average" summer conditions.)

As shown in the following table, the estimates provide a close fit with traffic counts to the west of Monte Creek and east of Tappen but appear to under-estimate volumes east of Sicamous by a small margin.

Verification of Summer O-D Tables Developed for 1996

	West of Monte Creek	East of Tappen	East of Sicamous
Estimated External Traffic	9,066	7,585	8,567
% External (from O-D surveys)	61.4%	49.8%	84.2%
Estimated 1996 SADT	14,765	15,232	10,175
Actual 1996 SADT	14,466	15,420	10,544
Over (under) estimate	2.0%	1.2%	(3.6%)

This comparison suggests that the estimated 1996 origin-destination tables provide a sound basis from which to forecast future "external" traffic in the corridor.

Appendix 2

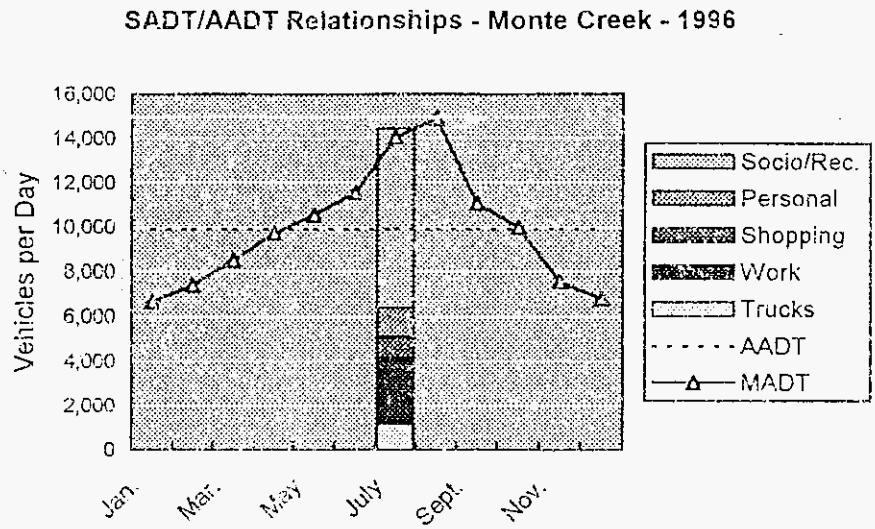
Estimation of Year-Round Travel Patterns

Estimation of Year-Round Travel Patterns

Estimates of year-round travel patterns were needed as a starting point in developing forecasts of Annual Average Daily Traffic. However, all of the Ministry's origin-destination surveys and trucking surveys are carried out during the summer months. As a result, it was necessary to make a number of assumptions in order to arrive at estimates of year-round origin-destination patterns. This appendix outlines the method used to develop O-D tables by trip purpose.

It might be expected that certain types of travel would be constant throughout the year (in terms of both volume and origin-destination pattern). Trucking activity, for example, is relatively uniform throughout the year. Some commodity movements are seasonal in nature. However, with the diverse mix of truck traffic on the TCH, little change would be expected from one month to the next. The same would be true for work-related travel and shopping, personal business, and medical trips – all of which meet personal or commercial needs that are relatively constant through the year. If this is the case, then the number of trucks and the number of work, shopping and personal business trips on the TCH would be constant throughout the year. It would also be expected that the total volume of traffic on the highway in January (when there is little social/recreational traffic) would be the same as the total volume of truck, work, shopping and personal business travel on the highway during the summer. The data tends to support this.

Using the Monte Creek count station as an example, the following chart shows the trip purpose breakdown in July/August against monthly average daily traffic. As shown, the number of truck, work, shopping and personal business trips during the summer months is essentially the same as the total number of trips over the highway in mid-winter. In this example, the January MADT amounts to 6,700 vehicles per day – a very close match with the 6,400 truck, work, shopping and personal business trips in July and August. It appears, then, that these four types of trips might account for an average of about 6,400 trips per day at Monte Creek, year round. All of the additional traffic on the highway during the spring, summer and autumn months would then be social/recreational travel. This relationship was used in developing origin-destination tables on an AADT basis.



With this background, the following assumptions were made as SADT trip tables were transformed into AADT origin-destination tables.

Assumptions Used in Estimating AADT Travel Patterns

- It is assumed that the origin-destination pattern for each trip purpose remains unchanged throughout the year. For example, the O-D pattern for personal business and medical trips is the same in November as it is in August.
- Work trips (and business trips) remain unchanged throughout the year. That is, the same number of work-related trips occur in November as in August. (In fact, work trips might be expected to be lower during the summer than through the rest of the year.)
- Similarly, shopping trips, personal business trips, and truck traffic are assumed to remain unchanged.
- Bus trips are factored down, assuming no tour or charter buses are on the highway during the winter months.
- It is assumed that all of the remaining trips are social/recreational trips. That is, social/recreational trips are determined by subtracting work, shopping, personal business, bus and truck trips from AADT.
- Finally, it is assumed that the seasonal pattern for one-day social/ recreational trips is identical to the pattern for multi-day trips.

The conversion from the summer trip purpose breakdown to an annual breakdown is illustrated with the following example for the site of the 1995 origin-destination survey east of Tappen.

Development of an Annual Trip Purpose Breakdown For Highway 1 East of Tappen

Trip Type	% of SADT	% of Non-commercial Traffic	SADT by Trip Type	SADT Purpose/ Type Split	AADT by Trip Type	AADT Purpose/ Type Split
Work		23.0	3,214	21	3,214	28
Shopping		13.2	1,837	12	1,837	16
Personal Business		13.7	1,913	13	1,913	17
1-Day Social/Rec.		8.4	1,175	8	565	5
Multi-Day Social/Rec.		41.7	5,827	39	2,804	25
Trucks	6.5		978	6.5	978	8.6
Buses	0.4		56	0.4	19	0.2
Total			15,000		11,330	

The resulting estimates were used to factor trip tables to an AADT basis. For example, in the Tappen example the trip table for work trips remained unchanged while the table for multi-day social/recreational travel was factored down by 52 percent (2,804 trips on an average day/5,827 trips on an average summer day).

Appendix 3

1996 Origin-Destination Tables

External Work Trips -- TCH, Afton i/c to the Alberta Border

996 Work Trips - SADT

Origin	Destination																			Total
	West of corridor	North of Kam.	Kam.	Kam.-Monte Creek	Monte Cr.-Salmon Arm	Salmon Arm	Salmon Arm-Sica.	Sica.	Sica.-Rev.	Revel.	Revel.-Golden	Golden	Golden-Alberta	Okan.	Koot.	Alta.	Other Can.	Wash./ Calif.	Other U.S.	
est of the corridor	-	40	135	5	15	20	-	5	-	15	-	5	-	45	-	30	5	-	-	320
orth of Kamloops	40	-		5	5	-	-	-	-	-	-	-	-	-	-	5	-	-	-	55
amloops	135													185	10	5	-	-	-	335
amloops-Monte Creek	5	5												-	-	-	-	-	-	10
onte Cr.-Salmon Arm	15	5												105	-	5	-	-	-	130
almon Arm	20	-													-	-	-	-	-	20
almon Arm-Sicamous	-	-												-	-	-	-	-	-	-
camous	5	-													-	-	-	-	-	5
camous-Revelstoke	-	-												45	-	-	-	-	-	45
evelstoke	15	-												55	-	-	-	-	-	70
evelstoke-Golden	-	-												-	-	10	-	-	-	10
olden	5	-												5	-	25	-	-	-	35
olden-Alberta	-	-												-	-					-
kanagan	45	-	185	-	105		-		45	55	-	5	-	-	10	40	5	-	-	495
ootenays	-	-	10	-	-	-	-	-		-	-	-	-	10	-	5	-	-	-	25
berta	30	5	5	-	5	-	-	-	-	-	10	25		40	5	-	-	-	-	125
ther Canada	5	-	-	-	-	-	-	-	-	-	-	-		5	-	-	-	-	-	10
ash./Calif.	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
ther U.S.	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
	320	55	335	10	130	20	-	5	45	70	10	35	-	495	25	125	10	-	-	1,690

External Shopping Trips – TCH, Afton i/c to the Alberta Border

1996 Shopping Trips - SADT

Origin	Destination																			Total
	West of corridor	North of Kam.	Kam.	Kam.-Monte Creek	Monte Cr.-Salmon Arm	Salmon Arm	Salmon Arm-Sica.	Sica.	Sica.-Rev.	Revel.	Revel.-Golden	Golden	Golden-Alberta	Okan.	Koot.	Alta.	Other Can.	Wash./ Calif.	Other U.S.	
West of the corridor	-	5	10	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	20
North of Kamloops	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
Kamloops	10	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-	-	25
Kamloops-Monte Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monte Cr.-Salmon Arm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Salmon Arm	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
Salmon Arm-Sicamous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sicamous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sicamous-Revelstoke	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Revelstoke	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Revelstoke-Golden	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Golden	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	5
Golden-Alberta	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Okanagan	-	-	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15
Kootenays	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alberta	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	5
Other Canada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wash./Calif.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other U.S.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	20		25	-	-	5	-	-	-	-	-	5	-	15	-	5	-	-	-	80

External Personal Business Trips -- TCH, Afton i/c to the Alberta Border

1996 Personal Business Trips -- SADT

Origin	Destination																			
	West of corridor	North of Kam.	Kam.	Kam.-Monte Creek	Monte Cr.-Salmon Arm	Salmon Arm	Salmon Arm-Sica.	Sica.	Sica.-Rev.	Revel.	Revel.-Golden	Golden	Golden-Alberta	Okan.	Koot.	Alta.	Other Can.	Wash./ Calif.	Other U.S.	Total
West of the corridor	-	90	95	-	10	15	5	-	-	5	-	-	-	55	-	70	25	-	-	370
North of Kamloops	90	-		10	-	-	-	-	-	-	-	-	-	5	-	-	-	10	-	115
Kamloops	95													85	5	10	-	-	-	195
Kamloops-Monte Creek	-	10												-	-	-	-	-	-	10
Monte Cr.-Salmon Arm	10	-												75	-	-	-	-	-	85
Salmon Arm	15	-													10	10	5	-	-	40
Salmon Arm-Sicamous	5	-												-	-	-	-	-	-	5
Sicamous	-	-													-	5	-	-	-	5
Sicamous-Revelstoke	-	-												20	-	-	-	-	-	20
Revelstoke	5	-												30	-	5	-	-	-	40
Revelstoke-Golden	-	-												-	-	-	-	-	-	-
Golden	-	-												10	5	40	-	-	-	55
Golden-Alberta	-	-												-	-					-
Okanagan	55	5	85	-	75		-		20	30	-	10	-	-	5	50	20	-	-	355
Kootenays	-	-	5	-	-	10	-	-	-	-	-	5	-	5	-	5	-	-	-	30
Alberta	70	-	10	-	-	10	-	5	-	5	-	40		50	5	-	-	-	5	200
Other Canada	25	-	-	-	-	5	-	-	-	-	-	-		20	-	-	-	-	-	50
Wash./Calif.	-	10	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	10
Other U.S.	-	-	-	-	-	-	-	-	-	-	-	-		-	-	5	-	-	-	5
	370		195	10	85	40	5	5	20	40	-	55	-	355	30	200	50	10	5	1,590

External 1-Day Recreational Trips -- TCH, Afton i/c to the Alberta Border

1996 1-Day Recreational Trips -- SADT

Origin	Destination																			Total
	West of corridor	North of Kam.	Kam.	Kam.-Monte Creek	Monte Cr.-Salmon Arm	Salmon Arm	Salmon Arm-Sica.	Sica.	Sica.-Rev.	Revel.	Revel.-Golden	Golden	Golden-Alberta	Okan.	Koot.	Alta.	Other Can.	Wash./ Calif.	Other U.S.	
West of the corridor	-	20	15	-	15	10	-	-	-	-	-	-	-	10	-	10	-	-	-	80
North of Kamloops	20	-		-	5	-	5	-	-	-	-	-	-	15	-	-	-	-	-	45
Kamloops	15													85	-	10	-	-	-	110
Kamloops-Monte Creek	-	-												-	-	-	-	-	-	-
Monte Cr.-Salmon Arm	15	5												80	-	-	-	-	-	100
Salmon Arm	10	-													5	-	-	-	-	15
Salmon Arm-Sicamous	-	5												-	-	-	-	-	-	5
Sicamous	-	-													-	-	-	-	-	-
Sicamous-Revelstoke	-	-												15	-	-	-	-	-	15
Revelstoke	-	-												15	-	-	-	-	-	15
Revelstoke-Golden	-	-												-	-	-	-	-	-	-
Golden	-	-												-	-	25	-	-	-	25
Golden-Alberta	-	-												-	-	10				10
Okanagan	10	15	85	-	80		-		15	15	-	-	-	-	-	-	-	-	-	220
Kootenays	-	-	10	-	-	5	-	-	-	-	-	-	-	-	-		-	-	-	15
Alberta	10	-	10	-	-	-	-	-	-	-	-	25	10	-	-	-	-	-	-	55
Other Canada	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
Wash./Calif.	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
Other U.S.	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
	80	45	120	-	100	15	5	-	15	15	-	25	10	220	5	55	-	-	-	710

External Multi-Day Recreational Trips -- TCH, Afton i/c to the Alberta Border

1996 Multi-Day Recreational Trips -- SADT

Origin	Destination																			Total
	West of corridor	North of Kam.	Kam.	Kam.-Monte Creek	Monte Cr.-Salmon Arm	Salmon Arm	Salmon Arm-Sica.	Sica.	Sica.-Rev.	Revel.	Revel.-Golden	Golden	Golden-Alberta	Okan.	Koot.	Alta.	Other Can.	Wash./ Calif.	Other U.S.	
West of the corridor	-	795	5	10	90	200	50	65	5	45	-	10	-	430	90	1,150	375	5	35	3,360
North of Kamloops	795	-		-	-	5	-	-	-	-	-	-		60	-	15	-	110	-	985
Kamloops	5													165	50	125	20	-	5	370
Kamloops-Monte Creek	10	-												-	-	-	-	-	-	10
Monte Cr.-Salmon Arm	90	-												125	15	180	10	-	-	420
Salmon Arm	200	5													10	120	10	-	-	345
Salmon Arm-Sicamous	50	-												-	-	-	-	-	-	50
Sicamous	65	-													-	115	5	-	-	185
Sicamous-Revelstoke	5	-												20	-	5	-	-	-	30
Revelstoke	45	-												50	5	50	10	-	-	160
Revelstoke-Golden	-	-												-	15	90	25	-	-	130
Golden	10	-												15	-	-	-	-	-	25
Golden-Alberta	5	-												-	-	5			10	20
Okanagan	430	60	165	-	125		-		20	50	-	15	-	-	25	490	150	-	-	1,530
Kootenays	90	-	50	-	15	10	-	-	-	5	15	-	-	25	-	25	5	-	-	240
Alberta	1,150	15	125	-	180	120	-	115	5	50	90	-	5	490	25	-	-	-	105	2,475
Other Canada	375	-	20	-	10	10	-	5	-	10	25	-		150	5	-	-	-	15	625
Wash./Calif.	5	110	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	115
Other U.S.	35	-	5	-	-	-	-	-	-	-	-	-	10	-	-	105	15	-	-	170
	3,365	985	370	10	420	345	50	185	30	160	130	25	15	1,530	240	2,475	625	115	170	11,245

External Bus Trips – TCH, Afton i/c to the Alberta Border

1996 Bus Trips – SADT

Origin	Destination																			Total
	West of corridor	North of Kam.	Kam.	Kam.-Monte Creek	Monte Cr.-Salmon Arm	Salmon Arm	Salmon Arm-Sica.	Sica.	Sica.-Rev.	Revel.	Revel.-Golden	Golden	Golden-Alberta	Okan.	Koot.	Alta.	Other Can.	Wash./ Calif.	Other U.S.	
West of the corridor	-	18	12	-	-	6	-	-	-	6	-	-	-	-	-	-	24	-	-	66
North of Kamloops	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18
Kamloops	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
Kamloops-Monte Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monte Cr.-Salmon Arm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Salmon Arm	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	12
Salmon Arm-Sicamous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sicamous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sicamous-Revelstoke	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Revelstoke	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
Revelstoke-Golden	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Golden	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Golden-Alberta	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Okanagan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kootenays	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alberta	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	6
Other Canada	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24
Wash./Calif.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other U.S.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	66	18	12	-	-	12	-	-	-	6	-	-	-	-	-	6	24	-	-	144

External Transport Truck Trips -- TCH, Afton i/c to the Alberta Border

1996 Transport Truck Trips -- SADT

Origin	Destination																				
	West of corridor	North of Kam.	Kam.	Kam.-Monte Creek	Monte Cr.-Salmon Arm	Salmon Arm	Salmon Arm-Sica.	Sica.	Sica.-Rev.	Revel.	Revel.-Golden	Golden	Golden-Alberta	Okan.	Koot.	Alta.	Other Can.	Wash./ Calif.	Other U.S.	Total
West of the corridor	-	150	193	-	-	20	-	10	-	-	-	-	-	43	5	184	70	-	10	685
North of Kamloops	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150
Kamloops	193	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-	211
Kamloops-Monte Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monte Cr.-Salmon Arm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Salmon Arm	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	25
Salmon Arm-Sicamous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sicamous	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	16
Sicamous-Revelstoke	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Revelstoke	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	14
Revelstoke-Golden	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Golden	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	-	-	-	17
Golden-Alberta	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Okanagan	43	-	-	-	-	-	-	-	-	5	-	-	-	-	-	65	-	-	-	113
Kootenays	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
Alberta	184	-	18	-	-	5	-	6	-	14	-	17	-	65	-	-	-	-	-	309
Other Canada	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70
Wash./Calif.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other U.S.	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
	685	150	211	-	-	25	-	16	-	19	-	17	-	108	5	309	70	-	10	1,625

External Resource Industry Truck Trips -- TCH, Afton i/c to the Alberta Border

1996 Resource Industry Truck Trips -- SADT

Origin	Destination																			Total
	West of corridor	North of Kam.	Kam.	Kam.-Monte Creek	Monte Cr.-Salmon Arm	Salmon Arm	Salmon Arm-Sica.	Sica.	Sica.-Rev.	Revel.	Revel.-Golden	Golden	Golden-Alberta	Okan.	Koot.	Alta.	Other Can.	Wash./ Calif.	Other U.S.	
West of the corridor	-	-	2	7	18	-	17	-	5	10	-	5	-	12	-	11	-	-	-	85
North of Kamloops	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kamloops	2	-	-	-	-	-	-	-	-	-	-	-	-	40	-	2	-	-	-	44
Kamloops-Monte Creek	7	-	-	-	-	-	-	-	-	-	-	-	-	27	-	-	-	-	-	34
Monte Cr.-Salmon Arm	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	18
Salmon Arm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Salmon Arm-Sicamous	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17
Sicamous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	4
Sicamous-Revelstoke	5	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	3	14
Revelstoke	10	-	-	-	-	-	-	-	-	-	-	-	-	-	6	1	-	-	-	17
Revelstoke-Golden	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Golden	5	-	-	-	-	-	-	-	-	-	-	-	-	-	7	8	-	-	-	20
Golden-Alberta	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Okanagan	12	-	40	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	79
Kootenays	-	-	-	-	-	-	-	-	6	8	-	7	-	-	-	-	-	-	-	19
Alberta	11	-	2	-	2	-	-	4	-	1	-	8	-	-	-	-	-	-	-	28
Other Canada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wash./Calif.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other U.S.	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	3
	85	-	44	34	18	-	17	4	14	17	-	20	-	79	19	28	-	-	3	382

Total External Trips -- TCH, Afton i/c to the Alberta Border

1996 External Trips - SADT

Origin	Destination																			
	West of corridor	North of Kam.	Kam.	Kam.-Monte Creek	Monte Cr.-Salmon Arm	Salmon Arm	Salmon Arm-Sica.	Sica.	Sica.-Rev.	Revel.	Revel.-Golden	Golden	Golden-Alberta	Okan.	Koot.	Alta.	Other Can.	Wash./ Calif.	Other U.S.	Total
West of the corridor	-	1,118	467	22	146	276	72	80	10	81	-	20	-	595	95	1,455	499	5	45	4,986
North of Kamloops	1,118	-		15	10	5	5	-	-	-	-	-	-	80	-	20	-	120	-	1,373
Kamloops	467													575	65	170	20	-	5	1,302
Kamloops-Monte Creek	22	15												27	-	-	-	-	-	64
Monte Cr.-Salmon Arm	151	10												385	15	187	10	-	-	758
Salmon Arm	276	5													25	141	15	-	-	462
Salmon Arm-Sicamous	72	5												-	-	-	-	-	-	77
Sicamous	80	-													-	130	5	-	-	215
Sicamous-Revelstoke	10	-												100	6	5	-	-	3	124
Revelstoke	81	-												150	11	70	10	-	-	322
Revelstoke-Golden	-	-												-	15	100	25	-	-	140
Golden	20	-												30	12	120	-	-	-	182
Golden-Alberta	5	-												-	-	15	-	-	10	30
Okanagan	595	80	575	27	385	-	-	-	100	155	-	30	-	-	40	645	175	-	-	2,807
Kootenays	95	-	75	-	15	25	-	-	6	11	15	12	-	40	-	35	5	-	-	334
Alberta	1,455	20	170	-	187	141	-	130	5	70	100	120	15	645	35	-	-	-	110	3,203
Other Canada	499	-	20	-	10	15	-	5	-	10	25	-	-	175	5	-	-	-	15	779
Wash./Calif.	5	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	125
Other U.S.	45	-	5	-	-	-	-	-	3	-	-	-	10	-	-	110	15	-	-	188
	4,996		1,312	64	753	462	77	215	124	327	140	182	25	2,802	324	3,203	779	125	188	17,471

Total External Trips – TCH, Afton i/c to the Alberta Boundary

1996 External Trips – AADT

Origin	Destination																			Total
	West of corridor	North of Kam.	Kam.	Kam.-Monte Creek	Monte Cr.-Salmon Arm	Salmon Arm	Salmon Arm-Sica.	Sica.	Sica.-Rev.	Revel.	Revel.-Golden	Golden	Golden-Alberta	Okan.	Koot.	Alta.	Other Can.	Wash./ Calif.	Other U.S.	
West of the corridor	-	690	457	17	91	166	46	46	7	57	-	15	-	364	48	846	302	2	27	3,180
North of Kamloops	690	-		15	7	2	2	-	-	-	-	-	-	41	-	12	-	62	-	832
Kamloops	457													444	39	99	10	-	2	1,050
Kamloops-Monte Creek	17	15												27	-	-	-	-	-	59
Monte Cr.-Salmon Arm	91	7												277	7	93	5	-	-	480
Salmon Arm	166	2													17	78	10	-	-	273
Salmon Arm-Sicamous	46	2												-	-	-	-	-	-	48
Sicamous	46	-													-	70	2	-	-	118
Sicamous-Revelstoke	7	-												82	6	2	-	-	3	100
Revelstoke	57	-												116	8	44	5	-	-	230
Revelstoke-Golden	-	-												-	7	53	12	-	-	72
Golden	15	-												22	12	107	-	-	-	156
Golden-Alberta	2	-												-	-	7	-	-	5	14
Okanagan	364	41	444	27	277		-		82	121	-	22	-	-	27	388	96	-	-	1,888
Kootenays	48	-	44	-	7	17	-	-	6	8	7	12	-	27	-	22	2	-	-	200
Alberta	846	12	99	-	93	78	-	70	2	44	53	107	7	388	22	-	-	-	55	1,875
Other Canada	302	-	10	-	5	10	-	2	-	5	12	-	-	96	2	-	-	-	7	451
Wash./Calif.	2	62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65
Other U.S.	27	-	2	-	-	-	-	-	3	-	-	-	5	-	-	55	7	-	-	99
	3,182	832	1,055	59	480	273	48	118	100	235	72	156	12	1,883	195	1,875	451	65	99	11,190

Appendix 4

2021 Origin-Destination Tables

Total External Trips – TCH, Afton i/c to the Alberta Border

2021 External Trips – SADT

Origin	Destination																			
	West of corridor	North of Kam.	Kam.	Kam.-Monte Creek	Monte Cr.-Salmon Arm	Salmon Arm	Salmon Arm-Sica.	Sica.	Sica.-Rev.	Revel.	Revel.-Golden	Golden	Golden-Alberta	Okan.	Koot.	Alta.	Other Can.	Wash./ Calif.	Other U.S.	Total
West of the corridor	-	1,691	719	29	216	427	99	124	12	118	-	27	-	921	147	1,996	748	8	68	7,348
North of Kamloops	1,691	-		24	16	8	8	-	-	-	-	-	-	125	-	28	-	181	-	2,079
Kamloops	719													877	103	236	32	-	8	1,974
Kamloops-Monte Creek	29	24												22	-	-	-	-	-	75
Monte Cr.-Salmon Arm	216	16												608	24	251	16	-	-	1,130
Salmon Arm	427	8													39	192	24	-	-	691
Salmon Arm-Sicamous	99	8												-	-	-	-	-	-	107
Sicamous	124	-													-	174	8	-	-	306
Sicamous-Revelstoke	12	-												158	5	7	-	-	2	184
Revelstoke	118	-												237	13	97	16	-	-	480
Revelstoke-Golden	-	-												-	24	136	39	-	-	200
Golden	27	-												47	14	182	-	-	-	271
Golden-Alberta	8	-												-	-	22	-	-	16	46
Okanagan	921	125	877	22	608		-		158	244	-	47	-	-	63	903	274	-	-	4,243
Kootenays	147	-	118	-	24	39	-	-	5	13	24	14	-	63	-	49	8	-	-	503
Alberta	1,996	28	236	-	251	192	-	174	7	97	136	182	22	903	49	-	-	-	149	4,423
Other Canada	748	-	32	-	16	24	-	8	-	16	39	-	-	274	8	-	-	-	23	1,186
Wash./Calif.	8	181	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	189
Other U.S.	68	-	8	-	-	-	-	-	2	-	-	-	15	-	-	149	23	-	-	265
	7,356	2,080	1,990	75	1,130	690	107	306	184	487	200	271	38	4,235	488	4,423	1,186	189	265	25,699

Total External Trips – TCH, Afton i/c to the Alberta Border

2021 External Trips – AADT

Origin	Destination																			
	West of corridor	North of Kam.	Kam.	Kam.-Monte Creek	Monte Cr.-Salmon Arm	Salmon Arm	Salmon Arm-Sica.	Sica.	Sica.-Rev.	Revel.	Revel.-Golden	Golden	Golden-Alberta	Okan.	Koot.	Alta.	Other Can.	Wash./ Calif.	Other U.S.	Total
West of the corridor	-	463	687	14	53	101	22	23	4	48	-	12	-	239	8	438	184	-	15	2,311
North of Kamloops	463	-		24	8	-	-	-	-	-	-	-	-	8	-	8	-	16	-	527
Kamloops	687													483	24	52	-	-	-	1,246
Kamloops-Monte Creek	14	24												22	-	-	-	-	-	59
Monte Cr.-Salmon Arm	53	8												284	-	10	-	-	-	354
Salmon Arm	101	-													16	32	8	-	-	157
Salmon Arm-Sicamous	22	-												-	-	-	-	-	-	22
Sicamous	23	-													-	20	-	-	-	43
Sicamous-Revelstoke	4	-												103	5	-	-	-	2	114
Revelstoke	48	-												134	5	30	-	-	-	217
Revelstoke-Golden	-	-												-	-	16	-	-	-	16
Golden	12	-												24	14	143	-	-	-	192
Golden-Alberta	-	-												-	-	-	-	-	-	-
Okanagan	239	8	483	22	284		-		103	142	-	24	-	-	24	246	42	-	-	1,616
Kootenays	8	-	24	-	-	16	-	-	5	5	-	14	-	24	-	16	-	-	-	111
Alberta	438	8	52	-	10	32	-	20	-	30	16	143	-	246	16	-	-	-	8	1,018
Other Canada	184	-	-	-	-	8	-	-	-	-	-	-	-	42	-	-	-	-	-	234
Wash./Calif.	-	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
Other U.S.	15	-	-	-	-	-	-	-	2	-	-	-	-	-	-	8	-	-	-	25
	2,311	527	1,246	59	354	157	22	43	114	224	16	192	-	1,609	111	1,018	234	16	25	8,277

Appendix 5

Inter-Provincial Truck Shipments to the Lower Mainland

Truck Shipments Between the Lower Mainland and the Other Provinces - 1996

Originating in Vancouver (Eastbound)	Shipments (000's)	Tonnes (000's)	Revenue ($000's)
Agricultural Products	3	25	1,919
Building Material	11	10	1,776
Chemicals	16	44	5,024
Dangerous Goods	0	0	0
Food and Beverage	135	390	42,207
General Freight	152	419	51,363
Household Goods	27	44	12,341
Machinery	15	47	6,701
Medical Products	8	12	1,794
Metal Products	38	190	14,333
Minerals	4	27	2,075
Miscellaneous	32	116	13,094
Petroleum and Gas Products	2	9	715
Plastic Products	1	3	450
Textile and Clothing	22	24	3,282
Transportation	34	44	8,143
Wood and Paper Products	13	125	11,028
Total	513	1,530	176,244

Destined for Vancouver (Westbound)	Shipments (000's)	Tonnes (000's)	Revenue ($000's)
Agricultural Products	4	69	3,840
Building Material	16	13	3,400
Chemicals	14	52	7,686
Dangerous Goods	0	0	1
Food and Beverage	100	717	77,676
General Freight	213	473	86,782
Household Goods	46	80	28,606
Machinery	14	27	7,082
Medical Products	15	13	3,072
Metal Products	36	171	20,204
Minerals	6	55	6,234
Miscellaneous	36	135	20,835
Petroleum and Gas Products	2	22	1,666
Plastic Products	1	3	798
Textile and Clothing	42	22	8,837
Transportation	27	31	9,264
Wood and Paper Products	12	170	9,143
Total	585	2,050	295,126

Source: Statistics Canada For-Hire Trucking Survey, special tabulation.

Notes:

Includes all for-hire truck shipments to/from the Vancouver Census Metropolitan Area and the other nine provinces. The Vancouver Census Metropolitan Area covers the same area as the Greater Vancouver Regional District.

Appendix 6

Origin-Destination Patterns for Truck Traffic on the TCH

Commercial Truck Traffic by Origin and Destination - Kamloops Weighscale 1996

Destination	S.W.B.C.	W. Kamloops	S.Kamloops	Okanagan	N. Kamloops	North B.C	Kamloops	Salmon Arm	Sicamous	Revelstoke	Golden	Kootenay	Yoho	Alberta	Other Canada	USA	Total
Origin																	
S.W.B.C.		1	1	35	7	3	61	5	9	10	2			242	73	4	453
W. Kamloops				8	3		32	3	1	8		1		10	1	1	68
S. Kamloops	2	1		1	8		26		1	1				1	1		42
Okanagan	26	10	5	1	2	10	9	1						2	1	4	71
N. Kamloops	12	6	2	1		1	6									4	32
North B.C.	3			2			24			1				5		1	36
Kamloops	69	52	75	9		37	4									5	251
Salmon Arm	15	6	1			2											24
Sicamous	7	5	1														13
Revelstoke	9	7															16
Kootenay	10																10
Alberta	309	2	4	2		4	1									17	339
Other Canada	80					3										2	85
U.S.A.	4			1			6							13	1		25
Total	546	90	89	60	20	60	169	9	11	20	2	1		273	77	38	1,465

Commercial Truck Traffic by Origin and Destination - Kamloops Weighscale 1995

Destination	S.W.B.C.	W. Kamloops	S.Kamloops	Okanagan	N. Kamloops	North B.C	Kamloops	Salmon Arm	Sicamous	Revelstoke	Golden	Kootenay	Yoho	Alberta	Other Canada	USA	Total
Origin																	
S.W.B.C.				61		7	124	26	8	6	5	6		395	109	3	750
W. Kamloops			1	15	5	6	90	6	3	7		1		12		1	147
S. Kamloops				7	2	3	57		1	1				6	1		78
Okanagan	14	5	4	1	2	7	17									1	51
N. Kamloops	3	3															6
North B.C.	1			12			36	1	1			6		12	2	1	72
Kamloops	42	44	64	8		18						1				3	180
Salmon Arm	11	3	1	1		1	1										18
Sicamous	3	3	1														7
Revelstoke	1	1															2
Kootenay	3						2										5
Alberta	99	3	3	3		2										7	117
Other Canada	31	1				1										2	35
U.S.A.	2			1		2	1							2			8
Total	210	63	74	109	9	47	328	33	13	14	5	14		427	112	18	1,476

Commercial Truck Traffic by Origin and Destination - Golden Weighscale 1996 (Westbound Only)

Destination	S.W.B.C.	W. Kamloops	S. Kamloops	Okanagan	N. Kamloops	North B.C.	Kamloops	Salmon Arm	Sicamous	Revelstoke	Golden	Kootenay	Yoho	Alberta	Other Canada	USA	Total
Origin																	
Kootenay	7			1			1		1	1	3						14
Yoho	1										7						8
Golden				2			2			1	5	1	1				12
Alberta	191			52		4	14	3	11	12	24		1			7	324
Other Canada	70			4			3				1						78
USA	4			1										1			6
Total	273			60		4	20	3	12	14	40	1	2	1		7	442

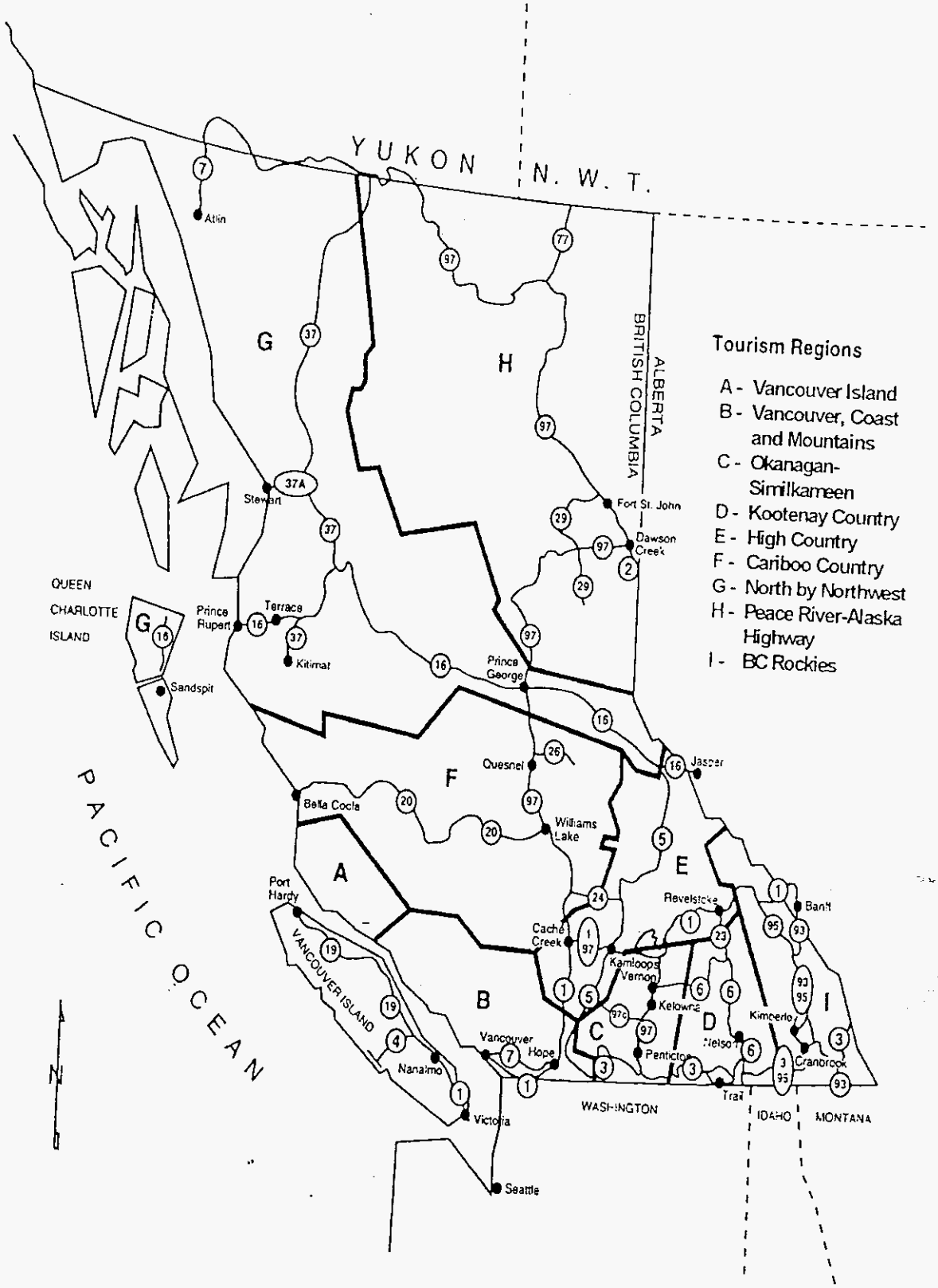
Commercial Truck Traffic by Origin and Destination - Golden Weighscale 1995

Destination	S.W.B.C.	W. Kamloops	S. Kamloops	Okanagan	N. Kamloops	North B.C.	Kamloops	Salmon Arm	Sicamous	Revelstoke	Golden	Kootenay	Yoho	Alberta	Other Canada	USA	Total
Origin																	
Southwest B.C.												3	3	329	137	9	481
Okanagan												2	1	153	24	3	183
North B.C.	1												2	11	4	3	21
Kamloops												3	10	47		2	62
Salmon Arm												1	5	8	5	1	20
Sicamous														13			13
Revelstoke													1	25		4	30
Golden												3	18	33	2	1	57
Kootenay	3			2			3				5		1	3	1		18
Yoho	3			5			6	1			33		1	1	1		51
Alberta	246			111		5	34	8	15	25	74		2		1	9	530
Other Canada	146			9			4	3		1	1	3		1		2	170
USA	3			5						1	1	2		3			15
Total	402			132		5	47	12	15	27	114	17	44	627	175	34	1651

Appendix 7

Reference Maps

British Columbia Tourism Regions



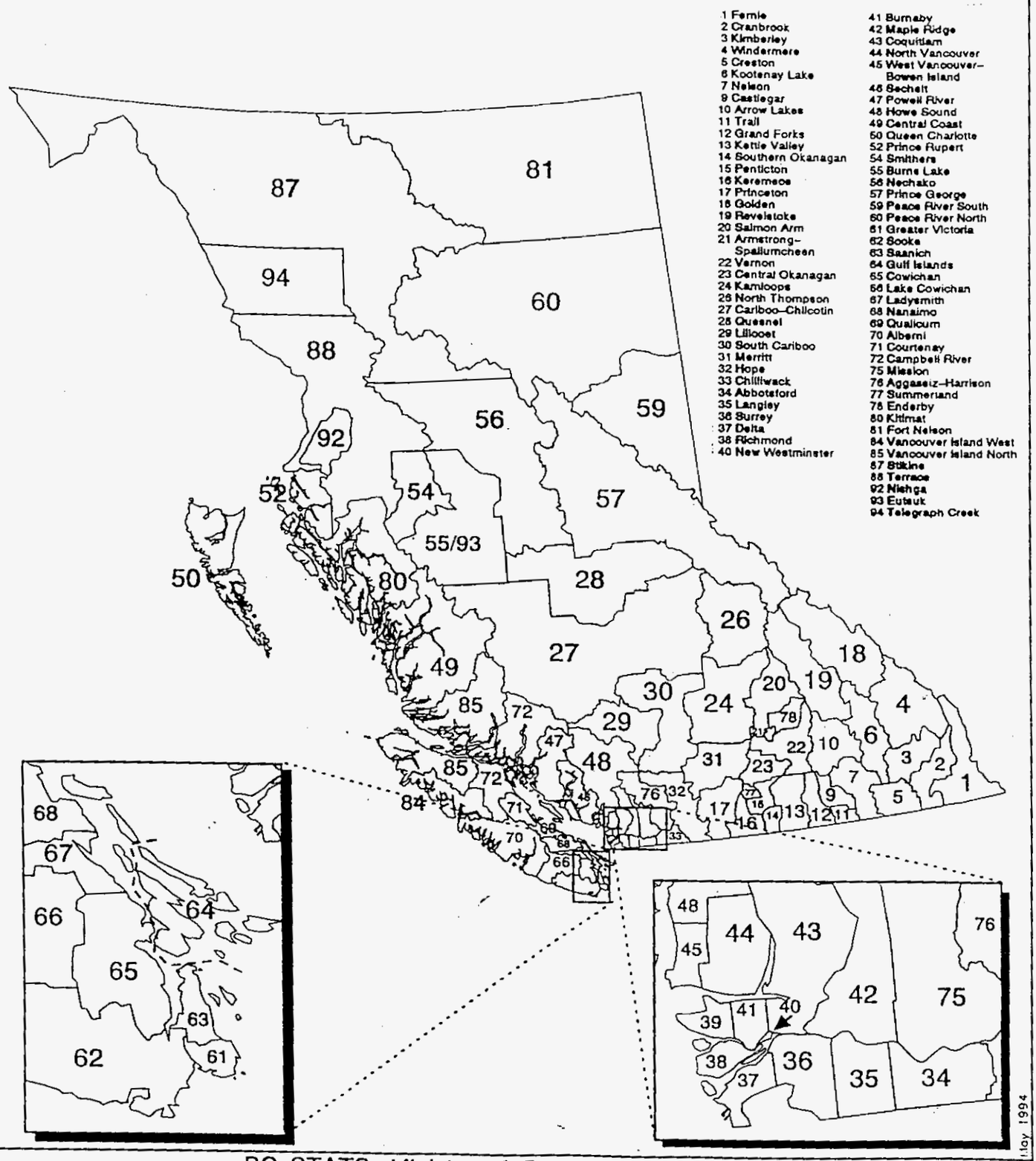
Tourism Regions

- A - Vancouver Island
- B - Vancouver, Coast and Mountains
- C - Okanagan-Similkameen
- D - Kootenay Country
- E - High Country
- F - Cariboo Country
- G - North by Northwest
- H - Peace River-Alaska Highway
- I - BC Rockies

Forest Regions and Forest Districts

BC Parks District Boundaries and District Offices

British Columbia
Local Health Areas



May 1994

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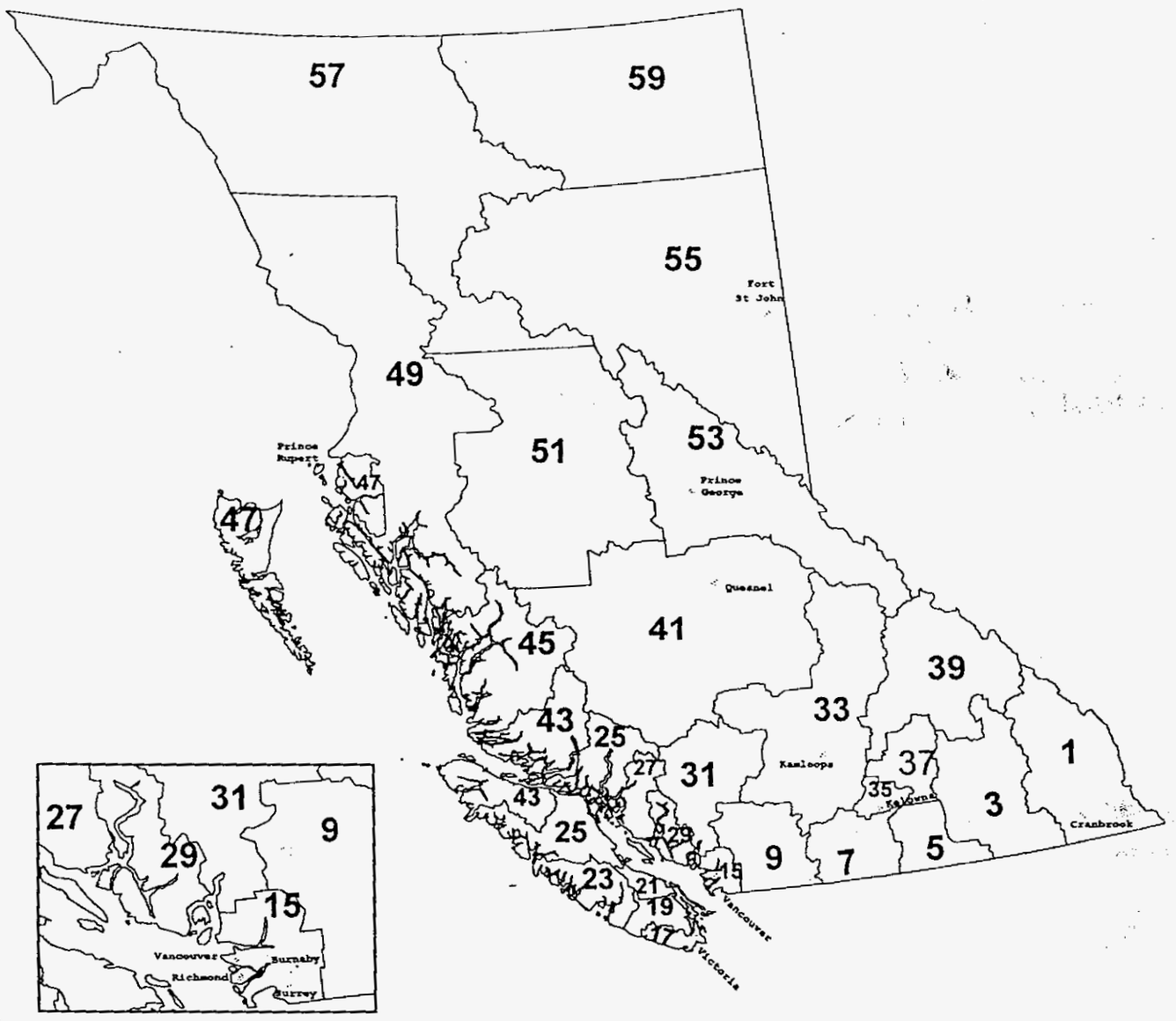
British Columbia Regional Districts

1996 Boundaries



1 East Kootenay
3 Central Kootenay
5 Kootenay Boundary
7 Okanagan-Similkameen
9 Fraser-Valley
15 Greater Vancouver
17 Capital
19 Cowichan Valley
21 Nanaimo
23 Alberni-Clayoquot
25 Comox-Strathcona
27 Powell River
29 Sunshine Coast
31 Squamish-Lillooet
33 Thompson-Nicola
35 Central Okanagan
37 North Okanagan
39 Columbia-Shuswap
41 Cariboo
43 Mount Waddington
45 Central Coast
47 Skeena-Queen Charlotte
49 Kitimat-Stikine
51 Bulkley-Nechako
53 Fraser-Ft George
55 Peace River
57 Stikine
59 Fort Nelson-Liard

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